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TIMES OF WAR AND WAR OVER TIME

The roles time and timing play in operational art and its development according to the texts of renowned theorists and practitioners

Jan Hanska

MAANPUOLUSTUSKORKEAKOULU JULKAISUSARJA 1: TUTKIMUKSIA NRO 12

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ACADEMIC DISSERTATION

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ABSTRACT

The aim of this dissertation is to analyze the impact of the meaning of time to operational art throughout the arc of development of the art of war over the ages. The method was to utilize the texts of most influential theorists and commanders to gain a perspective into how they conceived of time and how they treated the management of time in the textual corpus they left behind. Because of the nature of the sources the method chosen for the analysis has been derived from narratology.

For the purposes of clarity, the historical development of the art of war has been divided into three separate but partially overlapping eras according to the theory of the three waves Alvin Toffler developed. These waves are the agrarian, industrial and informational phases of societal development.

In the agrarian age time was closely related to cyclical repetition of days and seasons and an actual conception of minutes or hours did not even properly exist. With the advance of industrialization time gained a clear and liner direction and became measurable and thus divisible into smaller and smaller segments. In the art of war it had earlier been sufficient to seize the favorable moment but during 'indust-reality' the paradigm of increased speed and efficiency of utilizing every moment to perform more began to dominate. During the Third Wave and the information society the passage of time has quickened and speed in warfare has accelerated so far that it has gone beyond control of the human mind. If the tempo cannot be managed, operational art has to slow it down.

The world does not adhere to a single wave-phase. Different societies and their armed forces abide to the procedures related to different waves while the waves collide and cause tumult. For a society in transformation from industrial to information age the wave-phases is unclear and armed forces have to act in accordance with both paradigms. Same occurs when the enemy has a different conception of time. One may have a watch and the other may have plenty of time. Thus the armed forces of today and tomorrow may have to time and synchronize their actions to fit a multi-wave pattern. New means to master time have to be developed and these could be found from partially reverting to the utilization of auspicious *Kairos*-moments and intuition in trying to actively create them. Instead of performing faster and faster in accordance to indust-reality, intelligently managing flexitime may give alternative and additional options. To act in a timely manner and avoid unnecessary haste is the crux of operational art. One has to set a suitable rhythm for ones operations.

As societies have developed over time so have their means and ways of conducting war. There has been and will be a continuous process of evolution in the art of war and sometimes this happens at a revolutionary speed. This development, however, occurs in a cyclical instead of a linear manner. Novel inventions dominate warfare until they are relatively quickly countered. For some time offensive is the paradigmatic way of waging war and then the defensive triumphs for a while. Time has a different meaning in defense and offense and the way to utilize time has to be set depending on the end state of operations. In a way time is a meaningless concept in operational art by itself. It only gains an importance when contrasted to what can be achieved in a given period of time. Time, place, and force create an inseparable trinity in which the relationships of the factors are consciously and continuously altered by the operational artist. His task is to create original combinations of the three as the situation demands. Mastering distances through mobility and using speed, rhythm, and synchronization to concentrate forces and effects at the right time in the right place is how time can be mastered in the physical realm of operational art.

However, as physical speed has reached practicable limits, there is during the Third Wave not much more edge on the enemy to be gained by still accelerating movement. Since we live in information age, turning information into knowledge and intelligence thus using the mental faculties to master time is more promising. Traditionally energetic and strong willed commanders have ruled the battlefields. But within Third Wave battlespace these important characteristics need to be augmented with imagination, intuition, and flexibility of thought and action. Brain and brawn need to cooperate to produce original solutions to problems of operational art. Daring and audacity suffice in some situations; care and caution in others. Situational awareness today does not only concern knowing the position of the troops in the battlespace but ability to imagine and intelligently deduce outcomes as well. Even in our information age the uncertainty involved in warfare will not evaporate. Operational artists must dare embrace it. The fog of war may get thinner but it will never be lifted from the battlespace. The operational artist must master time through managing uncertainty and his ability to act at auspicious moments. The most important manipulation of time occurs in the mental sphere of operational art.

Time can be won or lost to serve different purposes. Time can be robbed from the enemy or given to him. It can be managed or squandered but the important thing is that the operational artist understands how it relates to the other two essential factors of warfare. Time is not only an absolute in warfare. Time is a tool as well as a resource of operational art and to make most of it requires analysis and planning as well as imagination and daring. There is no single way to conceive of time in warfare and much of operational art revolves around manipulation of time. The ability to squeeze the most out of time available is as important as the skill to seize fleeing moments.

TIIVISTELMÄ

ämän väitöskirjan tarkoituksena on ollut tutkia ajan merkitystä operaatiotaidossa koko sotataidon kehityskaaren läpi. Metodiksi tutkimukseen on valittu narratologian periaatteiden mukaisesti käyttää vaikutusvaltaisimpien sotateoreetikoiden ja komentajien tuottamia tekstejä. Näistä on etsitty heidän itsensä käyttämiä näkökulmia ajan merkitykseen ja sen manipulaatioon.

Selvyyden vuoksi sotataidon historiallinen kehitys on tässä käsittelyssä jaettu kolmeen erilliseen, mutta osittain päällekkäiseen aikakauteen. Tässä on käytetty apuna Alvin Tofflerin kolmen aallon teoriaa yhteiskuntien kehitykselle. Nämä kolme aaltoa ovat maatalouden, teollisuuden ja informaation aikakaudet.

Maatalouden aikakaudella aika oli pitkälti sidoksissa päivien ja vuodenaikojen muodostaman syklin rytmiin ja tunneilla, saati minuuteilla ei ollut merkitystä. Teollistumisen myötä aika alkoi vasta saada selkeän lineaarisen suunnan ja siitä tuli mitattavissa oleva ja siten yhä pienempiin ja pienempiin osiin jaettava suure. Jos maatalouden aikakauden sotataidossa yleensä riittikin tarttuminen toimeen oikealla hetkellä, niin "teodellisuuden" aikakaudella kiihtyvän nopeuden ja tehokkuuden paradigmat jokaisen hetken käyttämisestä enempään suorittamiseen hallitsivat ajattelua. Kolmannen aallon ja informaatioyhteiskuntien aikana sodankäynnin aika on lyhentynyt ja vauhti on kasvanut sellaiseksi, että ihmismieli ei enää täysin pysty sitä kontrolloimaan. Uusia menetelmiä ja tapoja hallita aikaa tulee kehittää ja osin niitä voi löytää palaamalla lupaavien kairos-hetkien hyväksikäyttöön ja sellaisten hetkien aktiiviseen luomiseen.

Ei ole olemassa yhtä aallon vaihetta, joka vallitsisi koko maailmassa. Eri yhteiskunnat ja niiden asevoimat noudattavat eri aaltojen toimintatapoja ja samalla aallot törmäävät toisiinsa aiheuttaen lisäsekaannusta. Teollisesta informaatioaikakauteen siirtyvä yhteiskunta on tilassa, jossa edellinen aalto vetäytyy ja uusi vyöryy päälle. Asevoimien on pakko noudattaa osin kummankin aallon vallitsevaa paradigmaa. Hiukan samoin käy silloin, kun vihollisella on erilainen aikakäsitys. Yhdellä voi olla kello ja toisella on runsaasti aikaa. Nykyisten ja tulevien asevoimien tulee kyetä tilanteen niin vaatiessa taistelemaan "moniaaltomuotoisesti" ajoittaessaan ja synkronoidessaan toimintojaan. Uusia tapoja hallita aikaa on kehitettävä jatkuvasti, mutta niitä voidaan etsiä myös agraarisesta ajasta ja vallinneesta pyrkimyksestä etsiä lupaavia kairos-ajan hetkiä. Lisäksi informaatioaikakauden periaatteiden mukaisesti tulee pyrkiä kaikin keinoin myös aktiivisesti luomaan lisää tällaisia hetkiä. Toimiminen nopeammin ja nopeammin teodellisuuden vaatimusten mukaisesti ei enää yksin riitä vaan siihen tulee liittää joustava aikakäsitys. Operaatiotaidossa tulee kyetä toimimaan oikea-aikaisesti, mutta kiireettömästi aikauttaen operaatiot itselleen sopivan rytmin mukaisesti.

Samalla kun yhteiskunnat ovat ajan myötä kehittyneet, myös niiden tavat ja menetelmät sotia ovat muuttuneet. Evoluutiokehitys on ollut jatkuvaa ja toisinaan jopa vallankumouksellisen nopeaa. Tämä kehitys on kuitenkin kulkenut syklisesti ennemminkin kuin lineaarisesti. Uudet keksinnöt ja tekniikat ovat hallinneet sodankäyntiä, kunnes niille on varsin nopeasti löydetty vastatoimia. Jonkin aikaa hyökkäyksellisyyden ajatus dominoi sotataitoa, jonka jälkeen puolustuksesta tulee vallitseva paradigma. Ajalla on eri merkitys näissä taistelun muodoissa. Aika itsessään on tavallaan merkityksetön operaatiotaidossa. Siitä tulee merkityksellinen vasta kun se sidotaan asioihin, joita tietyn ajan kuluessa voidaan tehdä tai saavuttaa. Aika, paikka ja voima luovat erottamattoman kolmiyhteyden, jonka sisällä niiden keskinäisen vuorovaikutuksen muuttelu tilanteen vaatimusten mukaisesti on operaatiotaidon ydin. Komentajan tehtävänä on muodostaa näistä kolmesta osatekijästä uudenlaisia yhdistelmiä vastatakseen kunkin tilanteen vaatimuksiin. Välimatkojen voittaminen liikkuvuudella ja nopeuden, rytmityksen sekä synkronoinnin käyttö joukkojen ja vaikutusten keskittämiseksi oikeaan aikaan oikeaan paikkaan ovat tapoja hallita aikaa operaatiotaidon fyysisessä ulottuvuudessa.

Koska kolmannen aallon aikana fyysinen nopeus on saavuttanut käytännöllisen ylärajansa, fyysisen liikenopeuden kasvattaminen taistelutilassa ei enää tarjoa suuria käyttämättömiä mahdollisuuksia. Koska elämme informaation aikakaudella, informaation jalostaminen tiedoksi ja järjeksi on paljon lupaavampi kehityssuunta. Perinteisesti voimakastahtoiset ja energiset komentajat ovat pärjänneet taistelukentillä. Kolmannen aallon taistelutilassa näitä kriittisiä ominaisuuksia tulee täydentää mielikuvituksella, intuitiolla ja sekä ajattelun että toiminnan joustavuudella. Aivojen ja lihasten yhteistyötä vaaditaan, jotta kyettäisiin tuottamaan innovatiivisia ratkaisuita operaatiotaidon ongelmiin. Uskallus ja rohkeus toimivat yhdessä tilanteessa, mutta varovaisuus ja huolellisuus toisessa. Tilannetietoisuus nykypäivänä ei tarkoita ainoastaan joukkojen sijainnin ja tilanteen tietämystä taistelutilassa, vaan lisäksi kykyä kuvitella ja päätellä tulevia kehityskulkuja. Operaatiotaidossa aikaa hallitaan hallitsemalla epävarmuutta ja kyvykkyydellä nopeaan toimintaan lupaavilla ajan hetkillä. Operaatiotaidon kannalta tärkein ajan hyväksikäyttö tapahtuu henkisellä tasolla.

Aikaa voidaan voittaa yhtä hyvin kuin hävitäkin. Sitä voidaan ryöstää viholliselta tai antaa hänelle. Aikaa voidaan hallita tai heittää hukkaan ja kaikki nämä asiat voivat tapahtua niin taistelutilan fyysisissä ulottuvuuksissa kuin henkisellä ja älyllisellä puolellakin. Tärkeintä kuitenkin on, että operaatiotaidossa ymmärretään ajan, tilan ja voiman keskinäisten riippuvuussuhteiden merkitys. Aika toimii operaatiotaidossa yhtä hyvin työkaluna kuin resurssinakin ja jotta siitä voidaan ulosmitata täysin hyöty, tulee kyetä käyttämään analyysia ja suunnittelua apunaan yhtä lailla kuin mielikuvitusta ja uskallusta. Ei ole yhtä ainoaa oikeaa tapaa ymmärtää ajan merkitystä operaatiotaidossa, sillä suuri osa siitä liittyy erottamattomasti ajan hyväksikäyttöön ja manipulointiin tilannesidonnaisesti ja päämääristä riippuen. Pitää kyetä yhtä lailla puristamaan etulyöntiasema käyttäen jokainen ajan hetki hyväkseen kuin pystyä hyödyntämään ohikiitävän hetken lupauksia. Tiialle

Kiitos Maanpuolustuskorkeakoulun tukisäätiölle sen myöntämästä apurahasta, joka sekä toimi kannustimena että mahdollisti intensiivisen työskentelyjakson.

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INTRODUCTION

"An important requirement in military art is a skilful combination of styles of warfare that will respond properly to the concrete situation of a given place and time. Each style of warfare must be adapted to the balance of forces between the enemy and ourselves and to the strategic situation of each phase of war."

1.1. RESEARCH MOTIVATION

"The further back one goes, the less useful military history becomes, growing poorer and barer at the same time. The history of antiquity is without doubt the most useless and barest of all. This uselessness is of course not absolute; it refers only to matters that depend on precise knowledge of the actual circumstances, or on the details in which warfare has changed."²

ne should not too eagerly adopt this maxim by Carl von Clausewitz³. Military history of the antiquity is useless only if one searches for detailed information on execution of battles. It is beneficial for students of the art of war to seek to penetrate the veil of time and see what could be learned from the antiquity and how these lessons as general principles could be adopted and adapted to suit warfare in our times. As Dupuy has argued, war is an observational science like astronomy. For the soldier the best laboratory is military history⁴. Indeed, the Russian military tradition has always relied heavily on historical operational analyses. Analytical study of the past was considered essential for predicting future developments in warfare⁵. As Svechin put it, "Work on military history and the art of war can improve our capabilities of drawing up good plans."⁶ But beyond auguring the future, it is difficult enough to learn to comprehend let alone practice the art of war in the present. According to Napoleon tactics may be learnt from treatises, but knowledge of strategy is;

> "acquired by experience, and by studying the campaigns of all the great captains. Gustavus Adolphus, Turenne, and Frederick, as well as Alexander, Hannibal, and Caesar, have all acted upon the same principles. These have been: to keep their forces united; to leave no part unguarded; to seize with rapidity on important points."⁷

If one is not able to learn command of armies in *praxis*, the other option is to peruse how the "great captains" led their troops. The aspiring commander needs to model himself upon these examples and hopefully "*learn to reject all maxims foreign to the principles of these great*

¹ Giap (1970), p. 89.

² Clausewitz (1989), p. 173.

³ Here, to begin with, it must be stated that following Strachan (2013), p. 63, there is no need to ditch

Clausewitz, but rather "to read more of it and to read it with greater care."

⁴ Dupuy (1987), p. xxii.

⁵ Adamsky (2010), p. 33.

⁶ Svechin (1992), p. 279.

⁷ Napoleon: (1987), Maxim LVVVII. pp. 81-82. In the course of this study Napoleon and to some degree Clausewitz will be referred to time after time. This is because, as Smith (2008), p. 70 argued, "A measure of Napoleon's innovation and Clausewitz's theoretical insights is that they transcended their preindustrial times, largely because neither was concerned with models of war so much as its essence."

commanders.^{**8} Napoleon did not mean that war should be carried out by copying past history. His argument was that the basic principles of warfare remain untouched.

This book focuses on the importance, meaning and management of time in the art of war and especially operational art. I have brought together the genius of theorists and pragmatists from different cultures and eras to compare the roles of time and timing concerning the conduct of war in their writings. The "art of war" is a multifaceted topic and it is impossible to include every theorist and numerous omissions have been made. Furthermore, the views on warfare have greatly varied among different cultures. The art of war in Russian thought has traditionally been more of an "arithmetic" sort, based on calculations and strict rules to be obeyed. The German thinkers have tended to rely on overwhelming force to produce Wagnerian symphonies. The Greco-Roman culture used heavy tools to sculpt their military masterpieces and if the Oriental art of war reads like simplistic but deep poems of *haiku*, the French and the British alike have written their romances with the blood of their enemies and their own soldiers. There are numerous approaches to the art of war and I will examine their varied ideas of time as a factor on the battlefield and in the realm of operational art. To begin by quoting Clausewitz;

> "When the strength and capability of armed forces are being calculated, time is apt to be treated as a factor in total strength on the analogy of dynamics. It is assumed in consequence that half the effort or half the total forces could achieve as much in two years as the whole could do in one. This assumption, which rests, sometimes explicitly, sometimes implicitly, at the basis of military planning, is entirely false. Like everything else in life, a military operation takes time. No one, obviously, can march from Vilna to Moscow in a week; but here there is no trace of that reciprocal relationship between time and energy that we could find in dynamics. Both belligerents need time; the question is only which of the two can expect to derive special advantages from it in the light of his own situation. "

Time has a profound meaning in the dynamics of warfare but the relationship is more constrained than would initially seem. Twice the forces, twice the speed is no formula for success. While since the days of Clausewitz it has become a matter of hours to transport troops from Vilna to Moscow, it remains true that every military operation requires a certain amount of time. As Vego writes, "*Any movement in space requires time. Obviously, the longer the distance, the longer the time required to overcome the factor of space. Also, the greater the speed and mobility, the shorter the transit time.*"¹⁰ This type of thinking about time and space was characteristic to the industrialized age. But especially in the complex information age we now live in, it is not enough for any commander to satisfy himself with tackling the problems related to the speed of movement of troops alone, since every action requires time. Planning, decision-making, issuing orders, and executing given orders consume the time at the disposal of the commanders, their staffs and their subordinates.

There are many maxims concerning proper timing in the art of war and operational art. Some of them remain constant as times change and some become obsolete as the ways and means of waging war develop. Leo VI advised his general concerning the beginning of a campaign "to embark upon your expeditions at that time of the year when the harvest is ready." ¹¹ There is no further elaboration of the theme, no argumentation when this might hold true. When a maxim is not supported by logical arguments it becomes an empty slogan. In the case of this particular maxim, it is a product of its time and is related to a certain type of army and its means of provisioning itself. The quotation itself, even without knowledge of the temporal context when it was written, reveals that it refers to an age when the army foraged and provisioned its food from the civilian population and thus full

⁸ Napoleon (1987), Maxim LXXVIII, p. 82.

⁹ Clausewitz (1989), p.597. See also Bernhardi (1914), p. 171.

¹⁰ Vego (2009), p. III-58.

¹¹ Leo VI (2010), p. 635. Leo the Wise was not a completely original thinker, but rather put together earlier writings at his disposal such as Onasander. Yet it was a contemporary practice since the treatises of that time are not theoretical approaches to the art of war but rather handbooks. See Creveld (2005), pp. 58, 65.

granaries were an essential requirement. Similarly, such guidance suits only a relatively small army, since no region is agriculturally rich enough to feed a million-man mass army. As times change warfare changes. Therefore, old maxims have to be evaluated anew before they are accepted to shape the doctrines of war. The principles of war do not remain intact from one age of warfare to another and thus it is a constant duty of every general to ponder upon how to make his army more effective, that is, how to perform more in a shorter time-span. If two armies of equal strength, training, equipment, and mobility face each other, they are likely to need approximately more or less the same amount of time to carry out their operations. Thus it remains a race in which one can gain the "special advantages" from his disposition and maximize the gains by utilizing time as effectively as possible. Every attempt must be made to win more time for oneself and deprive the enemy of the time at his disposal.

One of the reasons for writing this book comes from Liddell Hart's idea of how one is able to understand war and perhaps even chart its future course¹². The war of tomorrow is always connected to the way war is today and this, in turn, is determined by the past. Development or evolution of warfare is a continuum. According to Liddell Hart,

"The future is moulded by the past. The best promise for the future lies in understanding, and applying, the lessons of the past. For that reason, in discussing the problems created by the current war, more light may come from tracing the whole course of the revolution in warfare than by dealing merely with the appearances of the moment. If we realize how the conditions of this war have come about, there may be some prospect of averting a more deadly recurrence."¹³

Many of the proponents of revolution in military affairs (RMA), information war, networkcentric war, cyberwar and numerous other inventions of the past have fallen into this pit of isolating how war could be fought at a given time from the way it has been fought in the past. In the U.S. the RMA was seen as a revolution that consists of technological drivers that create a shift from brute force to brain force.¹⁴ The same hype has returned time after time. The context of war is naturally provided by the level of technological and intellectual sophistication of the society that wages it. Yet the opponent may be culturally different and in terms of development on another level and thus abides his own rules and ways of thought and uses the technology at his disposal. An information society cannot effectively wage an information war with the entire spectrum of its high-tech arsenal against an agrarian society¹⁵. The most sophisticated cyber weapon is useless if the agrarian enemy lacks computers and a networked infrastructure. The evolution of war has been gradual and periodical but in the big picture it has become qualitatively better and better. But in the case of individual wars there have been numerous occasions when one or all of the proponents have reverted to the ways and means of warfare of the past that have seemed even barbaric at the time to an outsider.

Du Picq's argued that "The study of the past alone can give us a true perception of practical methods, and enable us to see how the soldier will inevitably fight to-morrow."¹⁶ Even during the course of a single war warfare may become qualitatively different from what it was at the beginning. There is a continuous tendency of development of weapons and methods

¹² The reader will notice that Fuller and Liddell Hart occasionally emerge prominent among the theorists of the art of war. There are two reasons for this. Together the two wrote a stunning number of books and there is something original among them. In Liddell Hart Danchev (2006), p. 81 defines it by claiming that "*The tone is what is most individual about a page of Liddell Hart, what gives him away at once, what incites, what aggravates.*" The same ability to provoke and stimulate is apparent in Fuller's writings. They did not choose the dry, academic tone to promote their ideas by a more polemic approach. For a study that spins on the idea of narrative, their texts possess narrativity above the rest of military theorists.

¹³ Liddell Hart (1946), p. 76.

¹⁴ Strachan (2013), p. 47.

¹⁵ See Kagan (2006), pp. 319-322 on a discussion how the methods of network-centric warfare of the U.S. were inefficient against an almost agrarian-level networked enemy of the Taliban.

¹⁶ du Picq (1987), p. 130.

alike, but in a long-lasting period of war high technology weapons and other resources may be depleted and affect the outlook of the war. Once one starts reading the books of the leading military thinkers of their times, one cannot help noticing that almost every moment in history when the books were written were considered as revolutionary turning points. An example is Douhet's emphatic claim that "*In the period of history through which we are passing, war is undergoing a profound and radical change in character and forms, as I shall show; so that the war of the future will be very different from all wars of the past.*"¹⁷ It seems that at each and every era war has become something utterly different from what it has been in the past according to the authors. Yet, the bottom line is that war itself has remained immutable in essence and only its character has changed.

The fascinating thing about all true turning points of history is that people at the time rarely recognize the importance of the moment. After all, who thought at the time that the shots Gavrilo Princip fired would have such far-reaching consequences? But that was primarily a political turning point resulting in a breakout of a major war. Warfare itself has different turning points that shape the outlook of future wars. As Douhet argued, "the form of any war - and it is the form which is of primary interest to men of war - depends upon the technical means of war available."¹⁸ Thus, we might or might not today live in a time that could in the future be characterized as a turning point – maybe the dawn of an era of robotic and autonomous systems' warfare. Progress keeps speeding up and we need to keep up with the pace of "mechanical progress, whereby the latest product of to-day is obsolete to-morrow. (...) if we are to await mechanical finality we shall wait for all eternity."¹⁹ Development continues as long as civilization prospers and a suitable thought to hold in mind even today is provided by Fuller:

"The battle of machines, is this the ultimate goal in warfare? I do not think so, for a machine is but a means of waging war, a tool whereby men seek to impose their will upon each other. Once the machine was a bow and arrow; to-day it is a rifle or a machine gun carried on a mounting called man; to-morrow it may be an aeroplane or a tank. Yet, whatever it be, it is the will and understanding of man which the machine forces man to accept."²⁰

Yesterday, today, and tomorrow, the deciding factors in warfare will be the intelligence, determination, will, and imagination that the human mind can offer. Machines are tools and humans allocate their tasks. As we move from one age into another the outlook and practice of operational art will inevitably change, but the core remains the same. As Moltke wrote, the acme of skill in the art of war is to "comprehend in good time the momentarily changing situation and after that to do the simplest and most natural things with steadfastness and prudence."21 Time and timing are always important in operational art and some of the meanings given by the eminent theorists and practitioners remain valid from one age into another, but some others need to discarded or at least modified to better suit the context. As we will later discuss in more detail, the world does not live globally in the same age or Wave of civilizational development. Even if some societies are in late phases of development of information age, others geographically very close may be just beginning their industrial age while others still remain rooted to the agrarian age. Furthermore, different strata in these societies may exhibit characteristics of different ages. One's own armed forces and those of the enemy need to be evaluated according to their level of development which may shed light on their conceptions of temporality.

¹⁷ Douhet (1999), p. 383.

¹⁸ Douhet (1999), p. 279.

¹⁹ Liddell Hart (1927), p. 13.

²⁰ Fuller (1923), p. 168. This book, "The Reformation of War" was Fuller's attempt to synthesize his ideas within the context of a more overarching general theory of war and even with its faults it is considered by many to be his most important one. See e.g. Reid (1987), pp, 65-67, 79.

²¹ Moltke (1993), p. 175.

1.2. RESEARCH QUESTIONS AND METHODOLOGICAL REMARKS

The primary research question I will address is

What kind of role have the renowned theorists and practitioners of war given to time in operational art in their texts?

Secondary research questions are:

- 1.) What kind of eras can the history of war be divided to for analysis on the role of time-related issues in warfare?
- 2.) How does society affect the operational art its armed forces employ?
- 3.) How has the role of time in operational art changed from one era to another and what kind of development patterns has it followed?
- 4.) What are the differences and similarities between levels of war regarding employment of time in warfare?
- 5.) How are time, place, and force interconnected in operational art, how do they affect each other, and how can an operational artist best use them?
- 6.) What are the influences of time and speed on the main physical activities of operational art and how do they differ from each other?
- 7.) How can an operational artist save, win, lose, reallocate, waste and utilize time as a resource in operational art?
- 8.) How can an operational artist gain a temporal advantage over his enemy?

To clarify my intentions, I am researching how taking advantage of time and managing it was expressed in the texts as a narrative element or a theme. Temporality sets the narrative path or storyline I attempt to follow through my research data and simultaneously provides the narrative arc giving the structure and plot for the study. Thus under scrutiny are the roles time-related factors play in operational art and how they are represented within the corpus of literature used as sources. I will illustrate the denotations and connotations of management of time and temporizing embedded in the texts have and combine them into a metanarrative reflecting the theorists' and commanders' perceptions of temporality in the narrative discourse of the art of war. The purpose of this study is not to theorize the ontology of time and compare it to the conceptions of the military writers but rather to collect and analyze the perceptions crucial military theorists, strategists and operational artists throughout the ages have had of the meaning of time in relation to their profession – operational art.

Here it might be important to somewhat clarify the terminology used in this study. War' is used to refer both to war as a phenomenon and a period of time that cannot be described as 'peace' even if no actual clash of arms takes place for long time. War refers here both to a state of conflict that somewhat extends the realm of traditional political intercourse between states and a more tangible period of hostile action between states of other conflicting parties. War is a legal state between belligerents in those cases when international laws of war apply and a recognized institution in international relations.²² Fighting is not a necessity for the state of war to prevail and neither does war have to be officially declared. Peace and war are not as easily discerned as we will later discuss. 'Warfare' refers to the actual conduct of war and how the belligerent parties carry out their warlike activities principally in its military dimension.²³ It is used here to signify the praxis of war and its active period. Warfare is the essential part of war. 'The art of war' is used here as overarching concept embracing the mental and intellectual aspects of war and warfare on all of its levels and including original ways of conducting it. 'Operational art', however, is a more tightly defined 'subspecies' of the art of war. The realm of operational art occupies the intermediate area between strategy and tactics, partially overlapping the two and connecting

²² See e.g. Gray (2007), p. 32.

²³ Ibid.

the battles that are the realm of tactics into operations in order to influence war itself as the level of which strategy operates. Traditionally the term 'campaigning' was used to cover much of the realm we now consider to be operations and some thinkers today tend to favor discussing 'theatre' level instead of operational levels, but this is semantics.²⁴ Again, 'operations' deals with the practice of campaigns while operational art is more focused on the intellectual and mental aspects of conceiving, planning, and thinking about warfare on the operational level. As Strachan simplified the meaning of operational level, it is "*the level of command situated between the tactical and the strategic, between the company or battalion commander in the field and the president in the White House.*"²⁵ On the operational level strategic tasks are broken down into missions that tactical units can accomplish²⁶. This is sufficient to start with as a point of reference, but there will be more discussion later what operational art means, how it came to existence and was born out of increasing complexity in the art of war.

Within the realm of military academia there is a clear paradigm to divide military action into different spheres depending on its scope. Thus, we often tend to discuss different levels, most commonly labelled 'tactical', 'operational' and 'strategic.' I do not question this taxonomy, but for the purpose of comprehensiveness, it is beneficial to occasionally discard the thought of dividing the multifaceted and multi-layered concept of warfare into different levels. Time is involved in every military operation. The brigade commander may strike with a battalion or a nation state with its entire armed forces. On a fundamental level the manipulation of time to one's own benefit is the same, while the actual and quantifiable amount of time at one's disposal differs and the time span these actions cover is different. In other words, on all levels of military action time should be managed, controlled and exploited in a similar manner while the amount on time may vary greatly. Clausewitz argued that "tactics and strategy are two activities that permeate one another in time and space but are nevertheless essentially different. Their inherent laws and mutual relationship cannot be understood without a total comprehension of both."27 I will thus focus on operational art to explain the aforementioned relationship on the level of time and its management, keeping in mind that all the levels of warfare overlap spatio-temporally. A battle with all its tactical decisions is simultaneously a part of the big picture, the operational and strategic realms of war. As Jomini wrote, battles are not isolated incidents without a part in the outcome of war. "Battles are the actual conflicts of armies contending about great questions of national policy and of strategy."28 Battles are the practical manifestation of both politics and strategy during war. Through them, the policy of nation is put to action when other political means prove insufficient.

The levels of the art of war overlap and bridge one another and the lines between them appear to be drawn in sand. Grand strategy, politics, strategy, operations, and tactics cannot be defined so that the articulations would suit each and every case. Thus, an over-arching perspective is required on occasion to illustrate how the levels influence each other, but this study will focus on the perspective of the level of operational art and include only relevant forays into how strategical and tactical levels influence it when necessary.

This study will not discuss in detail individual battles and campaigns in the wars they belonged to, but talk of the generalized mental mindset of the theorists and practitioners towards their art. There are no "general" battles, since every attempt, like Schlieffen's, to recreate the magnificence of Cannae would be a wholly different battle. On occasion in the upcoming pages there will be references to specific battles but they will not be discussed in depth. Generalizations may be drawn from those battles, but as Ferdinand Foch wrote, "*in war there are none but particular cases; everything has there an individual nature; noth-*

²⁴ Smith (2008), pp. 13, 16-17.

²⁵ Strachan (2013), p. 210.

²⁶ Kagan (2006), p. 60.

²⁷ Clausewitz (1989), p. 132.

²⁸ Jomini (2007), p. 131.

*ing ever repeats itself.*²⁹ Discussion will be limited to how the military thinkers perceived battles and the lessons to be learnt from them and not determine what historically happened.

The primary research material used for this study is clearly three-fold. One crucial element is composed of the theorists, who often enjoy a certain amount of reputation. Among these belongs B.H. Liddell Hart who had the rank of captain, but wrote extensively on the art of war. Despite his rank as a major-general J.F.C. Fuller is another example of a theorist without relevant hands-on experience of command in war. The other side of the coin consists of practitioners of war, men often less literary or theoretical, but with extensive knowledge and experience on command and decision-making in war. From among them I have attempted to use generals and field marshals who held crucial and had a personal influence on the proceedings of the wars they fought. I have read their memoirs searching for guidelines how to interpret their ways of thinking about war and their personal preferences of how it should be conducted.³⁰ A third group consisting of military thinkers and doers bridges the two above-mentioned. Among this group are those rare and fortunate ones like Heinz Guderian, who not only played a crucial role in formulating tactics and operational art, but also had the opportunity to put them into practice as commanders³¹. The importance of the theorists and practitioners used in this study is that both as thinkers and doers they have been influential in reshaping warfare of their time and their future. Because of their often authoritarian positions, their subjective perspectives have altered the outlook of warfare.

Furthermore, it should not be forgotten that the majority of military theorists themselves discuss and interpret the ideas of their predecessors and contemporaries. Thus the theorists and practitioners themselves have not existed in a vacuum but instead built on or criticized actively the other texts among my primary sources. Therefore, despite the fact that the texts have been written in different times, they refer constantly to each other and

²⁹ Foch (1920), p. 11.

³⁰ I have, of course omitted some men from my sources. As Liddell Hart, cited in Danchev (1998), p. 106 evaluated him, "*Haig was an bonourable man according to his lights – but his lights were dim.*" There is, for example no denying that Douglas Haig had a crucial position in World War I and influenced the outcome of that war but as the mass-slaughters of his own men he organized do not exhibit profound mastery of the art of war, his thoughts do not tend to pop up along these pages. Not surprisingly a long and praiseful preface to his memoirs was written by Foch. For those interested see e.g. Haig (1919) or Bond (2009). For some others hopefully it is reason enough for Haig's omission from these pages is that according to his biographer, Haig read few books and never a single novel. Leonhard (1998), p. 238. Some others see him in a more favorable light. See for example Martel (1945), p. 78 or Mearsheimer (2010), p. 11.

It is also easy for the reader to search for representatives of his or her own armed forces from the sources of this study and fail to find any. To use Finland as an example, there were many imaginative and innovative military commanders during the WWII but their operational art cannot be considered to influence warfare as a whole. Winter War provided many lessons in conduct of war in extremely cold weather, but these do not change operational art as such. The so-called "*multi*-tactics" of surrounding the enemy and destroying them or waiting for them to surrender were not unique in theory even if the practice suited the circumstances perfectly. A suitable example to illustrate the innovative nature of the Finnish military thought of the time is Viljanen (2012), but it had no international impact on operational art. Guerrilla tactics as a field of expertise produce many other suitable examples. Undoubtedly ever occupied country in the past and present breed their own resistance movements that fight according to specific national characteristics and strengths, but they are rather adaptations of the operational art since only a few have managed to influence the tenets of operational art on a larger scale. An example of a profound study of Finnish Guerrilla tactics can be found in Palokangas (2014). The same once again applies to the theorists. I have chosen to focus on those thinkers who have had the most widespread impact on the development of the art of war and operational art.

³¹ Guderian has been portrayed in later studies as the father of mechanization, and many of his biographies omit all criticism. A refreshing perspective is provided by Hart (2006), p. 3., who goes to the other extreme and grudgingly admits that he is a great military figure, but among other emotional bursts called him "*a man on appriciable ego and ambition – a volatile, impetuous, and difficult personality determined to achieve his vision of a war-winning armored force, irrespective of the consequences.*" Corum (1992), pp. 137-138, 140 agrees on the defects of Guderian's personality calling him an egotist and extremist and maintains that the emphasis on Guderian's role in creating German armored force is self-created in retrospect. However, even if he was not among the earliest theorists and developers, he was one of those who got to test and further develop them during the war.

in addition to intertextuality through indirect influence on the minds of the various authors, the authors of the texts consciously create dialogues between themselves.

I have used lengthy quotations since it is beneficial to allow the great military minds of the past to speak with their own voices. Naturally the Reader may question my choice of sources since they do not at a first glance seem to form a comprehensive and unified textual whole or a body of data. I have chosen *artistes*, theorists and practitioners of war based on the influence they have had either in their own time or throughout centuries as the example of Sun-Tzu demonstrates³². Martial artists are not always highly esteemed for their literary efforts. As Wellington wrote in a letter, "*I am really too hard worked to become an Author and review these lying works called Histories.*"³³ Thus, valuable sources like Alexander, Cyrus or Hannibal are unavailable to the researcher. One is forced to operate with written material, but of this, I have picked a multicultural sample from the earliest strategists onwards. This presents a pitfall I try to avoid. When we use old theorists and practitioners to answer our contemporary dilemmas, we still need to view them as men of their times writing for their times.³⁴ The further back in time one goes and the wider the differences between the cultures of the author and his interpreter, the more pressing the need to differentiate between universal and context-specific ideas.

I have made the conscious decision to leave outside my primary research material the actual doctrines of the armies. To support my decision I quote Liddell Hart who argued that "official manuals, by the nature of their compilation, are merely registers of prevailing practice, not the log-books of a scientific study of war."³⁵ Using manuals and doctrines as primary sources would give a slightly different perspective than the one I chose as my vantage point into operational art. Furthermore, following Strachan a doctrine does not equal operational art. Earlier doctrines were associated tightly with only the tactical level. They were close to dogma, teaching the soldiers how to fight. In the 21st century doctrine rather approaches the strategic level of war and instead of being considered as dogma, it seemingly attempts to teach soldiers how to think and not what to think. If, as Strachan argues, operational art does not have to be predicated on doctrine, doctrines are not as important as the artistic views themselves.³⁶

Doctrines and manuals are refined and finished products. They are stripped of the logic that has led to the way issues are articulated in them. They do not illustrate the train of thought behind their production and all the wild ideas and innovative visions are excluded from them. They describe the established practices and procedures and not the imagination that has given birth to the raw ideas that have been polished to perfection on their pages. In other words, the doctrines and manuals do not exhibit the philosophy of the art of war but serve merely as technical guides.

A lot has been included, but just as much has been left out of this study. In fact, there are three entire fields of warfare that have been excluded outside the study and are only occasionally mentioned. First one is space warfare because space supposedly is deweaponized and today or even in the foreseeable future operational level commanders have

³² For example Gray (2007), p. 60 claims that Sun-Tzu, Clausewitz and Thucydides are endowed with "*time-lessness of their strategic ideas. They can be improved upon, though probably more at the margins than in the body of their thoughts, but they cannot be updated.*" An important thing to notice, especially should one seek to contrast Sun-Tzu and Clausewitz is that the framework of the former was much broader than that of the latter. Sun-Tzu

devoted his attention to detail that precede war and thus diplomacy was the best way to win a war before it even started to attain his ideal of victory without bloodshed. Clausewitz's work focuses on the art of waging war itself. See Handel (2001), p. 33.

³³ Wellington, cited in Bassford et al (2010), p. 47.

³⁴ Paret (2009), p. 142 has advocated this approach on Clausewitz and the same ideas is applicable to each theorist.

³⁵ Liddell Hart (1932), p. 238.

³⁶ On this see Strachan (2011), p. 97.

to direct control of space assets.³⁷ The two others are nuclear warfare and cyber warfare. The reasons for omitting them are two-fold. The first and more important reason can be deciphered from Simpkin who argued that "every theory of war I have encountered is based on a situation that changes at a rate slow enough for its further course to be influenced by response."⁸⁸ After immersion into the literature it became evident that in both the time-factor is almost eradicated. The art of war written down by different theorists emphasizes how war is reciprocal and a clash of wills. Both cyber and nuclear wars could be initiated and for all practical purposes except surviving the aftermath also fought in seconds and minutes. There could be automated or semi-automated responses, but no true art to direct warfare after the war has started.³⁹ The second important reason is that while all three approaches to the art of war have been thoroughly theorized they have not been tested in practice. In other words, we have no hard evidence if the dreaded escalation would occur instantaneously of if the nuclear powers could build enough restrained in their response systems so that the time-factor would remain meaningful. As Schelling put it,

"This is a difference between nuclear weapons and bayonets. It is not in the number of people they can eventually kill but in the speed with which it can be done, in the centralization of decision, in the divorce of the war from political processes, and in computerized programs that threaten to take the war out of human hands once it begins. That nuclear weapons make it possible to compress the fury of global war into a few hours does not mean that they make it inevitable. We have still to ask whether that is the way a major nuclear war would be fought, or ought to be fought. Nevertheless, that the whole war might go off like one big string of firecrackers makes a critical difference between our conception of nuclear war and the world wars we have experienced."⁴⁰

The most revolutionary factor about nuclear weapons was not the level of destruction they possibly could offer, but that their emergence in large quantities meant that the object of military force had become how to prevent war instead of how to wage it. ⁴¹

The meaning of time in war has been an open topic for research carried out in the Finnish National Defence University (NDU) senior staff course and general staff course for several years now. Thus, there should have been quite a few studies directed to address this topic. However, research thus far has focused on specialized areas and pinpointed issues. One could argue that practically every research paper written about the development of tactics at least indirectly addresses the topic since tactics and operational art are time-sensitive. Yet previous studies have not paid sufficient attention to the importance of time regarding its role in different aspects of operational art to be considered as valuable primary sources. Of foreign studies one could say that there are two men who have directly addressed the question of meaning of time in warfare. They are Richard E. Simpkin and Robert Leonhard, and their work has been used in this study. Practically everyone else, including the commanders, strategists and theorists used tend to mention time-related issues only in the passing while focusing their attention on something else. As an example, John Boyd's concept of the OODA-loop was created to reduce time spent in the infor-

³⁷ Warden (2000), p. xiv. This, however, does not imply that space warfare would not be an important topic of research. Furthermore, it is closely related to other strategic approaches. For example Klein (2006) propagates the principles of classical maritime strategy such as Julian Corbett to be chosen as guidelines to developing present and future space strategy. The main argument for excluding space warfare from this study. The assets in space are not directly if at all available to operational level commanders. This is a question of definition, since for example Odom (1993), p. 59 argued that space-based systems played a great role in the Gulf War, but refers strictly to communications and intelligence means in space and not weaponized systems. ³⁸ Simpkin (1985), p. xxiii.

³⁹ Schelling (1963), p. 3 discussed nuclear strategy from a game theory perspective and called it "the retarded science of international strategy."

⁴⁰ Schelling (2008), pp. 20-21.

⁴¹ Strachan (2013), p. 187.

mation analysis and execution of resulting action, but Boyd's perspective was functional and goal-oriented. $^{\!\!\!\!^{42}}$

This study takes a more philosophical view into the role time plays in totality of operational art. The object of inquiry here is neither military history nor is it limited to current warfare. Rather the purpose is to follow the development of thinking about the art of war in general and particularly operational art throughout the ages from one period of warfare into another specifically focusing on the meaning of time, its control, and perceptions of temporality in these respective ages. Thus a metahistorical approach of emplotting a narrative out of the texts has been used to collect, thematize, and analyze how their respective authors have conceived the meaning of time in operational art.

I refer to the type of research I am about to carry out as "a reading." This is descriptive because I seek to delve deep into texts originating from various different time periods and schools of military thought to find time-related factors and scrutinize their messages more thoroughly. There is no doubt that there are brilliant findings in the works of previous scholars on the works of the theorists I use here, but the prominent theorists are highlighted since, as Bassford wrote about the research on Clausewitz, "none is acceptable as a substitute for Clausewitz's own work; none can capture On War's richness and complexity."⁴³ Every text is plurivocal and thus also open to several different readings and interpretations.⁴⁴ The perspective used here is derived from the fields of literary theory and narratology because data is characterized by its literary and narrative nature. As Wavell advised younger soldiers, "when you study military history don't read outlines on strategy or the principles of war. Read biographies, memoirs, historical novels."⁴⁵ Much of the literature used is comprised of memoirs, some attempt to predict the future of war, and some can be put into the genre of non-fictional literature. Nevertheless, I have excluded novels from my research data. While in the Napoleonic age the "War and Peace" of the great Russian Tolstoy is a literary masterpiece and a treasure trove for the military historian, it has been written by a 'non-professional' and describes war from that perspective.⁴⁶

War has often been depicted as an art form and thus a more literary method of research can be considered not only as valid, but also as highly suitable in the metahistory of the art of war.⁴⁷ After all, history is accessible to us directly only through memory of personal experience. Anything one has not witnessed oneself can be mediated only through telling and a narrative is not a neutral medium since when it is used to represent real events, it endows them with an *"illusory coherence.*"⁴⁸ This study will treat war as an art and argue that the thinking, planning and conducting operations has an artistic element that should turn the mechanistic process into operational art. According to Bülow,

"art is the application of science. Science is in the mind only; art descends from the mind into the sphere of activity. Art is all that can be done, whether good or bad: these qualities ac-

⁴² For an excellent work on Boyd see Coram (2002).

⁴³ Bassford (1994), p. 9.

⁴⁴ Riessman (1993), p. 14.

⁴⁵ Wavell (1953), p. 33.

⁴⁶ This is not to say that not only literature but other works of art can be valuable sources in the study of the art of war. A good example can be found in Paret (2009), pp. 33-71 who analyses as qualitatively different material as poems and paintings to provide a context for the warfare of their times.

⁴⁷ This is one of the aspects where I slightly differ from Fuller whose continuous lament was the fact that wars are conducted without any scientific method. This led him to write his perhaps most obscure book of them all, "*Foundations for the Science of War*." In it, however, he wrote that "*I have stressed the scientific aspect of my subject, not that I am a trained scientist, for I am only an amateur, but because soldiers must realize what civil science means, and if, to-day, they spent half as much time in studying science, not forgetting a little philosophy, as they do in playing games, we ought to produce a very fine crop of generals.*" Fuller (1926), p. 16. To make my own position clear, war appears to me to be and art in which you have to understand certain scientific principles. Just like in the case of a painting, you must be familiar with mathematics to understand perspective and avoid creating another cubist piece like Guernica – only with too much bloody realism.

⁴⁸ White (1987), p. ix, Hanska (2010), pp. 77-78.

cord not with science; we know it, or we do not know it. We say of a science, that it is true or false; of an art, that it is good or bad.²⁴⁹

Treating war as an art does not divorce it from reality but rather emphasizes the point that it means the *praxis* of how operations are executed better or worse and narratology has something to offer as a method. Traditionally the narratological approach has too often focused on fictional narratives and Gerard Genette was one of the first to apply these tools to fact-based or historical narratives such as my research data.⁵⁰ I have wanted to do the opposite and include only the "professionals" of war and discarded many magnificent novels for reasons of getting the "soldiers" perspective into this research paper. Yet, only a minor part of the data fulfills the requirements of scientific or academic text in terms of analytic nature or methodology, but all of it is influenced by the need to produce lessons for the future wars. Not a single one of my primary sources is an impartial and objective description of the ontological reality or history.⁵¹ All bring forth a subjective interpretation of reality – since practically not a single military commander has ever admitted to making a mistake. No matter how disastrous the results, according to their interpretations every single decision made was always the correct one. To err is human and even for a Field Marshal there is no escape from the human condition. Even if the sources present themselves and their actions in a more favorable light than the events would allow, their reflections mirror the military thought of their times.

From the perspective on analysis of operational art the narratives of commanders who have been involved in the battles themselves are somewhat dubious source material. It is a typical human trait to embellish one's own actions so as to appear as more competent in the eyes of history. As von der Goltz put it, "*after a war one ought not only to write a history of what has taken place, but also the history of what was intended; the narrative would then be instructive*."⁵² In many instances one can presume that the two would differ greatly from each other. Since it is not the purpose of this study to provide a comprehensive description of battles long gone, but to illustrate the thinking of the commanders involved, the discrepancy between intentions and outcomes does not become methodically problematic.

Hans Delbrück in his history of the art of war chose to begin his analysis from the period of the Persian Wars, since it was the first time when source material began to provide a comprehensive glimpse into the events. Likewise, where accounts of battles are sparse, Delbrück refrains from performing his analysis. In the big picture, however, he argues that the development of warfare can be traced to today so that each successive period partially explains the preceding one.⁵³ A historian of war has to have reliable and verifiable data concerning the conduct of battles and what occurred in them. Where such material is not available, s/he has to remain silent.⁵⁴

My data represents what Hayden White called "*metahistory*."⁵⁵ Historical events have been narrativized and a chain of cause and effect has been emplotted to create a story out of the isolated and chaotic battles to make the entire war comprehensible for the reader. Emplotment or adding a plot creates a meaningful story out of a sequence of events. To simplify, "Hitler attacked Russia" is a statement of an individual event. It can be

⁴⁹ Bülow (2013), p. 228.

⁵⁰ Genette (1993), pp. 54-84.

⁵¹ One of the few who acknowledged the difficulty in remaining objective was Field-Marshal Kesselring who wrote that "What I am going to write will, to the best of my capacity, be of people and circumstances as they appeared to me at the time. I am aware, or course, that however much I may aspire to objectivity I may in the last resort remain subjective, or at any rate give that impression." Kesselring (1989), p. 11.

⁵² von der Goltz (1906), p. 105. Paret (2015) argues that von der Goltz followed Scharnhorst's thoughts in this idea. It history it is more important what was wanted and planned (*"eine Geschichte des Gewollten und Gedachten*') that a history of actual event that could be influenced by accidents and twists of fortune. ⁵³ Delbrück (1990), p. 27.

⁵⁴ This was a method Clausewitz preferred since he wanted to include in his studies only those campaigns about which full knowledge was available. See Howard (1983), p. 30.

⁵⁵ White (1973).

turned into a narrative by writing "Hitler attacked Russia but was defeated." To emplot these historical events one must be able to answer the question "why?"⁵⁶ Different ways of emplotting create different types of narratives. Following White's train of thought time and temporality are used as the backbone of the plot in the creation of a metahistorical metanarrative describing the meanings the prominent military thinkers and doers of different ages have given to time and time-related issues concerning operational art. This research does not attempt to produce the unquestionable 'truth' of the meaning time has in warfare. Neither does it seek to define what time ontologically is. I do not discuss how the wars, operations and battles were carried out but how they were described in writing. The 'reality' of El Alamein cannot be found in either the writings of Rommel, nor Montgomery. But in both there is an interpretation of that reality and it holds immense value, since it brings the human aspect into the essence of war.

Not all of the texts have been addressed in the same language as they were originally written in. This would have been impossible. Words and expressions change over time and depending on the context of their application and the translator but the meaning of entire utterances is more stable⁵⁷. Having to resort to translations does not distort the story told since it is not language-mediated.⁵⁸ The language is inconsequential, reading itself of utmost importance. I cannot summarize the entire thinking of each quoted individual writer in this study or even include all relevant thinkers. I can, however, by using longish quotations, allow the Reader the chance to get a glimpse at their train of thought.

The method I have chosen is to use is a Bakhtinian type of textual analysis. In it a text can be considered either as an utterance by itself or composed of utterances. An utterance is always longer than a word or a sentence and can be considered to be the smallest meaningful part of a narrative discourse. Utterance is basically a unit of text that begins and ends when the speaker/writer has said all he wants to say. Mikhail Bakhtin emphasized that utterances cannot be picked out of their context without altering their original mean-

⁵⁶ Forster (1953), pp. 82-83. Perhaps the most fitting definition of the meaning of plot comes from Polkinghorne who wrote that "Plot is the logic or syntax of narrative discourse, it is a linguistic expression that produces meaning through temporal sequence and progression. Narrative discourse is one of the large categories or systems of understanding that we use in our negotiations with reality, most particularly in our negotiation with time. Narrative constructs meaning out of our time-boundedness and our awareness that human existence occurs within the limits of mortality. The emplotment of events into narrative form is so much a part of our ordinary experience that we are usually not aware of its operation, but only the experience of reality that it produces. We inherently accept that certain kinds of knowledge and truth can be understood only sequentially, in a temporal narrative unfolding. Plotting is an activity in which temporal happenings are shaped into meaningful units. It manifests itself not only in the construction of experience but also as conversations between people and their literary creations (primarily oral, but also written) that rely on experience: myths, fairy tales, stories, novels and histories. When we are in the role of hearers or readers of the narrative experiences – the creations – of others, we understand the stories through the linguistic processes we use in constructing our own narratives. We call this kind of understanding – of hearing the meaning of a story – bermeneutic understanding." Polkinghorne (1988), p. 160.

⁵⁷ Danchev (1998), p. 174. Gives a fitting example. The translation of Sun Tzu at Liddell Hart's disposal used the terms "direct" and "indirect." Later translations use "straightforward" and "crafty", "normal" and "extraordinary" and "orthodox" and "unorthodox." The glossary of strategic though is constantly being rewritten and if one clings too desperately to the expression itself and the not the wider context of the utterance where it is used the idea may be lost in translation. Understanding the idea is more important than the words that act as tools of communication.

⁵⁸ Barthes (1993) argues that nothing essential is lost in the translation of the story. Earlier he had argued Barthes (1977), pp 79-124 that there is a "*narrative language within us*" (*la langue du recit*) which supposedly transcends the meaning of the story and communicates it on a higher level than mere language. Barthes (1977), p. 102. Instead of English, the meaning of the story would remain unchanged on the level of "mentalese" See also Palmer (2004), p. 95. In the context of military studies, Strachan and Rothe (2007), p. 13 argue, furthermore, that in the case of Clausewitz when many of the scholars discuss "On War" they are actually discussing the Howrd-Paret translation of it. This has never seemed to be an insurmountable problem among the academia. See e.g. Honig (2007), 58. Sumida (2007), pp. 164-165. Handel (2001), p. 3 for example uses Clausewitz and Sun-Tzu without any context of a "*more general historical, philosophical, cultural, or linguistic study*." Indeed, "*these two texts are quoted extensively in the interest of allowing their authors to speak for themselves*." This is very much my approach as well.

ings.⁵⁹ In picking quotations for analysis, I have made the unavoidable decision to enter into a dialogic relationship with the text.⁶⁰ To provide the original texts a prominent position within this dialogue, I have wanted to present the utterances without undue shortening so that the integrity of the original thought is not violated and the idea the writer has wanted to convey remains intact. It must further be noted why military men read their classics. As Bassford argued in relation to Clausewitz, most readers are fundamentally not interested in understanding Clausewitz, but understanding war. For a practical mind the semantics of interpretation are secondary to that purpose. It would be nice to know what is 'true', but the more important question is what is useful?⁶¹

Thus my personal narrative is constantly interrupted with longish quotations from the original texts and I have attempted to weave them together with my own and simultaneously juxtapose them with each other to add voices into this dialogue. In all cases I try to remain faithful to the tone of the original texts and as a result this study will produce a thematically unified narrative about time and its management in operational art. In other words, I will use the original texts as a mass of data and turn it into a metatext. I use the relevant parts of original texts and emplot them around the theme of time thus turning them into a logical new narrative discussing the perceptions of temporality in operational art. The outcome still remains representative of the body of literature. The utterances chosen for closer inspection have something of importance to say about management of time in operational art. This is the reason for choosing those specific utterances and the texts they belong to into the narrative discourse, metanarrative or metatext while excluding others. Furthermore, not every brilliant theorist or practitioner has written necessarily anything relevant concerning time. Based on thoroughly acquainting myself with the bulk of relevant literature I have chosen those texts that best reflect the tones and characteristics of their writers. Human perception of a text involves simplification and not all words, sentences or utterances are important within a given text.⁶² In any case understanding a text requires always more than a summation of its partial meanings. The text has to be considered as a hierarchy of topics and the most important ones are to be analyzed.⁶³ In a sense reading is writing anew and ultimately storytelling is what one has to do with his research material.⁶⁴

Roland Barthes argued that even a single text should be viewed as "a multidimensional space in which a variety of writings, none of them original, blend and clash. The text is a tissue of quotations drawn from the innumerable centres of culture."⁶⁵ There is a lot of meaning beyond the words of the text. Mikhail Bakhtin was a very complex theorist and while he often focused on the production of a single author, his aim ultimately was to rise above the text, describing a level that could not be read from the lines on the paper.⁶⁶ There has been a Bakhtinian boom in the social sciences and his theories have been used to analyze a wide variety of texts including Biblical ones.⁶⁷ While other Russian Formalists and later structuralists busied themselves with the structure of the text Bakhtin took a revolutionary step and attempted to illustrate what later in narratology has often been labeled as "metatext?" or the text above the text. Successive attempts to do the same have written about metanarratives or grands récits. Francois Lyotard described them as capable of defining what can be said

⁵⁹ Bakhtin (1986), pp. 71-76.

⁶⁰ Bakhtin (1986), p. 7.

⁶¹ Bassford (2007), p. 76. The same basically serves as an argument against Yuen (2014), p. 13 who argued that in order to understand Sun-Tzu one would have to understand China's language, culture, history, philosophy and logical system. The purpose is not to understand Sun-Tzu per se, but how he has influenced the metatext of the art of war.

⁶² Rabinowitz (1987), pp. 19-20, 48.

⁶³ Ricoeur (1995), p. 38.

⁶⁴ Czarniawska (2004), p. 88, Riessman (1993), p. 1.

⁶⁵ Barthes (1977), p. 146.

⁶⁶ On this see Bakhtin (1991) or Bakhtin (2002).

⁶⁷ Valeta (2008).

about the culture they discuss.⁶⁸ While warfare is always related to the culture that wages it, as van Creveld noted, war has a culture of its own and as is the case with any culture, "much of what surrounds war is based on unreason and does not fit into a utilitarian framework of any kind. However, this does not reduce its importance one whit. One reason for this is because, stripped of its 'useless' culture, war will degenerate into a mere orgy of violence, a thing sustained by no organization, no purpose, and no sense³⁵⁶⁹

The texts I have chosen for analysis created and defined the "military reality" of their time and have had their impact in future narratives of warfare as well as shapers of the culture and practice of operational art. Lyotard argued that since WWII and the blooming of technologies all the *grands récits* have become obsolete and overtaken with little stories told in their place.⁷⁰ For him the essence of post-modernity was incredulity towards metanarratives as means of legitimation.⁷¹ In this study I have attempted to re-create the metanarratives of the specific ages and attempt to describe their characteristics concerning the theme of time. In a sense adhering to the constructivist tradition of narratology I build a metanarrative around the central theme of time and in my analysis I deconstruct it anew to look for meanings and interpretations. This is a valid approach, since despite his denial of the metanarratives even Lyotard agreed that even if they are gone, the world still insists in telling them to itself.⁷² They continue to have a meaning in the world of warfare as well as linger in existence.

A metanarrative can be viewed as a narrative discourse of its own. Donald E. Polkinghorne has described narrative discourse as "an integration of sentences that produces a global meaning that is more than that contained in the sentences viewed independently."⁷³ I am, in other words, focusing on the "global meaning" beyond the words and use quoted utterances to provide the reader with an illustration of the content of the entire narrative discourse. I have recreated the *sjuzet* of time blended with the *fabula* of war. Their interplay represents how the 'timeless' concept of time is realized in the context of warfare and operational art under scrutiny.⁷⁴ The resulting metanarrative of the art of war is not a single story but every text is woven together into a storyweb, a tangle of interconnected stories that present to their reader an entire storyverse to discover and to map out.⁷⁵

While I am fully aware of the almost infinite combinations and shapes the art of war and warfare may present themselves in and the resulting legion of instances where the meaning and even purpose of time varies, I still argue that time remains a topic worthy of both study and discussion for the military mind. There is no possible way for a human intellect to produce definitive guidance for each and every occurrence on the battlefield, but being able to grasp some general characteristics of time and temporality and their relationship to success or defeat in war would be beneficial. This could lead our officers not only to strive to exhaustively perform more in less time according to somewhat old-fashioned tenets of indust-reality, but to truly understand that there is a need for saving, losing, wasting and winning time. One does not always have to rush, since hurry is often the worst enemy of the best. Nevertheless, there are occasions in warfare when there is simply no time for perusing the characteristics of the situation and making thoroughly informed decisions - only to decide instinctively. Unless an operational artist understands the difference between these two instances, his management of time is insufficient.

⁶⁸ Lyotard (1984), p.23.

⁶⁹ Creveld (2008), p. xiv.

⁷⁰ Lyotard (1984), p. 37.

⁷¹ Lyotard (1984), pp. xxiii-xxiv.

⁷² Lyotard (1997), pp. 81-82.

⁷³ Polkinghorne (1988), p. 31. See also Czarniawska (2004), p. 69.

⁷⁴ Propp (1968), Chatman (1978), pp. 19-20, and Bruner (1986), pp. 17, 103.

⁷⁵ Hanska (2010), pp. 98-103, 106. Storyverse and storyweb are theoretical constructs elaborated from the writings of earlier theorists on storylines and storyworlds based on the concept of possible worlds theory. On this see Chatman (1978), Todorov (1981), Herman (2002), Ryan (2004), pp. 1-47, and Palmer (2004).

It is difficult to position oneself properly within the academic disciplines, but I will in this study attempt to emulate the path Simpkin chose, that is, to give due credit to military history but still disagree with "the historian's view that it is the only proper path to military wisdom. I have thus sought to steer a middle course between the analytical historians and the didacts.⁷⁶ But to adopt the position of a didact is just as perilous, because the purpose is not to instruct anyone in his or her military duties. I would love to claim, like Simpkin, that my purpose is "to enlarge understanding of mechanisms of warfare in informed circles"77, but this would be a preposterous statement. Delbrück wrote fittingly, "military history has as little to do with the practice of war as any other branch of knowledge. To study military history and to lead armies are as different as to write about portraits and to paint them. Military history exercises have as little in common with leading troops as archaeology has to do with building houses."78 Therefore the aim of this study is neither to produce military history nor teachings how a general should perform. It is more fitting to claim that this study uses metahistorical approach to understanding development of military thought and illustrates the ideas of the commanders and theorists of the past and present to provide a different perspective into meanings of time-related issues in operational art. This is thus not a study that belongs to the realm of military history since the objective is to study how the thinkers and practitioners conceived of operational art. It describes the development of thought and how some principles, maxims and perceptions of time and temporality in operational art have been passed on from one generation of thinkers to another and how they have been amended, forgotten and re-learned. It is the thoughts and not so much their reflections in doctrines or actions that this study seeks to reveal. In the words of Liddell Hart,

"thought, however immature its present stage of development, is the greatest influence in the world. It is man's capacity for thought which has been responsible for human progress – in raising man above the animal. Hence to influence men's thought is far more important and more lasting in effect than to control their bodies or regulate their actions." 79

1.3. OF WHAT IS TO COME

"The elements contending in a future war will be all the moral and intellectual resources of nations, all the forces of modern civilisation, all technical improvements, feelings, characters, minds and wills—the combined fruit of the culture of the civilized world. It is thus that this question demands the attention of all society.⁸⁰

After this longish foreword there will be seven additional chapters. The second chapter, "Theoretical grounding for treatment of war over time", will lay down theoretical framework for the perspective I have chosen into the development and trends of the art of war. Put simply, this chapter will argue that the art of war is undergoing constant development in the long run but that this development is by no means linear and teleological and that the methods chosen for today would be automatically better, more advanced or more civilized than some employed in the past. The argument is that civilization in general and societies and their militaries progress in waves and cycles. There are ups and downs, periods of power and decline, times of faster development and standstills. Since the outlook of wars reflect the characteristics and practices of the cultures and societies waging them, the development of the art of war is inseparably tied to these waves and cyclical developments. The tools of war evolve constantly but guidelines into how these products of advanced technology

⁷⁶ Simpkin (1985), p. xviii.

⁷⁷ Ibid.

⁷⁸ Delbrück (1997), p. 60.

⁷⁹ Liddell Hart, cited in Danchev (1998), p. 97.

⁸⁰ Bloch (1914), p. Lxxv.

should be employed have to be sought from the past to gain a comprehensive perspective into their possibilities and shortcomings in fitting the overarching pattern of war.

This chapter opens with a discussion on the so-called principles of war. It argues that they are, like warfare itself, immutable in essence, but that they have to be applied in a slightly different, culture and technology specific ways, at different times. While there is constant development in the art of war and humankind in general, it does not blaze a linear trail throughout history. In the art of war very often what goes around, comes around with new twists added to suit the changing circumstances of each time period better.

The theory used in this study to divide the past development of warfare into separate periods is derived from Alvin Toffler. Development of warfare has, according to him, occurred in three separate waves. The first one was the agrarian age, the second one the industrial age or "indust-reality" as it often in the upcoming pages will be referred to, and the third one we are surfing concurrently is the information age. As briefly illustrated, there are numerous different attempts to distinguish particular eras in the overall evolution of warfare, but the three-wave-theory is suitable for inquiry into how time was managed and thought of in operational art, because the two factors of speed and time differentiate one wave from another in Toffler's theory. The waves do not occur simultaneously elsewhere, but are closely tied to the development of culture and society. The idea of waves as patterns of military evolution is supplemented with the introduction of cyclical development patterns within military theory, doctrine, technology, and, as a result, operational art. Based on the idea of cycles and waves as development pattern of operational art the study will discuss the development of different means of conceiving how to win, save, utilize, or manage time during the three epochal waves and how cycles within them has influenced of operational art.

The third chapter, "Timing in the arts of politics and war", will discuss the relationship of the art of war deeper in its context. There has always been violence throughout human history, but if we perceive of war as organized and institutionalized violence initiated in order to attain pre-set goals and practiced in a manner controlled by the society or other groups of people more or less unified around a common goal or idea, we can see that war is inseparable from politics. A society, be it a nation-state, a nation or a tribe tasks the practice of war to some of its members and oversees the execution of the task. Wars start on the level of politics since they are fought to fulfill political goals and war is the effort of the entire society even if only a part of it is engaged in the actual fighting. This chapter will argue that times of war and peace are fundamentally inseparable from each other and that on each level of warfare from politics to tactics the perception and meaning of time and temporality may be different. For a tactician the events of not only the upcoming days but also hours and even minutes are of supreme importance. The grand strategist operates on a time-scale of years or decades. This chapter attempts to shed light on the temporal connections between different levels of warfare and how certain time-related issues are universal and manifested in the principles of war. It will show how the time of peace can be used to prepare for war and how longish preparations may enable winning time during the armed phase of war. It will in the end illustrate how the concept of operational art as the intermediate level of war was inserted between the levels of strategy and tactics. The discussion on politics and peacetime functions of armed forces is important for operational art, because the foundations are built before the fighting proper commences. Operations are planned in advance, resources allocated to the armed forces, the concepts of operational art to be employed are devised, and the armed forces are equipped and trained so that they can operate in a desired manner. The passive and intellectual aspects of operational art take place during peacetime, and its execution and constant revision as situation dictates occur during war. Neither aspect should be forgotten.

The fourth chapter "*Times of revolutionary evolution*", will burrow deeper into how the art of war has developed throughout the ages and how some ideas and view expressed long time ago are still applicable in today's context despite a recurring trend in military literature to emphasize how new technological or methodological improvements have completely changed the complexion of the art of war. There are no 'new' wars or 'old' wars. The essence and purpose of war remains the same even if its appearance changes and although there have been times in the past and there will be times in the future when the ways of fighting wars change in a revolutionary manner, most of the 'revolutions' of the past are just evolution and, furthermore, all military revolutions are tightly connected to drastic changes in the society itself. This chapter will trace some wave and cycle patterns of development throughout the ages and illustrate the cyclical nature of changes. Ultimately the path to success and victory leads "*through better thinking, strategy, and planning. Everything else can be quickly copied and used against you.*"⁸¹

This chapter utilizes the World War II German operational art and tactics that earned the label "*Blitzkrieg*", or "lightning war" as an example of a rapid period of development when a new doctrine was built on old ideas of command augmented by technical developments in communication, weapons and especially enhanced mobility enabled by mechanization and aviation and how ultimately the strategic and operational level surprise affected by *Blitzkrieg* was countered and how the development of same ideas and principles continued under other doctrines elsewhere. If *Blitzkrieg* excelled in the harmonious synchronization of mechanized forces and tactical air-support, this was further developed into a means in which operations of all services would be seamlessly synchronized in joint operational warfare and how new means of technology, or at least visions of them, have continued to create new approaches to the age-old dilemma of how to enhance operational art and how to wage war even more effectively. On the surface the new theories seem to have slight resemblance to past ways of waging war, but soon one starts to see old patterns emerging and old principles being reapplied in new and innovative means.

The fifth chapter, "Manipulation of the trinity of time, space, and force", will seek to illustrate how the oft-cited trinity of time, space and force influence each other. Each one of these is ultimately meaningless if it is isolated from others. It is a common maxim to concentrate as much force as possible in the right place at the right time. If any one of these is not 'right' or at least sufficient, the entire undertaking is to fail. Therefore this chapter is dedicated to not only point out the interrelations but also to illustrate how the manipulation of each factor can be used to win both time and ultimately even maybe the war. This chapter will show that the size of battlefields has increased constantly and while this has allowed greater dispersion of forces within the battlespace, the demand for concentration of forces has increased even if the doctrines of today tend to emphasize the concentration of effects and not the troops themselves. Space can be utilized in many ways to gain more time, slow down the enemy or even reduce his ability to concentrate his forces. At the same time the debate concerning the size of armies has followed a cyclical pattern of preferring smaller and more mobile professional armies over masses of soldiers, each argument being in favor in turn. Concentration seems to be a unifying factor but how this effect is created has been argued over time after time.

The sixth chapter, "*Time and activity - controlling tempo and seizing moments*", will argue that there are fundamental differences in how one should conceive of the asset of time. The guidelines how this should be done are derivable from the desired end-state of the war and the commander's intent. In addition one has to have the ability to seize the moment and act according to its demands. The first choice to be made is whether to choose the defensive or the offensive stance and this dictates how time should be treated and managed as an asset. For the attacker it generally is beneficial to win time and to spend as little time fighting as possible. He has the initiative and is thus able to dictate the time and the place of combat. For the defender it is just as beneficial to win time, but he wins it by spending it. That is, the aim of the defender is to consume as much time as possible from the enemy. The enemy is not only worn down but also slowed down in the course of battles and oper-

⁸¹ Warden (2000), p. xi.

ations. But to remain on the defensive is a passive choice and cannot bring victory. Thus the defender must continuously be on the lookout for the right moment to act and then seize the initiative and go on the offensive. Activity and passivity, tactics of maneuver and attrition are just two sides of the same coin and it is dependent on the circumstances which one is more beneficial to be employed for certain duration of time.

This chapter argues that whether one chooses to be slow or rapid in his actions, speed must be managed and controlled properly to win time for one or to rob the enemy of the time at his disposal. Constant and unthinking acceleration of speed is not the answer to being faster since speed must remain controllable. Thus it must be curtailed, if the situation so demands. Similarly mobility and movement for the sake of movement itself does not bring any gains. There must be a purpose behind movement. This chapter argues that not only movement but every action forces and their commanders undertake have to be performed at the most suitable pace for those specific actions. Ultimately the argument is that time is relative and winning it is a zero-sum game in which every action one undertakes must be contrasted with what the enemy is doing at the same time. Instead of seeking to be faster and faster and performing more in a given unit of time doing things with variable pace works as a means to confuse the enemy and disrupt his timings. One must find the most suitable pace for his actions and vary this pace according to the rhythm of one's one preference and the battle or operations itself. Instead of speeding up, one must be able to slow down or even stop according to this rhythm.

This chapter argues that in the end the best way to rob the enemy of his time is to surprise him and catch him off his guard and that there are other means to accomplish this than being faster than he is. Occasionally it may not be wise to engage in a competition of which one is the fastest but attempt to set the tempo. This chapter argues that there are practical limits to the speed of operations and that these limits are reached long before the limits of speed made possible by technology and thus seeks to answer how seizing the correct moments to act and managing the tempo are crucial time-related issues concerning all activity within the battlespace. The conclusions show that in a world where armies focus on winning and managing time by being faster and faster, the cost-efficient way to win time is by being unorthodox and unpredictable in one's operational art through asymmetric methods and surprising the enemy. Asymmetry of timing, thought and tactics can be a valuable asset and the ability to use not only the newest technologies and methods, but to revert even to old methods originating from a different age may force the enemy of his rhythm.

The seventh chapter "*Winning time intellectually*", will seek to look inward into the realm of intellect and mental activity as timesavers. In the previous chapter we had focused more on the physical aspects of operational art and the activities in battlespace it creates and executes. In this chapter our attention will be on the intellectual side of controlling time in operational art; imagining, thinking, planning, and decision-making as tasks of the commander. We will ponder on the role of the operational artist as a controller and manager of time. In other words, this chapter will illustrate how the mind itself may be the best realm in which to win time to gain a relative advantage over the enemy. To create conditions favorable for victories the commanders must combine their intelligence and imagination, originality and flexibility, audacity and boldness to master operational art and use time as their ally and resource. There are times when taking action is more auspicious than others and the operational artist and his plan must be flexible enough to exploit them. Time, tempo, and speed may run amuck and the commander has to use his *coup d'oeil* to control them and use them optimally regarding his operations.

The eighth and last chapter, "*Time to think or conclusions*" is the coda and it will seek to combine the main findings of previous chapters and compress them into a synthesis and initiate a discussion on where further research might be wise to be directed. This chapter will present the findings of the study and engage in a discussion on their validity and usefulness. There will be a discussion on the methodology used here and its applicability for future research.

THEORETICAL GROUNDING FOR TREATMENT OF WAR OVER TIME

"Because massive changes in society cannot occur without conflict, we believe the metaphor of history as 'waves' of change is more dynamic and revealing that talk about a transition to 'postmodernism.' Waves are dynamic. When waves crash in on one another, powerful crosscurrents are unleashed. When waves of history collide, whole civilizations clash. And that sheds light on much that otherwise seems senseless or random in today's world."⁸²

2.1. THE PRINCIPLES OF WAR

"Warfare is the greatest affair of the state, the basis of life and death, the Way [Tao] to survival or extinction. It must be thoroughly pondered and analyzed."⁸³

There are myriad sets of the so-called 'principles of war' and this study focuses on the applicability of those principles that concern time and temporality and how they change from one era to another. Every officer is taught these principles in one form or another and he learns them by heart. There are constant attempts to visit and rephrase the old maxims and principles even today⁸⁴. Even if conditions of war vary from age to age, as Mahan wrote, "there are certain teachings in the school of history which remain constant, and being, therefore, of universal application, can be elevated to the rank of general principles."⁸⁵ The problem is that often the principles are not explicitly spelled out in the texts but they have to be deduced by the reader. Strachan uses Clausewitz as an example of a strategist whose text contains many references to the need for a system and principles but who "never delivers them in a way designed to be learnt by the parrots of military crammers and spoon-fed examinees.⁸⁶ Furthermore, even when the principles are more clearly listed, their meanings occasionally remain elusive. J.F.C. Fuller claimed

"the principles in themselves are not worth the paper they are written on, for they are but mere words strung together in a certain order. Their value lies in their application, and this application depends on the thousand and one conditions which surround the elements of war during operations. What are these conditions, for without knowing them it is manifestly impossible to apply the principles? Conditions are innumerable and ever changing, but the following are some of the most important : Time, space, ground, weather, numbers, training, communications, supply, armament, formations, obstacles and observation."⁸⁷

⁸² Toffler (1995), p. 18.

⁸³ Sun-tzu (1993), p. 157. Yuen (2014), pp. 3-5 has severely criticized the Sawyer translation that is the most commonly used in the West and argues that its popularity is not due to its sophistication, but that it is easy to comprehend. I take the deliberate risk to use Sun-Tzu precisely in the manner he warned against - taking short phrases from it. I argue that for the purposes of this narrative study this is applicable, since as Yuen argues, that is the way the text of Sun-Tzu has come to influence Western thinkers of the art of war and that is therefore the way he intertextually participates in the metatext created for this study.

⁸⁴ See e.g. Gray (2007).

⁸⁵ Mahan (1999), p. 57.

⁸⁶ Strachan (2013), p. 203.

⁸⁷ Fuller (1923), p. 40.

Fuller listed some conditions that influence the application of these principles and many of them are interlinked. Some remain important and integrity of their meaning intact while some are dependent on the culture applying them to practice. There are commonalities between cultures as well as distinctive differences⁸⁸. Principles are likely to remain empty slogans and catchwords unless they are adapted to the particular temporal and cultural context. Dragomirov claimed that "the principles of the art of war are within the reach of the most common-place intelligence; but this does not mean to say that such an intelligence would be able to practice them."⁸⁹ The principles are easy to memorize, but applying them to practice requires a highly specialized form of intelligence in a general. Failure to understand the fluid and changing superficial nature of the principles has led some theorists even to question their existence. As an example serves Leonhard who argued that the principles are "neither unchanging not universally accepted. They have in fact changed many times even in the brief bistory of our country. Other nations - some close allies - disagree with our list of principles, some substituting their own lists, others claiming that there are no valid principles."⁹⁰

The idea of the principles being 'eternal' came relatively late in the heyday of Newtonian physics born out of the Enlightenment⁹¹. In every natural science systematical models were built to reveal the universal principles that dominate the phenomena.⁹² At this time a philosophic contemplation of war was countered with tenets from the harder sciences. It must be said that physics as an approach to art of war was highly suitable in the mechanized age and we still lack a 'quantum theory' of war. Lately military philosophy has begun to borrow from the more humanistic sciences. The perceptions of time and temporality and especially their meanings vary from one civilization and country to another and the co-existence of different perceptions create difficulties in warfare between societies in different stages of their development. It is easy to join Wylie in his claim that the principles are "*an attempt to rationalize and categorize common sense.*"

We must make a choice on how we conceive of the nature and essence of war as a phenomenon. War is first and foremost an art and not a trade or science. The principles need to be learnt to be properly applied but they are not inflexible rules and laws like those in Newtonian physics.⁹⁴ The principles of war describe how war should be conducted for optimal performance and a greater chance of victory. They do not dictate the course of warfare. As Coker wrote, "*There are no laws of war that allow us to predict outcomes with complete certainty. Even historians now readily admit that there are many possible, subsequent turns of fortune in war.*"⁹⁵ Following and skillfully applying the principles of war increases the likelihood of the commander to subjugate his enemy, but warfare is full of unpredictability and advantageous moments. At any given moment the direction of war may be altered and thus unthinking obedience to the principles of war is no guarantee of success.

Every now and then the old ideas and adaptations of the art of war are tested and some are proven untrue while others persist. As an example we can use the opposition of fighting a war on two separate fronts at the same time. It is still not accepted or considered as a principle but only a result of adhering to the principles of concentration of force and economic use of force. In the words of Jomini, *"the celebrated maxim of the Romans, not to undertake two great wars at the same time, is so well known and so well appreciated as to spare the necessi-*

⁸⁸ As an example Scobell (2011) argues this point regarding China. There are many universal themes and factors in operational art, but some are unique to China.

⁸⁹ Dragomirov, cited in Foch (1920), p. 115. Foch nevertheless gave him wrong initials.

⁹⁰ Leonhard (1998), p. 8.

⁹¹ Handel (2001), p. 53 states, however, that even if the Clausewitzian concepts of friction and center of gravity were derived from the world of Newtonian physics, their application, nevertheless, was very similar to the ideas of Sun-Tzu who arrived at similar solutions to the problem of designing the most effective strategy two millennia before and in an agrarian culture.

⁹² Gat (2001), p. 11.

⁹³ Wylie (2014), p. 20.

⁹⁴ Colby (1943), p. 6.

⁹⁵ Coker (2010), p. 171.

*ty of demonstrating its wisdom.*²⁹⁶ Nevertheless, both World Wars saw Germany violating this principle and U.S. military strategy was for years geared on the idea of building sufficient capability of fighting wars on two separate theaters and only in the aftermath of the Cold War and the War on Terror this idea seems to be on the wane⁹⁷. Paret has stated that "*history is better at revealing than proving, and states do not interact in controlled laboratory conditions that allow comparisons of precisely equal elements. We must study war in the shifting reality in which it occurs.*"⁹⁸

Thus the principles or any other dicta do not create a strict framework for warfare. They do not form a 'box' within which war should be contained. For Fuller principles are more like guidelines and they can even be discarded if there is sufficient reason to do so. As he wrote, they are

> "no more than pegs on which to hang our tactical thoughts. There is nothing irrevocable about them; sometimes they may be discarded with impunity; but as a study of military history will show, they should only be discarded after deep consideration. They are very important guides rather than principles."⁹⁹

But what is the usefulness of the principles of war? It can be debated, since, as Bernard Brodie has argued, they are derived from "the work of a handful of theorists, most of them long since dead. Their specific contributions to living doctrine are not widely known, because their works are seldom read. The richness of their ideas is but poorly reflected in the axioms which have stemmed from those ideas."100 This seems to be a universal problem at all times. All too often the original rich works are not read or they are only partially assimilated and certain maxims are borrowed and circulated. Clausewitz is perhaps the best example with the omnipresent misquote about war being a continuation of politics by other means¹⁰¹. It was a huge feat of Clausewitz that he was able create a broad analytic framework by taking war out of its military isolation and embedding it in society and politics¹⁰². Nevertheless, this broadening of perspective has led to multiple misunderstandings throughout the years. Some, for example Lenin understood the connections between war and politics and built the communist principles of war around this dual relationship¹⁰³. "Lenin stressed that war is part of a whole, and this whole is politics. He also stated that war is a continuation of politics and that politics also 'continue' during *war*.³¹⁰⁴ But the principles of war themselves are not intrinsically connected to any specific political ideology.¹⁰⁵ They relate strictly to warfare and not the policy governing it. War is an extension of policy. It is politics with other means and the principles of war illustrate the use of these additional means. Fuller was ahead of his time when he argued that the principles of war are universal and

> "as applicable to sea warfare and to air warfare as to land warfare, irrespective of the differences in the three spheres of action in which these three modes of warfare take place, the spheres of sea, air and land. The ultimate objective is the same, namely, the maintenance of policy. The two great means are the same — offensive and defensive action, whether material, physical, or moral. The methods of potentiating these means are identical — concentration and economy, movement and surprise, and the ultimate co-ordination is the same — co-operation within fleets, armies and air forces and co-operation between them as parts of one single defence force. It is this co-operation which, I consider, forms the foundation of

⁹⁶ Jomini (2007), p. 25.

⁹⁷ See Kagan (2006), pp. 152, 159 and especially Clark (2001), pp. 47-49 for drafting a new policy.

⁹⁸ Paret (2009), p. 5.

⁹⁹ Fuller (1960), p. 293.

¹⁰⁰ Brodie (1959), p. 21.

¹⁰¹ It is worth noting that Clausewitz never defined his *"Politik*" in any detail throughout contexts where English-speakers would choose between "policy" and "politics." See. e.g. Bassford (2007), p. 83.

¹⁰² See Paret (2009), p. 117,

¹⁰³ Simpkin (1987), p. 24. See also Heuser (2002), pp. 46-47 on Lenin's views on Clausewitz.

¹⁰⁴ Sokolovsky (1963), p. 167.

¹⁰⁵ In fact Cold War era Soviet military thinkers often claimed that there are no eternal principles of war. They rather saw these principles as historically conditioned because some new laws emerged and other stopped operating. On this see Gat (2001), pp. 511-512.

grand tactics, not as heretofore interpreted — the major battle plan of an army, or of a navy, or of an air force, but of an army, a navy and an air force intimately co-operating in order to attain a common objective — the maintenance of policy."¹⁰⁶

Many of the classics were written for a single mode of warfare, that is, land warfare, and the acceptance of war being a joint employment of not only all branches of service but also unified expression of the national will and policy emerged relatively late. However, there are notable early exceptions like Julian Corbett who wrote that one should not study naval strategy or military strategy as isolated concepts since "embracing them both is a larger strategy which regards the fleet and army as one weapon, which coordinates their action, and indicates the lines on which each must move to realise the full power of both."¹⁰⁷ But even the industrial age war was still mostly considered a separate sphere of activity from policy or even broken into its components. Fuller wrote that too often for the soldier war is

"a nest of pigeon-holes : strategy, tactics, organization, administration, etc., etc., each nest being crammed with pill-boxes — infantry tactics, cavalry tactics, artillery tactics, etc., etc. The danger underlying these uncorrected values is to be sought in the temptation to invest them with individual, that is separate, existences, and then, when combined action is demanded, to produce a mixture of values in place of a compound."¹⁰⁸

Warfare should not be conceived of as a mix of different tactics or strategies, but an immensely complex issue that needs to be understood first as a whole and only then dissected into pieces more palatable and easier to deal with. War has the nature of a compound where all different elements blend to create something from which the ingredients cannot be mechanically separated. Fuller wrote that,

> "whether man fights on the land, or on the sea, or in the air, the elements of war are the same, namely : moral, weapons, movement and protection ; consequently, whatever mode of war is to be examined, in these elements we find a common denominator to all three forces. If this be accepted as correct, then I see no reason why warfare as a whole should not be treated as one subject."¹⁰⁹

If we discuss tactics, operations or strategy, they are always tied to their temporal, political and cultural contexts. They assume a certain form because of the time when and where they are applied and by whom. Thus the perspective chosen here is to follow Clausewitz and accept the singularity and individuality of past eras to take into account not only differences but generalities between them in a loose framework of historicism. Wars are different because their contexts are out of necessity different¹¹⁰. In is not enough to speak of temporally or culturally different contexts but even national ones. As von der Goltz put it, "a writer upon strategy and tactics ought to treat his subjects as national strategy and tactics; for only such teaching can be of real service to his country."¹¹¹ What is true for one country may be utterly impossible for another. Thus, the resources at the disposal of a superpower are different than those that guide the tactics, operations, and strategy of a small nation state. Tactics are context dependent just as strategy and policy are, but operational art is the aspect of warfare that turns it into an art from being merely planning on the highest level and fighting at the lowest. Warden interpreted operational level as being the next level below strategic and being "primarily concerned with how to achieve the strategic end of the war with the forces allotted."¹¹² Operational art discusses those elements of the art of war that are altered to best suit the circumstances of their application. Mao argued the same point by claiming that

> "Some people hold a wrong view, which we refuted long ago. They say that it is enough merely to study the laws of war in general, or, to put it more correctly, that it is enough

¹⁰⁶ Fuller (1923), p. 216.

¹⁰⁷ Corbett (1999), p. 167. For Corbett both naval and military strategy were subsumed by the theory of war. In this sense, even if he concentrated on naval issues, Strachan (2013), p. 31 considers him to belong to the mainstream of classical strategic thought.

¹⁰⁸ Fuller (1923), p. 212.

¹⁰⁹ Fuller (1923), p. 216.

¹¹⁰ Paret (2009), p. 121 called Clausewitz an early practitioner of historicism.

¹¹¹ von der Goltz (1906), p. 77.

¹¹² Warden (2000), p. 2.

merely to follow the military manuals published by the reactionary Chinese government or the reactionary military academies in China. They do not see that these manuals give mereby the laws of war in general and moreover are entirely copied from abroad, and if we copy and apply them exactly without the slightest change in form or content, we shall be "cutting the feet to fit the shoes" and be defeated. Their argument is: why should knowledge which has been acquired at the cost of blood be of no use. They fail to see that although we must cherish the earlier experience thus acquired, we must also cherish experience acquired at the cost of our own blood."¹¹³

While there are the universal principles of the art of war they are indeed not applicable on operational level without modifications since every civilizational context and every war is different. Thus operational art is the art of thinking how to best apply the principles of war in a particular circumstance. A profound understanding of these principles is a prerequisite of creating a national way of waging war. Operational art is universal, but operations are conceived differently in each specific case. Unless operational art is a subject of constant study in the military it withers and dies creating a situation de Saxe has warned us about. If teachings of operational art do not influence national tactics they become standardized. "Thus there remain nothing but customs, the principles of which are unknown to us."¹¹⁴ Customs are the primary opposition of progress and evolution of the art of war. Likewise, as Liddell Hart wrote, "Standardization is the curse of modern armies and modern thought."¹¹⁵ The deeper first mechanization and high technology weaponry of the information age have penetrated into the art of war, the more actual freedom of thought is restricted when the tools and means of war start to dictate how the war should be fought. In the agrarian age the relationship of the man and his tools was utterly different from the industrial age and in our contemporary information societies the relationship needs to be yet again reformulated. The tools and their users have in each age a different impact of the relative importance of time and how it is conceived in operational art. Standardization of thought can occur without a focus on technology, but it significantly increases the risk of art being curtailed by processes.

As to the ultimate question concerning why bother to research the meaning of time as a factor of war it seems suitable to quote Liddell Hart who stated that

"The uneconomic use of time and energy is a marked feature of the Army system. All too small a proportion of its man-hours bear a militarily "productive" yield. This is wasteful, not only directly, but indirectly. For it has a depressing effect on men of initiative who go into the Army, and a gradually paralysing effect on most of those who have spent a long time in the Army."¹¹⁶

All who are likely to read or browse through this study are familiar with the bureaucracy of the army during a time of peace. If occasionally the speed of decision-making is comparable to that of a continental drift, the bigger threat is that time is spent doing things that will yield nothing beneficial to the art of war or even administration. Even if he wished to ridicule the Soviet military system and its slow pace of reform, Simpkin's description fits almost every peacetime armed force everywhere; "*However, thanks to scale and bureaucracy, the mills of Marx grind almost as slowly as the mills of God though far less surely*."¹¹⁷ Wasted time, in war and peace alike, is a huge loss draining the efficiency of the system and inflicts it toll on the individual as well. We must not only attempt to win time, but to control it and the basic tenet of proper control in this case should be economic usage. The idea of armed forces as a machine striving for uttermost economy of time and other resources was essentially a byproduct of indust-reality, but efficient use of all available resources remains important in the information age as well. As Leonhard wrote,

¹¹³ Mao (1963), pp. 76-77

¹¹⁴ De Saxe (1944), p. 18. Handel (2001), p. xvii. attributes the exactly same words to Jomini in his argument that the logic of war differs from that of natural sciences.

¹¹⁵ Liddell Hart (1932), p. 77.

¹¹⁶ Liddell Hart (1950), p. 317.

¹¹⁷ Simpkin (1985), p. 18.

"Wastefulness is an ugly part of man, and the practice of warfare is particularly vulnerable to it. The dynamics that dominate warfare - uncertainty, fear, error, miscalculation, and often incompetence - lead to uneconomical practices in war. At times, inefficiency leads only to time lost, treasure wasted, or equipment poorly used. But all too often, human blood is the price of ineptitude. Of all endeavors of humankind, warfare has the potential to be the most uneconomical."¹¹⁸

2.2. THE THREE WAVES AS TEMPORALLY DIVERGENT AGES OF WARFARE.

"Thus the different laws for directing different wars are determined by the different circumstances of those wars – differences in their time, place, and nature. As regards the time factor, both war and its laws develop; each historical stage has its special characteristics, and hence the laws of war in each historical stage have their special characteristics and cannot be mechanically applied in another stage. (...) In studying the laws for directing wars that occur at different historical stages, that differ in nature and that are waged in different places and by different nations, we must fix our attention on the characteristics and development of each, and must oppose a mechanical approach to the problem of war."¹¹⁹

As Colin S. Grav has stated, "wars are not free-floating events, sufficient unto themselves as objects for study and understanding. Instead, they are entirely the product of their contexts."¹²⁰ To create a somewhat understandable taxonomy of the historically omnipresent phenomenon of war it is helpful to divide the past not into only historical periods but rather into separate eras based on their cultural outlook and perception of temporality. There are as many temporal categorizations of different periods of warfare as there are theorists. Thus Hans Delbrück divided the history of warfare into numerous separate periods by developments in tactics that gave wars of that time a common characteristic outlook¹²¹. Fuller simplified and divided the history of warfare into six time-periods. These are the ages of valor, chivalry, gunpowder, steam, oil and atomic energy respectively.¹²² They are not so much rigid taxonomies as descriptions of the prominent characteristic of war during that period. Mitchell in turn wrote about the dawn of a specific "aeronautical era" that had opened up with aviation technology after the "continental era" and the "era of the great navigators."¹²³ His thinking focused on separating different ages of warfare from each other by the domains in which battles were fought. Heidi and Alvin Toffler wrote about the three dynamic waves of history and war thus creating three periods with clashes of civilizations occurring at the time when the waves collide. They are "First Wave, or agrarian; Second Wave or Industrial; and now Third Wave armies."¹²⁴ Thus the history of war for the purpose of this study is divided into agrarian age, or the First Wave, industrial age, or the Second Wave indust-reality, and information age, or the Third Wave. Because Toffler's waves are inseparably bound to perceptions of temporality they provide a suitable theoretical founding for this study. Another reason for the choice is that the thinking of Tofflers was from the early nineties very influential in U.S. defense circles and shaped the U.S. military transformation profoundly.¹²⁵

¹¹⁸ Leonhard (1998), pp. 124-125.

¹¹⁹ Mao (1963), pp. 77-78.

¹²⁰ Gray (2007), p. 3.

¹²¹ See Delbrück (1990), (1990b), (1990c) and (1990d)

¹²² Fuller (1946).

¹²³ Mitchell (1999), p. 431.

¹²⁴ Toffler (1995), p. 18.

¹²⁵ Lonsdale (2007), pp. 232-233. See also Kagan (2006), pp. 203-206 on both the impact of Tofflerism on the U.S. military and critique of the validity of the Third Wave theory.
The waves of civilizational and thus societal shifts for Toffler occurred three times. The first wave began sometime around 8000 B.C. and prevailed globally until some-time around 1650-1750 A.D. This was, according to Toffler, the moment when

"the First Wave lost momentum as the Second Wave picked up steam. Industrial civilization, the product of this Second Wave, then dominated the planet in its turn until it, too, crested. This latest historical turning point arrived in the United States during the decade beginning about 1955 - the decade that saw white collar and service workers outnumber blue-collar workers for the first time."¹²⁶

Knowledge was the most important asset of this new era and knowledge workers surpassed the number of people laboring in factories. The idea of the Third Wave coincides with the advent of the Computer Age or, as it is more commonly referred to, the Information Age. This new age began to emerge in the fifties and has since kept accelerating its pace of evolutions. As Leonhard described the latest phase,

> "in the wake of the dramatic collapse of Soviet communism, Western thinkers have begun to apply the idea of a qualitatively different era to the study and practice of warfare. As a result, military periodicals and books have been replete with articles and essays on Information Age Warfare'. The problem is that the study of the military aspect of this advance in technology has been conspicuously lacking any sociological, philosophical, or theoretical component."¹²⁷

The Third Wave and the Information Age are practically synonymous. Nevertheless, from Toffler's concept we can deduct many different things to help us set the perspective for this study since it sets a longer developmental pattern. Firstly, even if the First Wave and to some degree the Second Wave are connected with the development of mankind in general, the timing of the Second Wave already starts to imply reference primarily to the western and advanced societies. The start of the Third Wave makes it clear, since it is timed by the developments solely in the U.S. This shows us that the beginning and the cresting of the waves in each civilization or society may occur at different times. In the mid-fifties, for example, when the Third Wave began to roll in the U.S. not all agrarian societies on the undeveloped parts of the world had even seen the cresting of the first one.

Secondly, as Toffler writes about waves picking up momentum we notice that his waves cover such a long time-span, and, furthermore, seem to gain extra propellant as they go that they become too all-encompassing to be used to describe the finer nuances of societal development. A huge wave in the sea may travel for hundreds of miles in deep water with the height of only a few inches to turn into a tsunami with terrible power when it meets the shallow coastline. If we view certain technical developments, such as the introduction of the steam engine, the invention of combustion engine and the advent of flight as features in our metaphorical shoreline, we can argue that at these points the wave gained more height and weight of impact. For the purpose of understanding development of warfare, it is beneficial to look more in detail at these waves and what kind of pattern emerges within each one.

Thirdly, as one wave crests and starts to recede, for a while the two waves interact and for the soldiers and generals and the military systems they compose, the debris in the water, strange and incalculable cross-currents emerge and one army is sucked in one direction while the other is pushed in another. These periods when the effects of waves cancel each other are the ones when the art of war is said to become revolutionized even if it is the ultimately the following wave that picks the news ideas on its crest.

The waves do not illustrate only the armies doing the fighting but also the nations and civilizations waging the wars. Furthermore, just because the waves are tied to the civilizations, all three waves occur simultaneously in different parts of the world. First wave civilization was a product of the agricultural revolution. The second wave civilization

¹²⁶ Toffler (1990), p.14.

¹²⁷ Leonhard (1998), p. 13.

might have originated in the Renaissance but started to have an impact with the rise of industrialization, finally creating "*what we came to call modernity – mass-industrial society, the civilization of the Second Wave.*"¹²⁸ Yet, in the advent of indust-reality many civilizations and cultures remained and still today remain anchored to the agrarian societies even as we in the western world arguably have evolved into Third Wave civilizations. The idea of waves will be crucial throughout the study. While the Waves themselves can be further divided into different periods, like mechanized age as a part of the Second Wave, the Waves are treated as the development cycles of different civilizations and countries.

Between different civilizations there are fundamental differences in their conceptions of time. Traditionally in the U.S. everything has to happen 'right now, preferably yesterday'. This has only heightened in during the Third Wave. In military affairs as in all walks of life Russia with its agrarian past and even in its contemporary existence as part of all three waves it has had 'strategic patience' and the concept of time and future is not measured in seconds, days or even moths but rather by decades or generations¹²⁹. As Toffler simplified the defining characteristics of the different waves of civilizations, "we are speeding toward a totally different structure of power that will create not a world cut in two but sharply divided into three contrasting and competing civilizations – the first still symbolized by the hoe; the second by the assembly line; and the third by the computer."¹³⁰ They conform quite well to the ideas of Alberts et. al. who divide the 'ages' into those of agricultural age, industrial age and information age but noted, that at different period of the information age development was driven in turn by steam, the combustion engine, electricity and nuclear power.¹³¹ As Grav noted, when looking closely at the standard cut-off dates of periods the neat eras seem less convincing. For him, "history, like the passage of time itself, is really seamless."¹³² Thus using the three-wave division of Toffler is more beneficial than most other taxonomies, because the metaphor allows for the waves to overlap and interact.

Different eras treated time and temporality somewhat differently yet some ideas were inherited from one era to another causing the eras to blend together and allowing a continuous storyline being emplotted. Since time by itself is next to meaningless, time is always related to what can be affected during its passage. Thus, the different ages are also characterized by technological innovations that drastically altered the pace of warfare, allowing for more to be accomplished in a specific period of time than ever before. According to Toffler, "*Each culture has its own characteristic pace*."¹³³ This pace determines the pace of every action of every society within that cultural or civilizational context.

"The general pace of life, including everything from the speed of business transactions to the rhythms of political change, the pace of technological innovation, and other variables, is slowest in agrarian societies, somewhat faster in industrial societies, and races at electronic speeds in the countries transitioning to Third Wave economies."¹³⁴

The different ages perceive the meaning not only of time but of place, force, and speed differently and especially their interrelations vary greatly. Movement at the relatively slow speed humans or animals could create characterized the agrarian age which had a relaxed attitude towards time as a commodity. Industrialization created a whole new idea of time being money and brought about locomotion driven by first steam and then the combustion engine which in turn ushered in the era of mechanization in warfare. Mechanization as the spawn of indust-reality spread and gained new forms and still continues to spread its influence as speed accelerated again to be consistent with the speed of missiles, which reduced the time for reaction to an attack into minutes. Nuclear age was an example of such an era

¹²⁸ Toffler (1995), pp. 18-19.

¹²⁹ Adamsky (2010), p. 44.

¹³⁰ Toffler (1995), p. 21.

¹³¹ Alberts et. al. (2000), p. 17.

¹³² Gray (2007), p. 149.

¹³³ Toffler (1990b), p. 40.

¹³⁴ Toffler (1995), p. 247.

that has in theory been remarkably influential but fortunately has thus far not been put to practice. It was characterized by fear of unlimited annihilation and caused wars to become geographically limited, fought between the superpowers by proxy, and strictly controlled so as not to escalate. As Strachan argued, nuclear strategy was a "*strategy of dissuasion; it prevented war*."¹³⁵ Nuclear war has the potential of eradicating not only the history but the future as well. In the words of Heuser, it would be "*war taken to its absurd extreme*."¹³⁶ The purpose was to use nuclear deterrence as insurance that a nuclear war would not be fought since nuclear age as the latest phase of indust-reality finally brought about the realization that in the worst case "*war would be general suicide and the end of civilization as we know it. Something, of course, would survive but it would not be recognizable as a tolerably habitable world. We should sink back into another Dark Age.*"¹³⁷

Instead of falling back into barbarous ages, we in the Western world have moved into the Information Age. Yet it would be folly to imagine that the clock of progress would tick along at the same pace in all corners of the globe. During the Second Wave in the Western world industrialization acted as the catalyst for mechanized warfare, but not all armies grasped the opportunities offered at the same time. Within each army there was a competition between the progressive thinkers and the upholders of the traditional dogma. Old methods of warfare seldom become obsolete, but tend to linger on. Occasionally the time-periods or waves at least partially overlap. Thus even today we have the Taliban fighting with basically agrarian ways and means the digitalized enemy of the U.S. Many states and especially intra-state actors of the Third World have had no other viable option than to stick to their agrarian form of warfare. Like many so-called 'low-intensity conflicts' show, the old methods are surprisingly effective in countering new ones¹³⁸.

The waves of warfare are the result of dividing the history of warfare into comprehensive wholes in terms of different speeds and therefore different perceptions of time. For the early hunter-gatherers noting the passing of the present was sufficient, but for agricultural considerations time had to include a concept of the future as well.¹³⁹ Time became a question of when to do something for the purpose of something else occurring in the future. In the agrarian age time was measured in passing of seasons, times for reap and harvest and the rising and setting of the sun. An industrialized society could no longer function adhering to this type of temporal conception. Mass-production required calculations how to produce as much as possible in as little time as possible. Hours, minutes and seconds became the meaningful units of time and their measurement essential.

Occasionally wars themselves alter the course of future warfare and policy to a degree that a societal paradigm shift from one wave to another occurs. This is not a revolution per se, but a necessity to discard old practices and adopt new ones. When Germany in WW II attacked Poland the brave but doomed charges of the Polish cavalry symbolized an end of an era¹⁴⁰ just as well as the Battle on Shangani in Rhodesia where four British machine guns fought off 3000 attacking native warriors. In these occasions we can argue that modes of warfare belonging to two consecutive waves collided and as a result war switched paradigms and this change reflected the shift in warfare from one type of civiliza-

¹³⁵ Strachan (2013), p. 37.

¹³⁶ Heuser (2010), p. 382.

¹³⁷ Slessor (1954), p. 13.

¹³⁸ As Smith (2008), p. 299 wrote, one of the most lethal weapons of the past decades has been the machete, with nearly a million casualties in Rwanda only in 1994. Such numbers shed a strange light on the idea of "low-intensity."

¹³⁹ Stempel (2012), p. 39.

¹⁴⁰ Even if cavalry regulations and doctrines of the time still included the cavalry charge as a viable tactical chose, it was already recognized prior to WWI that it was no longer universally applicable but tied to certain contexts. The head-on collision with armored troops seems to have been a failure of correctly assessing the situation. Doctrines already stressed the correct appraisal of the situation. See e.g. Echevarria (2000), pp. 8, 216-217.

tion to another and illustrated to the losing side a necessity to affect a societal shift as well. Fuller gave an example of this kind of shift with the American Civil War he called a war

"not between two antagonistic political parties, but a struggle to the death between two soci-

eties, each championing a different civilization. Or, as Stephen Benét concisely depicts it:

"The pastoral rebellion of the earth

Against machines, against the Age of Steam.""¹⁴¹

Dividing the belligerent parties into the South favoring agrarian or pastoral and the North favoring machines and an industrial lifestyle is descriptive. What happened was that the speed of change and compression of time scale were different for both.¹⁴² The issue of slavery was of secondary importance among the reasons for the war. As Toffler noted, it was fought over a far more fundamental issue of who would determine the future of the U.S.; "would the rich new continent be ruled by farmers or industrializers, by the forces of the First Wave or the Second? Would the future American society be basically agricultural or industrial?"¹¹³ For Fuller the American Civil War was the first great conflict that grew out of the Industrial Revolution¹⁴⁴. The American Civil War ushered in the industrial age in U.S. making the Confederacy abandon its pastoral past.¹⁴⁵

Fuller argued that the industrial age of the Second Wave was divisible into two periods. The first one was characterized by steam as the motive power and railroads as the mobility-enhancing factor. The second period started when oil took over as propellant of movement and roads started to play a bigger role in channeling it. In both cases little attention was paid to the radical changes they created in the techniques of war.¹⁴⁶ The direct effect on combat is different on each 'sub-period.' When the railway was used for transport, movement stopped at the rear of the battlefield. As Foch described the situation, troops in the early industrial age "*cannot be transferred from the left to the right of the battle-field. Modern extended fronts do not allow of this. One no longer has the time to affect it.*"¹⁴⁷ In that sense the latter part of the Second Wave can be called the age of motorization or mechanization.

During indust-reality an integral part of the art of war as a practical utilization of the principle of measured time and what could be achieved in a given time. Perhaps WWII was in the military sense the summit of indust-reality. In WWII many of the armies were initially at best motorized and could not brag about extensive mechanization. Yet mechanization allowed the full bloom of engine-produced movement on the battlefield mobility. Americans joined the war late, but its industrial production capability was unprecedented and by 1943 in tanks, heavy guns and aircraft the U.S. production figures alone surpassed that of all the Axis powers combined. Thus, on one level winning the war was a matter of grinding Axis strength down, but on another, it was question of maneuver battles new mechanized mobility allowed for¹⁴⁸. Mechanization and air-mechanization brings forth connotations of machines gaining in importance when contrasted to men and this was a development hardly foreseeable in the early stages of industrialization. Men and machines were combined in a manner alien to the inventor of the spinning jenny.

According to Toffler there can also be identified a time period that intervenes between the Second Wave of indust-reality and the Third Wave of information age. He argued that the pace accelerated considerably during the metaphorical gearshift from industrial to "*super-industrial*" age and this speeding up of pace created cleavages in the unity

¹⁴⁶ Fuller (1961), p. 311.

¹⁴¹ Fuller (1961), p. 98.

¹⁴² See Holden (2014), p. 7.

¹⁴³ Toffler (1990), p. 23. Bond (1998), pp. 5-6 agrees and treats the American Civil War as one in which victory was won through industrialization and not operational skill.

¹⁴⁴ Reid (1987), p. 112.

¹⁴⁵ Stempel (2012), pp. 114-115. In some ways the Confederacy seemed to cling to the agrarian age. This is evident for example in the double-role Jefferson Davis took as both the political leader as president and the commander-in-chief who wanted to lead the army in the field. See Stoker (2010), pp. 22-23.

¹⁴⁷ Foch (1920), p. 350.

¹⁴⁸ Echevarria (2011), p. 145.

of the Western world. "*The new technology on which super-industrialism is based, much of it blueprinted in American research laboratories, brings with it an inevitable acceleration of change in society and a concomitant speed-up of the pace of individual life as well.*"¹⁴⁹ It is true that a large share of the technology that has governed our lives for the past decades is of American origin and especially true it is in military technology but no less valid in the case of, say, information technology. As these inventions have begun to occupy larger and larger roles in the way we live our lives and fight our wars there are two ways to adapt. Either to choose the Luddite approach of not attempting to catch up with the required pace or get accustomed to acceleration and its impact. One who internalizes that the accelerated pace means,

"that things are moving faster in the world around him – makes an automatic, unconscious compensation for the compression of time. Anticipating that situations will endure less long, he is less frequently caught off guard and jolted than the person whose durational expectancies are frozen, the person who does not routinely anticipate a frequent shortening in the duration of situations."¹⁵⁰

In the context of operational art it is not enough to understand that everything is faster than ever before. It is necessary to interpret the implications of the accelerated pace. Time is compressed by factors external to the situation within the military sphere of activity. The commander can decide the pace at which he and his staff produce their plans and orders but the compression of time within the society and its functions imposes a shorter duration to any period of time during warfare at his disposal. Toffler argued that when a person, be it the commander or a staff officer, is forced to "operate above his adaptive range"¹⁵¹ something called "future shock" will emerge. It is comparable to a culture shock that occurs when a person suddenly gets immersed into a totally different culture that is fundamentally alien and incomprehensible to him. Without mental preparation to the changes brought about by compression of time and acceleration of pace, a future shock is almost unavoidable¹⁵². The problems of accelerated pace cannot be compensated by being 'mentally quicker' or just by doing the same things "more effectively". It requires a flexibility of mind and plan that through anticipation of shorter duration of the decision-making cycle is able to produce decisions that are not perfect and fully detailed but act as blueprints or sketches that the recipients of those orders embellish with the details they require.

A soldier, according to Toffler, in his professional life is continuously exposed to conditions that may cause a future shock, if it is defined as "an overload of the human organism's physical adaptive systems and its decision-making processes. Put more simply, future shock is the human response to overstimulation."¹⁵³ In the chaotic conditions that prevail for the duration of the battle and the operation, "the soldier is driven to operate in the upper reaches of his adaptive range. Sometimes, he is pushed beyond his limits."¹⁵⁴ This doesn't mean that anyone would be more adept to survive future shock just because s/he is accustomed to similar effects. Rather the limits may emerge sooner. In addition, the input overload affects worst those who have to make most decisions in the compressed time available; the commanders. They have

"to adapt to a new life pace, to confront novel situations and master them in ever shorter intervals. We are forcing them to choose among fast-multiplying options. We are, in other words, forcing them to process information at a far more rapid pace than was necessary in slowly-evolving societies. There can be little doubt that we are subjecting at least some of them to cognitive overstimulation."¹⁵⁵

¹⁴⁹ Toffler (1990b), p. 41.

¹⁵⁰ Toffler (1990b), pp. 43-44.

¹⁵¹ Toffler (1990b), p. 344.

¹⁵² This discussion does not mean that the future shock occurred only during the shift from the Second to the Third Wave, but that the shift from agrarian society to an industrial one brought about a similar shock. Echevarria (2007), p. 4 wrote a long list of technological innovations and claimed that when these inventions started to be mass produced "*they simply came on too fast for many*."

¹⁵³ Toffler (1990b), p. 326.

¹⁵⁴ Toffler (1990b), p. 344.

¹⁵⁵ Toffler (1990b), p. 355.

The most important thing about this claim is that the adaptation is forced and we can only attempt to educate and train our soldiers and commanders to handle better the speed at which information has to be processed. Nevertheless, "at this phase of the Information Age, it is clear that we are poised to continue compressing time and space beyond the physical limits of the Industrial Age."¹⁵⁶ Physical limits are reached but only theoretically, since the human factor as decision-maker is still present in war and thus mental limits restrict the velocity. The compression of time has to permeate the mental aspect of operational art as well so that the commander is subjected to pre-analyzed information on the less crucial issues. The task of analysis is outsourced to the staff and the time at the disposal of the commander for decision-making is best supported by compressing and filtering the information he has to process.

For sure in the future wars, no matter how they are conducted, the pace of the society gives the rhythm to the war and there will be no more time for the generals to learn their profession in the course of the war. As an example the American Civil War, fought between the Second Wave society of the industrialized North and the agrarian First Wave society of the South was still conducted in synchronization with the agricultural pace. This enabled the generals to learn the art of war by doing. As Sherman wrote; "*I had to learn the tactics from books; but I was convinced that we had a long, hard war before us, and made up my mind to begin at the very beginning to prepare for it.*"¹⁵⁷ In many other senses the American Civil War was an augur of the shape industrial war would take in the last part of the 19th and early 20th century¹⁵⁸. Some have even called in the first modern war.¹⁵⁹ Furthermore, if the new technologies greatly influenced the outlook of war, this was most evident in the tactical and operational levels while strategic thinking was not deeply influenced by technology.¹⁶⁰ Should a major war today emerge between two great powers with advanced technology at their disposal, there certainly will not be a possibility for the commanders of that war to learn their art by doing.¹⁶¹

My initial premise is that since the Industrial Revolution and other true revolutions of the past profoundly altered the essence of the societies that experienced it, the warfare of these societies must have undergone a fundamental metamorphosis as well. Hand-in-hand with the development of societies occurred the acceleration of speed and resulting compression of time. When everything within a society moved with the cycle of crops, there was no need for very precise measuring of time. As industrialization hastened the pace of production it had an influence on first the society and then the way it wages its wars. When production was no longer tied to the speed of the artisan creating the product, but machines that needed no rest, time began to indeed be money. By producing more in the same time profits grew and this way of thought influenced the armies as well. Time grew in importance and its importance keeps growing at an accelerated pace since time is increasingly becoming a scarce commodity in our societies. "Second Wave civilization did more than cut time up into more precise and standard chunks. It also placed these chunks in a straight line that extended indefinitely back into the past and forward into the future. It made time linear."¹⁶²

¹⁵⁶ Alberts et. al. (2000), p. 16.

¹⁵⁷ Sherman (1890), p. 220. There is no doubt that the Northern generals indeed were able to learn their art well, since the superiority the South enjoyed in generalship that brought a lot of early victories could later be compensated. See e.g. Bond (2006), p. 5.

¹⁵⁸ Smith (2008), p. 84. Bond laments the failure of European military men to understand that it was this attritional war that would shape the future wars and not the decisive victories Moltke won simultaneously in Europe. Bond (2006), p. 68.

¹⁵⁹ Stempel (2012), pp. 123-124. However, the concept of what is modern keeps shifting and for example Colby (1943), p. 17 argued that the campaigns of Marlborough "*mark the commencement of modern war*" because of the flexible maneuver and the impact of firepower.

¹⁶⁰ Stoker (2010), p. 7.

¹⁶¹ Even in both World Wars the military leadership still had to learn by doing. This is seldom recognized in most of the texts, but for example Martel (1945), pp. 77-81 admits the fact that the level of military leadership increased considerably during the course of the wars. Unfortunately the price of the lessons may be too high to pay.

¹⁶² Toffler (1990), p. 104.

advent of the industrial age time gained a direction. This was a drastic change from the seasonal and cyclical understanding of time. For Toffler the indust-reality followed

"the progress principle - the idea that history flows irreversibly toward a better life for humanity. This idea, too, had plenty of preindustrial precedent. But it was only with the advance of the Second Wave that the idea of Progress with a capital P burst into full flower."¹⁶³

In essence both the capitalist and communistic systems believed in teleological progress toward a better and practically a utopian fulfillment of the ideal society. There began to emerge the unshakeable belief that the world was constantly improving and progressing. Our belief in linear time is so deeply planted into our consciousness by indust-reality that it seems almost impossible to conceive of any other way of perception. Nevertheless, even today Buddhists and Hindus in all societies see time as circular and repetitive, with *"history repeating itself endlessly."*¹⁶⁴

Adhering to other characteristics of the industrial age Toffler described it was not enough to see time as linear, tracing a straight path through history. But as production maximized and multiplied, everything was bigger and quicker, in every industrial society time "came to be seen as a highway unrolling from a distant past through the present toward the future, and this conception of time, alien to billions of humans who lived before industrial civilization, became the basis of all economic, scientific, and political planning."¹⁶⁵ This had a huge impact because it created a new paradigm, a discontinuity in the perception of time and thus in the texts of the military writers as well.

For the industrialists a chance, if not used, was gone forever since time was linear. For the agrarians a similar chance would come along, sooner or later. The ones advocating cyclical notion of time generally have time at their hands. The industrialists favoring linear conception of time merely have the watches on their hands to measure its passing. But since the speed has been accelerated to its limits, even beyond human cognition, alternative ways of managing speed and time have to be actively sought for.

There is no universal rhythm. Societies and their armed forces are in different phases of development. Even if some of the most advanced societies have embraced the networked information age and their militaries have adopted related capabilities and tactics, some are currently making the change and seeking direction. Some are still adapting to the industrial age and some, like China, combine all paradigms. Furthermore, within the states different strata of society live in different times. Thus in the military and its development the agrarian, the industrial, and the information society-related effects occur simultaneously and vie with each other. This is predictable, since the prevailing indust-real way of thought and style of living that has reigned for centuries cannot be superseded in an instant.

> "Key ideas of the industrial period are being discredited, discounted, superseded, or subsumed into much larger and more powerful theories. The core beliefs of Second Wave civilization did not win acceptance during the past three centuries without a bitter struggle."¹⁶⁶

We are expecting a similar bitter struggle in our minds and the reality surrounding us. Not all ideas, structures and systems are going to be replaced in a flash. Some persist in their existence longer than others, some might even adapt to the new conditions. We are living, once again, through a confusing historical period. Whatever will be the decisive course of development in the art of war, to understand how wars of the future will be fought, the adoption of new principles and turning them into actual practices the military system requires "*a cultural change, it cannot be achieved without widespread discussion, debate, experimentation, and ultimately, broad acceptance.*"¹⁶⁷

This is explicable with the wave metaphor as well. As one wave breaks and

¹⁶³ Toffler (1990), p.101.

¹⁶⁴ Toffler (1990), p. 104.

¹⁶⁵ Toffler (1990), p. 105.

¹⁶⁶ Toffler (1990), p. 289.

¹⁶⁷ Alberts et. al. (2000), p.4.

the next one follows, there is a tumult when the advancing and receding waters cancel the effects of each other. My argument is that in many of our Western societies we have achieved information societies but the military is still developing in that direction. Toffler noticed the impact successive waves have on each other. This led him to write that in order to understand the situation we live in, "to understand today's colliding waves of change we must be able to identify clearly the parallel structures of all industrial nations - the hidden framework of Second Wave civilization."¹⁶⁸ We have to understand the specific characteristics of indust-reality in order to be able to determine which factors in human experience and war alike are of permanent nature and which likely to change over time with another wave. We are living inbetween waves, waiting for the next one to sweep us along. It is a necessity to understand the characteristics of the currently dominant waves to be able to follow the next one.

Again, to return to the argument of different civilizations advancing and developing at different paces we must note that many of the countries earlier characterized as 'third world' are the emerging markets of today in which a huge technological boom is taking place and hand in hand with the development of information society the industrial society is built simultaneously. Simpkin argued that

> "pre-eminence in manufacturing has passed to the third world. (...) war between mass armies weighed down with baroque equipment they cannot use properly has become an established third world sport. This advanced world, too vulnerable to survive a war of attrition or mass destruction, must learn to conduct its affairs by the rapier – by the threat or use of small specialized forces exploiting high tempo and strategic surprise."¹⁶⁹

The former third world is divided into stagnant and/or fragile states where war is mostly internal and in accord with Kaldor's idea of new wars¹⁷⁰. These weak societies often depicted as failed states conduct their intrastate wars partially adhering to agrarian age principles but they have bought a lot of obsolete cheap industrial weapon stockpiles of the more advanced countries. To some degree, industrialization has permeated them through these weapons from the outside, but it is increasingly being developed within those societies that are stable enough. In addition there are emerging powers in which industrialization is proceeding at astonishing pace. China and India are good examples. Parts of their societies are living in the agrarian age, in others indust-reality is becoming a leading paradigm but eagerly adopting principles, procedures and ideas of the Information age simultaneously.

The waves thus occur simultaneously and the societies and their preferred means and ways of warfare exhibit a mixture of all three waves. Some countries are well poised for Third Wave warfare but simultaneously have large industrial-age armies with corresponding weapons and doctrines. Simpkin's argument how the advanced world must conduct it wars "by rapier" doesn't fully answer the demands set by such type of potential opponents. From Simpkin's argument it should thus rather be deduced that our information era societies cannot compete in the realm of mass-produced weapons and equipment and agrarian methods of these 'multi-wave-societies'. They can potentially create enough indust-real mass that information age equipment does not suffice as a force multiplier to counter the mass. Perhaps an advanced information society of the west must combine the rapier with the broadsword and even the flint axe to counter the emerging societies by means of warfare that belong to all three waves of warfare. Perhaps the answer could we found by zooming into the cycles as micro-level societal currents instead of looking at big picture of wave-phase.

What will the perception of the flow of time in the information age be like? It is, to say the least, likely to be full of discontinuities and periods in which time moves at different speeds and is experienced in different manner by individuals and societies. But what if time for our societies and civilizations was both; linear and circular? This sounds as an inescapable paradox, but it is rather a question how progress is experienced. This we can

¹⁶⁸ Toffler (1990), p. 25.

¹⁶⁹ Simpkin (1985), p. 180.

¹⁷⁰ For a good discussion on Kaldor and other theorists of the 'new war' phenomenon see Berdal (2011).

chart with the concept of the wave being added into the equation. In terms of development of means and ways of war Liddell Hart has written that there is always progress. According to his interpretation, "plain common sense and a knowledge of history will show us that, even if warfare moves in cycles, they are progressive cycles, and that each succeeding war in modern times between the Great Powers shows an advance mechanically on the last, and at least begins where the last left off:"¹⁷¹

2.3. WAVES AND CYCLES OF DEVELOPMENT IN THE ART OF WAR

"Military evolution seems condemned to travel in circles – to chase its own tail."¹⁷²

"Everything from the beginning is just the same pattern repeating itself, and it makes no difference whether you watch this same show for a hundred years, or for two hundred, or for all eternity."¹⁷³

For the purposes of this study the thinking of Alvin Toffler and especially the wave metaphor he used to describe civilizational phases of development is so crucial that we shall further extrapolate on it and discuss how the waves interact with the cyclical development patterns the military thrives on. Waves occur at intervals; they occasionally collide and create a tumult in the water with crosscurrents running in unpredictable directions. Waves have a rhythm of their own just as warfare does. As Warden noted, in its traditional forms warfare

> "permitted maneuver and countermaneuver, attack and counterattack, and movement and pause. It also gave rise to the phenomenon known as the culminating point in campaigns, that point at which the campaign is in near equilibrium where the right effort on either side can have significant effect. All of our thinking on war is based on serial effects, on ebb and flow."¹⁷⁴

The same wave-pattern applies to rise and fall of societies and civilizations, development of warfare and activities within war. Movement is generally in one direction, but at some point the wave breaks and starts to recede. Then it collides with the successive wave and in effect the two cancel each other until the next wave is able to sweep over them again. Toffler notes that using the wave metaphor "*belps us see beneath the raging surface of change. When we apply the wave metaphor, much that was confusing becomes clear*."¹⁷⁵ Even if he doesn't refer to it, the "raging surface" is caused by the fact that the receding and incoming waves create temporary confusion during which the direction of movement is unclear and undecided.

If we contrast the wave metaphor that seems to pertain to the occidental thought with the cyclical concept of time we get interesting results. If, instead of seeing time as teleological we argue that whatever goes around comes around we can conceive of development of mankind as a cyclical process. As Toffler argued,

> "there appear to be alternative and plural 'times' operating under different rules in different parts of the universe or universes we inhabit. All of which knocks the props from under the Second Wave idea of universal linear time – without substituting ancient notions of cyclical time."¹⁷⁶

The idea Toffler had in mind with his wave metaphor for civilizational advance was meant to help his readers understand the time period they were living in. The point was to prepare for the future and to shape that future at the same time. The premise was that nothing will

¹⁷¹ Liddell Hart (1927), pp. 55-56.

¹⁷² Liddell Hart (1932), p. 273.

¹⁷³ Marcus Aurelius (2002), p. 31.

¹⁷⁴ Warden (1995), pp.19-20.

¹⁷⁵ Toffler (1990), p. 5.

¹⁷⁶ Toffler (1990), p. 297.

remain unchanged and that the future is always fluid instead of frozen and predetermined. The future can be changed by every decision we make daily.¹⁷⁷ In his words,

"Once we think in terms of successive waves, we grasp the essential fact of our generation - that industrialism is dying away - and we can begin searching among signs of change for what is truly new, what is no longer industrial. We can identify the third wave."¹⁷⁸

Even if Toffler wrote this idea in the seventies, it is still fully applicable in our contemporary context, especially in the context of the armed forces. The development of the military follows the pattern and direction of societal or civilizational development but generally lags behind by several decades in the worst situations. A good example of what the means to the military is to be found in the influence of indust-real pace on business. A crisis of leadership in corporate culture results from and is intensified by

> "the speed at which events are moving. For the very speed of change introduces a new element into management, forcing executives, already nervous in an unfamiliar environment, to make more and more decisions at a faster and faster pace. Response times are honed to a minimum."¹⁷⁹

The military systems are attempting to adapt to both the acceleration in the speed of change and the speed of decision-making alike. John Boyd's OODA-loop composed of four successive phases of observe, orient, decide and act started to develop from a rudimentary attempt to get fighter-pilots to make their combat-decisions quicker to cover situations in which a system composed of multiple individuals should be streamlined and taught to make better decisions faster. However, OODA-loop itself is not as simple a concept as it often is mistaken for¹⁸⁰. The cycle of decision-making rather consists of numerous interconnected cycles and the idea of getting inside the enemy decision-making cycle requires more than just being faster than he is. It means also getting inside his mind. Somewhat paradoxically once the OODA-loop starts to spin, it must not be allowed to slow but forced to keep accelerating. Success is the biggest trap in the OODA-loop, since it may cause action to stop.¹⁸¹ Cycles and waves are conceptually interconnected and there are two options to choose from; either to optimize the adherence to these patterns or to attempt to break away from them and increase pre-existing discord in the rhythm one's potential adversaries employ.

Perhaps the most suitable means can be created when one combines the lessons of military history to the characteristics of new temporal and national context. Fuller noted that civil progress reshapes the character of war since they "*develop from out of the central idea of each cultural cycle.*"¹⁸² Nevertheless, culture is a social construct that changes constantly, albeit slowly. It is always in a flux and assigning too specific characterizations to short periods of time would be at odds against the idea of culture itself. Society produces its culture as well as its warfare and we should concern ourselves with the megatrends of change. However, following Fuller,

"as war is changed by civil progress, so also is civil progress changed by war – there is a reciprocal action between them. Further, that war is the one permanent factor in its changings, for whether the period under examination be predominantly religious, commercial or industrial, and whatever its political and social systems may be, war is never absent. [...] though military systems also change, war is never annihilated. Except for brief periods of

¹⁸¹ For further description of the logic of the OODA-loop see e.g. Coram (2002), pp. 336-339.

¹⁸² Fuller (1946), p. 27.

¹⁷⁷ Toffler (1990), p. 129.

¹⁷⁸ Toffler (1990), p. 124.

¹⁷⁹ Toffler (1990), p. 229.

¹⁸⁰ Then again, fundamentally the essence of the OODA-loop is to create another cycle during which the change of position from involuntary defense to attacking can be affected and initiative seized. Even if the simplified interpretation of the OODA-loop is easy to grasp and just as easy to misunderstand a lot of deep analysis and even philosophy creates the foundation on which the loop was built. And when Boyd gave a briefing on it, he used 185 slides in his presentation. See. Coram (2002), p. 336.

lassitude, the evolution of the weapons and means of war has been continuous and progressive."¹⁸³

Arden Bucholz wrote about the cycles of war and in his opinion between 1864 and 2000 there have been different cycles. Before 1860 warfare resembled the game of whist in which chance and ability to improvise made the winner. From 1864 to its fruition in the World Wars warfare was like bridge. The whole game plan had to be ready when the game commenced and followed a preprogrammed pattern. 21st century warfare is like Go. The characteristics of relatively uniform pieces depend on their positioning in the overall mosaic. Once the pattern is set, victory or defeat are decided.¹⁸⁴ The paradigms of war are constantly changing.

It occasionally seems, especially when viewed in the light of such organized mass slaughters as Somme and Passchendaele, that the art of war had not undergone evolution but rather devolution during the high-tide of the Second Wave of indust-reality. This occasionally happens in the history of warfare. Some weapon gains such dominance for a certain period of time, that the existing tactics are useless against it. Then and there tactics may be destined to undergo a short period of decadence. The invention and increasing use of machine guns achieved to create such temporary confusion in tactics. In the words of von der Goltz, "modern battles are decided by great masses of projectiles simultaneously hurled at the enemy."¹⁸⁵ The effect was evidenced in the sphere of cavalry tactics, which had to be recreated practically anew. While cavalry disappeared from battlefields in one phase of the cycle, a new type of cavalry returned in concurrent phase. Liddell Hart dissected war into three basic elements; those of guarding, moving and hitting. The initial value of cavalry had lain in its mobility and once cavalry disappeared, warfare became stagnant.¹⁸⁶ The advent of the tank as indust-reality cavalry promised a more mobile future in which moving and hitting would be possible again through the protection armor offered from a hail of bullets.

Development of doctrines and tools of warfare move in cycles in which the preponderance of attacking and defending and measures compatible with them alternately dominate. It astonishes how quickly the ways and means how to fight adapt themselves to changed situations and how the cycle revolves. After the disastrous, static and bloody WW I tactics took huge leaps forward in the time leading to the WW II. It was recognized that the mass production and mass armies – just as well as mass destruction – had to be replaced with a new way of thinking that would revitalize mobility.

It is possible to retrospectively emplot the past and create wave or cycle patterns, but the future is always fluid and in motion. The more daringly great military thinkers have tried to envision the future, the more spectacular often have been their failures¹⁸⁷. Nevertheless, if they would not attempt to predict what a future war would look like, there would not be course for development. That even the most perceptive predictions "*will come true in detail in unlikely because military prophecies are nearly always wrong, but it is essential to consider future developments or else there can be no general guiding policy for the present*."¹⁸⁸ While superpowers can use considerable amounts of money on research and development of new technologies, the small states are seldom offered such luxury.

Very often the small nations cannot then freely chart their course of military development, but must use their most astute minds to closely follow the advances in civilian technology and think how they could be adapted for military purposes. In a time of peace from a dawn of a new idea it might take more than a decade before it can be put to

¹⁸³ Fuller (1946), pp. 26-27.

¹⁸⁴ Bucholz (2001), pp. 3-4. It is worth noting that Go is an ancient strategy game and. In some ways the strategy of today returns to its agrarian roots.

¹⁸⁵ von der Goltz (1906), p. 175.

¹⁸⁶ Liddell Hart (1927), p. 50. See also Danchev (1998), pp. 99-100.

¹⁸⁷ As Liddell Hart wrote about Fuller "*while I do not feel that you are always right I hold that the ideas conceived by your genius have proved right so often as to claim universal respect for any you put forward.*" Cited in Reid (1987), p. 2. Even the disproved visions are beneficial for one interested in the art of war.

¹⁸⁸ Martel (1931), p. 118.

use by the military and even then getting it naturalized and deployed throughout the whole organization may take additional years. During a period of war more resources of the nation can be allocated into developing military capabilities, but in peacetime the development is slow. Simpkin claimed that there is a certain pattern that developments in the art of war follow and that it tends to occur in cycles that follow a certain temporal sequence so that each major development follows the previous one at almost preset intervals. In other words, at least the peacetime speed of revolution would be a constant.

"Time and again, where a radical change in equipment, doctrine or force structure is concerned, one finds a gestation period of between 30 and 50 years or more between the technique becoming feasible, or the need for change apparent, and full-scale adoption of the innovation."¹⁸⁹

We will return to the possibility of a shorter cycle later, when in discussing the reasons for this frequency in more detail. As a rule of thumb we can consider half a century as a starting point for argumentation. The cycle of development occurs in Simpkin's train of thought with a 50-year interval. There is often an innovation in mobility that is followed by a decade or two of theorizing and a period in which these theories become flesh. Around the year 1800 Napoleon's creation of a people's army led to the theorists like Clausewitz and Jomini who sought to explain it¹⁹⁰. In 1850 the innovations of rail and steam fathered Mahan and Moltke among others. Around 1900 petrol, tracks and aviation fed theorists like Fuller, Tukhachevsky, Douhet and Guderian to shape mechanized warfare for decades¹⁹¹. After 1950 the invention of rotary wing led US reformists to theorize about the use of helicopters.¹⁹² Military history clearly evidences that theories do not become reality without a considerable delay even when they answer pressing demands. In worst cases their actualization may take such a long time that when they are ready, they fail to reflect the reality of the time of their application any more. Some ideas are brought to fruition so late that they have meanwhile become obsolete. This is due to internal resistance of the military structure to adoption of new ideas. As Liddell Hart argued,

> "military history is filled with the record of military improvements that have been resisted by those who would have prohibited richly from them. Between the development of new weapons or new tactics and their adoption there has always been a time-lag, often of generations. And that time-lag has often decided the fate of nations."¹⁹³

This time lag is evident in Simpkin's idea of development cycles where it has been incorporated into the length of the cycle. It is interesting that Simpkin arrived at his 50-year cycle by following the pattern of development of different theories of war, but ultimately had to reserve his position and deduct that the development of theories is the outcome and not the cause of the cycle.¹⁹⁴ The idea of cycle fits the development of war fighting tools, theories and practices surprisingly well, but again, adopting the concept of a wave allows us to understand the periods in between the cycles as riptides when ideas mature to be fully employed. Development never grinds to a standstill. New ideas emerge constantly and some of them do not gain recognition neither at the time they are presented, nor afterwards. Some ideas emerge at a profitable time and ride the crest of the wave; some drown in tumultuous waters between the consecutive waves. Some ideas actually create a cycle that has potential to amplify the wave itself and make it prevail longer than its original momentum would have permitted it to do. This is what first railroads, combustion engines, tanks, aviation and then the invention of the rotary wing did for the Second Wave of indust-reality.

¹⁸⁹ Simpkin (1985), p.5.

¹⁹⁰ See e.g. Bond (2006), pp. 3-6.

¹⁹¹ Naturally these men were far from the only important theorists of mechanized warfare, but they were among the most vociferous and emerged as the ones whose names would go down in history. Hart (2006), p. 23 for example presents von Kuhl, von Volland-Bockerberg and especially von Volckheim as more prolific German theorists than Guderian.

¹⁹² Simpkin (1985), pp. 8-9.

¹⁹³ Liddell Hart (1937), pp. 154-155.

¹⁹⁴ Simpkin (1985), p. 8.

The wave continued by picking up extra force. And naturally the wave carries on after it has crested since some of the waters in it are picked up by the next wave

On the long run the frequency of waves might increase, since if everything in society has become faster and faster as a byproduct of civilizational development, it is entirely plausible and even predictable, that the development cycle will pick up speed as well. Simpkin started to discuss it, but did not follow his train of thought to its logical conclusion. He wrote that from early on in history

> "technology has influenced the form of war in some way or other. But it was not really until the years leading into the (first) Industrial Revolution, again the turn of the eighteenth and nineteenth centuries, that technology began its tumultuous burgeoning, and machine power really came to be employed first in static, then in mobile applications. The pace of the electronic revolution leaves us breathless, as the mechanical one may well have done our forebears."¹⁹⁵

He therefore admits that the pace of revolutions following each other has accelerated but omits the discussion on what this might do to the frequency of his cycles or waves of development. Simpkin, however, does not explicitly state that the gestation period would be half a century, but allows for flexibility¹⁹⁶. Unfortunately it is not very flattering to see one of the main arguments he has on the behalf of the frequency that "varies somewhat with time and place only because of variations in the factor that governs it – the career span of an officer rising to the highest rank. When the pressures of war distort this pattern, the ensuing peace almost always brings a restoring backlash."¹⁹⁷ The frequency is therefore dictated by the length of time it takes for an idea to develop into fruition and to influence the thinking of a young officer who orders it to be adopted when he is in a sufficient position of power to do so and the time for the order to be realized. Even after the idea is ripe to be accepted it takes time to overcome problems involved in the construction and introduction of the materiel and train people to use new and sophisticated equipment and. As Giap argued,

"step-by-step modernisation of the army is virtually a technical revolution. The more strengthened are the material basis and modern technique, the more the men are required who are able to master that technique. Otherwise, modern technical equipment cannot develop its effectiveness and the army's combativeness will not be increased."¹⁹⁸

Troops are not in immediate operative readiness when they receive the equipment, but when they are capable of using it. Simpkin suggests that there is a four or five-year period between acceptance and the first unit going operational. The research and development cycle has lengthened due to the sophistication of technologies involved. In the seventies this was considered to be 10 years and in the eighties 12 years. The pressures of war may see years cut to months, but unless such external pressure is applied, the cycle will continue on its own pace.¹⁹⁹ All too often the cycle of technological change and that of bureaucratic decision-making are not synchronized. This creates unbridgeable gaps between theory and practice in the context of rapid change.²⁰⁰

Usually the development cycle for the military in terms of doctrines and techniques just as well as technologies associated with them revolves slowly during time of peace. Ideas are constantly born and they wither away because the need for their further development is not perceived. The winners of the war are more likely to tend to conserve the way things stand and the losers look for innovation. The winner's progress may halt and the losers attempt to accelerate their cycle. As Alberts et. al. wrote,

¹⁹⁵ Simpkin (1985), p. 5.

¹⁹⁶ It is worth noting that Simpkin discussed revolutionary development cycles giving birth to new innovations involving leap-ahead technologies. Kagan argues that outside pressures enable development cycles to spin rapidly and uses U.S. aircraft as examples. The time from proposal to delivery for F-14 was four years, F-15 and F-16 six years and F/A-18 nine years. See Kagan (2006), p.35.

¹⁹⁷ Simpkin (1985), p.5.

¹⁹⁸ Giap (1962), pp. 137-138

¹⁹⁹ Simpkin (1985), p. 6-8.

²⁰⁰ Echevarria (2000), p. 223.

"this is not to say that innovative ideas were not born and nurtured, during intervar periods, but rather, that with rare exceptions, they were not brought to full fruition and implemented. The crucible of war creates a new competitive dynamic (...) Changes are accelerated into the time frame of war."²⁰¹

War has enough energy to overcome the internal friction of the development cycle and makes it spin faster. Actually, since the enemy in war has a cycle of its own, his developments in methods or tools of war force one's own cycle to spin faster in order to produce countermeasures. Occasionally the shortening of the timespan can be drastic and Simpkin used the reinstating of armored warfare concept in Britain and the U.S. as an example. In this case the time was only 25 years, or, only half of the normal frequency, but he argued that the timing was forced on them by the German armored threat.²⁰² As a result of the victory of WW I the British, French and Americans alike felt satisfaction with the performance of their armed forces and their doctrines forgetting the guidance of Jomini who argued that "*it is particularly necessary to watch over the preservation of armies in the interval of a long peace, for then they are most likely to degenerate*."²⁰³

Meanwhile Germany as the losing side developed itself from the fundamentals upwards. Due to the different time-scales in developing tank-based doctrines and troop structures the German pace may seem revolutionary to the British. For the Germans, in the long run and looking back at the decades of testing and developing equipment and doctrine for more mobile armies, the pace was evolutionary.²⁰⁴ The decision to turn different theoretical concepts into practice and determine how to use them, allowed certain nations to excel above others in the beginning of WWII. Those nations that did not grasp the potential of mechanization suffered a nasty surprise and had to quickly readjust themselves. In 1928 the Soviet Union had less than 200 tanks and armored cars and 350 trucks. In other words, the motorization, yet alone mechanization, had not advanced while for example Frunze spoke vehemently on behalf of creation of a mechanized army.²⁰⁵ As Liddell Hart wrote, "the utilization of new weapons in war has followed far behind the period at which they were technically possible or even produced."²⁰⁶

The U.S. was the only nation that did not have a pressing urgency for development, since its isolation beyond the Atlantic allowed for the creation of a mechanized army in a relatively relaxed pace. But even it ultimately chose the path of mechanization. MacArthur as the commander of West Point pondered whether WWI had changed warfare so that a new type of officer was necessary in order to achieve maximum efficiency.²⁰⁷ The composition of the Army took longer to follow, even if he led the development as Chief of Staff in the 30's. Nevertheless, only when the U.S. joined WWII a new mobility was rapidly built after the lessons gleaned from early stages of that war. As Patton wrote,

"Americans, as a race, are the foremost mechanics in the world. America, as a nation, has the greatest ability for mass production of machines. It therefore behooves us to devise methods of war which exploit our inherent superiority. We must fight the war by machines on the ground, and in the air, to the maximum of our ability, particularly in view of the fact that the two races left which we may have to fight are both poor mechanics but have ample manpower. While we have ample manpower, it is too valuable to be thrown away."²⁰⁸

There was a time when military needs were the drivers for civilian technology. This is no longer applicable except in certain very specific areas, like stealth technology. Perhaps the last time military needs spurred technological development onwards and managed to even

²⁰¹ Alberts et. al. (2000), pp. 230-231.

²⁰² Simpkin (1985), p. 5.

²⁰³ Jomini (2007), p. 34.

²⁰⁴ Simpkin (1985), p. 27.

²⁰⁵ Zukov (1969), pp. 98-99.

²⁰⁶ Liddell Hart (1932), p. 106.

²⁰⁷ MacArthur (1964), p. 778.

²⁰⁸ Patton (1947), p. 366.

accelerate the development cycle was during the Cold War in the context of the U.S.-Soviet arms race. Excessive amounts of money spend on research and development gave a strong impetus to advances in technology.²⁰⁹ Today the big money for new inventions comes from the civilian sector, but the pace has kept accelerating. "*Many advances in military technology now occur more often outside the military* R&D sector."²¹⁰ New things can not only be produced but also developed faster than ever before and the military purposes. But the point is that the military has no longer any control on the technology development cycle and has been relegated to the role of a bystander and to keep an open eye for products that could influence the art and practice of war, if applied properly. The characteristics of the Third Wave development cycle can be described with four essential points;

> "First, the rate of technological advance, and the ability to turn out new products, has increased dramatically. Second, the advances in technology that are relevant for the military are, to a very large extent, no longer driven by known operational requirements. Instead, they are being driven by private sector requirements to move and process information on a scale unimaginable just a few years ago. Third, the military is now being driven by a technology cycle that is quickening and has less and less time to react to take advantage of the new capabilities they represent before these, in turn, are overtaken by new capabilities. Fourth, the new capabilities are equally available to potential adversaries."²¹¹

Today the pace of development is so rapid that the frequency of waves and cycles is increased. "Revolutions" are likely to follow each other in shorter succession than ever before. This may not mean that the research and development or introduction times of the career-spans would be altered out of necessity. Perhaps we are just entering an age in which the great revolutions occur at the same interval but the time between waves is characterized by more activity in all fields ranging from the technological to doctrinal.

The biggest dilemma in development cycles, however, is not how fast or slow they revolve, but the necessity to synchronize speeds. As Strachan noted, national strategies tend to look at least ten years ahead and one of the reasons is that by choosing such a timespan, the strategy-cycle is synchronized with the average procurement cycle of most defense equipment²¹². As long as the cycle of civilian technology development accelerates, there is a pressing need to get the military development cycle to emulate that speed in development of strategy, concepts and doctrine. This has regrettably seldom occurred. As Leonhard wrote, "doctrine typically lags behind technology. Sometimes leading to disaster."²¹³ Alberts et. al. summarize this requirement of having the cycles revolve at the same speed by saying; "what is needed is an approach that synchronizes the development of military strategy and doctrine with the advances in technology and with the technology insertion process."²¹⁴ It is always a question on synchronization. The speeds of the cycles do not need to be equal as long as their phases are synchronized so that an output from the civilian technology cycle influences the doctrine and concept development cycle at the right time as input.

We can say that the change in the organization, tactics and weapons of an army has developed more or less at the same speed as the conditions of war have changed and this, in turn, has occurred following the pace of technological development of the society. The problem is that each of the above has occurred at intervals. The pace of the cycles may be the same, but since the starting point of development has been different for each level of change, this has led to a situation suitably summarized by Liddell Hart; "Thereby the armies of today are as helpless, and their prospects as hopeless, as a portly policeman trying to catch a motor

²⁰⁹ Odom (1993), p. 152.

²¹⁰ Odom (1993); p. 157.

²¹¹ Alberts et. al. (2000), p. 200.

²¹² Strachan (2013), p. 235.

²¹³ Leonhard (1998), p. 7.

²¹⁴ Alberts et. al. (2000), p. 201.

*thief – the thief of time.*²²¹⁵ And there seems to be no option available for catching up the existing head start in development. The different phases of development seems to be an enduring fact and Liddell Hart continues to paint a bleak picture of future wars by claiming that once a new war is initiated, it is likely to pick up from where the old one left off. Yet, for both armies it seems to be generally true "*that the tactics of an army immediately after a war are closer to the reality of the next war than any of the tactical doctrines which succeed it periodically during the interval.*"²¹⁶

2.4. RIDING THE FIRST WAVE AND THE IMPACT OF CIVILIZATION

"As the weapons of war change, so does the character of war change, and though this is an undoubted fact, tactically it must not be overlooked that weapons change because civilization changes; they do not change on their own account. To-day wars arise out of economic causes, because our present civilization is an economic one, its master pivot being the machine in one form or another. As the present age is largely a mechanical one, so will the wars of this age take on a similar complexion, because military organization follows civil organization."²¹⁷

Fuller means that the ways and means of fighting a war are mirror images of the functions and characteristics of a society or civilization that wages them. This is evident everywhere.²¹⁸ Great Britain, in the peak of its international dominance was a maritime society, and thus its forces were built around an unconquerable navy. The society of the Middle Age was agrarian and the elite of the society consisted of landed gentry. Thus the battles were often between a peasant mob armed with scythes or pitchforks and the knights with their chivalric armor and weaponry. The Industrial Revolution created conditions for factorized mass production of weapons and their rapid transportation with the aid of first steam and then internal combustion engine. It is seldom that military progress sets the pace for the society. The more common way of development is that society develops something that enhances the quality of life and military adapts it to its purposes. However, there will never be a war that does not reflect the stage of development of its societal and cultural structures. In addition, sometimes war itself changes the society and its structures²¹⁹.

War has been with us for a long time and is likely to remain with us in the future as well. War is a byproduct of civilization since it emerged at the same time as the early civilization was born about 12 000 years ago as humans began to coalesce into small towns and villages in Mesopotamia.²²⁰ However, as civilization progressed, so did the methods of fighting practically hand in hand. As Fuller wrote, "*war to the men of the Stone Age was not the business of a selected few, it was the occupation of every adult male, and it is still so, with the addition of numerous women. In savage warfare, the aim was to kill all enemy males and abduct the women and children.*"²²¹ In primitive societies war was total because the entire tribe engaged in war. It determined the existence of the society with its outcome. The tribes lived or died according to if they were victorious of not. As the hunter-gatherer societies of nomads moving their adobe and their families with the army developed into agriculture-based societies a division was made within the population. Some kind of proto-society, built around an agri-

²¹⁵ Liddell Hart (1932), p. 185.

²¹⁶ Liddell Hart (1932), p. 202. For all his visionary qualities Liddell Hart failed to come up with any remarkable new ideas during the WW II itself. He produced several nooks mostly consisting of recycled thoughts that failed to add anything new to the art of war during those crucial years. See Danchev (1998), p. 215.
²¹⁷ Fuller (1943), p. 9.

²¹⁸ See also Matheny (2012), pp. 3-7.

²¹⁹ Shy (1976), p. x. argued that the American Revolution is an example of this process where fighting a war creates a different type of society.

²²⁰ Stempel (2012), pp. 6, 35.

²²¹ Fuller (1961), p. 40.

cultural community was required to organize its warlike endeavors in even a rudimentary manner. There were those who farmed the land securing nutrition for the society and those who defended the crops and the stable adobes of the society. The society was divided into warriors who protected the non-participants.²²² We can argue that true war arose at the time when agriculture and later early stages of politics were created²²³.

This led gradually to a distancing of non-combatants from the war. Although in many cases wars ravaged the land where they were fought and destroyed civilian life and property, they were not the main targets and as centuries passed, the civilians were increasingly protected. The story of the development of warfare shows us how at different periods of history wars themselves "*came to be modified, and gradually humanised. It is a story of "ups and downs"* – *but far more* up *than down.*"²²⁴ Our society today could not withstand the approach of Genghis Khan who often ordered everyone including the domestic animals to be killed so that no living creature should dwell in what he conquered.²²⁵ As society develops and turns civilized the traditional warrior, going berserk with a foaming mouth, no longer represents its nature. As people flee the countryside to follow the siren song of the cities, the warrior is no longer a peasant and the way he fights changes. Industrial Revolution began an acceleration growth of technology in all spheres of life and the warrior of this period mirrors the conditions surrounding him. As Charles De Gaulle wrote,

"modern conditions of military action demand, therefore, constantly increasing technical skill from fighting men. The equipment, which the force of events has introduced into the ranks, demands the gift, the taste, the habit of serving it. This is a consequence of evolution, ineluctable in the same way as the disappearance of candles or the end of sundials."²²⁶

Technology and its development have throughout history had a tremendous impact of the outlook of wars. The period of accelerated development of technology began with the advent of industrialization and has been picking up speed ever since. But has the heart and soul of war changed with the same pace the technical tools at its disposal have? My argument is no. Mary Kaldor's arguments about "*new wars*" replacing the old ones can and will in the course of these pages questioned, but she was absolutely right in claiming that societies fight their own types of wars. As she put it,

"Every society has its own characteristic form of war. What we tend to perceive as war, what policy-makers and military leaders define as war, is, in fact, a specific phenomenon which took shape in Europe somewhere between the fifteenth and eighteenth centuries, although it has passed through several different phases since then."²²⁷

Even if in my analysis and discussion use some occidental theorists of the past I fully acknowledge that the type of war I seek to analyze is primarily a Western phenomenon and in this case the concept of the west includes Russia and its predecessor the Soviet Union because the development of their art of war was so closely related to the developmental process in Europe.²²⁸ The attempt to be faster and faster and increase the speeds of movement and the spin of decision-making cycles has been very much an occidental tendency but oriental thought has influenced the Western operational art and strategy profoundly.

In order to treat the art of war philosophically and to avoid being drawn into heated discussion about turning swords into ploughshares a necessary starting point is to accept war as a part of the human condition. It is neither desirable nor avoidable. Oriental thinkers of the past seemed to accept this fact at face value. For example Ssu-ma wrote

²²² Fuller (1961), p. 31.

²²³ Stempel (2012), pp. 13, 35-39.

²²⁴ Liddell Hart (1950), p. 367. Italics in the original.

²²⁵ Juvaini (1958), p. 133.

²²⁶ De Gaulle (1976), p. 53.

²²⁷ Kaldor (2007), p. 15.

²²⁸ While I acknowledge that is risky to write of any "Western way" of warfare such an expression can be used since during the Cold War to a large degree the Western Europe and the U.S. shaped their national doctrines and a common NATO doctrine to primarily oppose the Soviet form of operational art. After the Cold War ended, the common understanding has only become deeper and more widespread. See, Raitasalo (2005).

"Thus even though a state may be vast, those who love warfare will inevitably perish. Even though calm may prevail under Heaven, those who forget warfare will certainly be endangered."²²⁹ Love of war is just as dangerous politically than turning a blind eye to its possibility. For the Chinese thinkers war was not an end or a means of policy but an evil necessitated by an imperfect world.²³⁰

The role of war is central not only in military history but entire history. As Christopher Coker argues, war is crucial to the story of mankind.²³¹ This does not mean that war should be glorified. As Hans Delbrück, a prominent historian of war, declared, "*War is the most terrible fate that mankind can envision. Men must bravely face it when it comes on us with iron necessity, but at the same time recognize that it is a crime to encourage it unnecessarily.*"²³² We do not yearn for war but it seems to be a recurring event directing civilizational development. At times war makes us evolve in great bounds, at other times it takes civilization backwards. The ultimate form of regression would be the aftermath of an all-out thermonuclear war. War gives history its direction and structure and helps to set other events into causal relationship. "*War, in a word, is the medium of bistory.*"²²³

Fighting wars is a part of human condition and if they are to be curtailed, only civilization itself can accomplish this feat. Moltke²³⁴ claimed that the answer to limiting the total nature of war and its destructivity is not to be found from people immersed in the art of war. His military genius was universally accepted, but simultaneously he was occasionally seen as too 'soft.' Ludendorff claimed that Moltke was more disposed towards peace than war.²³⁵ Depending on the viewpoint this can just as well be read as highest possible praise. Even if at heart he was a man of peace, as a practitioner Moltke could not change the nature of war as a phenomenon to be less devastating.²³⁶ Politicians are able to dictate how and with what means their armed forces fight, but they cannot control war as a general phenomenon.

> "Whoever knows war will agree that it cannot be restrained by theoretical chains. Lessening its horrors is rather to be expected from the gradual advance in general civilization that promote the humanity of each individual. This is because the conduct of war reflects the progress of civilization. Only such general progress, and not laws of war, can lead to the goal."²³⁷

Civilization itself can make wars less destructive, but not through conscious attempts to regulate them. When the value of human life is respected highly enough, certain measures are taken to limit wanton destruction. Even if the 'new wars' or intrastate wars that have started in the Post-Cold War era hold strong elements of genocide, they are no comparison to the wholesale slaughters Julius Caesar organized in Gaul²³⁸. Liddell Hart took this "*much praised missionary of Roman civilization*" and argued that Hitler seemed a gentle man in comparison.²³⁹ War used to be more violent in the past and different restrictions on its conduct have been applied gradually at least from the period after the Middle Ages. There have been, there are, and there will be temporary setbacks, but all in all, wars have become less

²²⁹ Ssu-ma (1993), p.126.

²³⁰ Creveld (2005), p. 29.

²³¹ Coker (2010), p. 50.

²³² Delbrück (1997), p. 99.

²³³ Coker (2010), p. 59. On the argument that wars are indeed a part of the human condition, see also Foucault (2003).

²³⁴ Here it is worthwhile to the reader to note that when I refer in this study to Moltke, I specifically mean Helmuth Karl Bernhard Graf von Moltke, or, Moltke the Elder as he is commonly referred to. For information of the German Chief of General Staff prior to World War I, Helmuth Johann Ludwig von Moltke see for example Mombauer (2001).

²³⁵ Ludendorff (1919), p. 56. Bucholz (2001), p. 10 on the other hand called him "*a rare combination of artist and soldier*." Moltke was a prominent strategist and Ludendorff only a brilliant tactician whose perhaps inadequate grasp of grand strategy brought about the collapse of the German army in 1918. See Corum (1992), pp. 3-5. ²³⁶ On this see Gat (2001), pp. 326-327.

²³⁷ Moltke (1993), p. 23.

²³⁸ See e.g. Caesar (2010), pp. 4, 43, 48, 85.

²³⁹ Liddell Hart (1950), p. 366.

destructive as civilization has progressed. This is because one goes to war to win the peace and unrestricted violence would make the war counterproductive. Thus history shows us that civilizations have constrained warfare in many ways²⁴⁰.

The above example of Caesar did not mean that he was unnecessarily barbaric in applying his art of war²⁴¹. As Fuller summarized the essence of Caesar as a commander-in-chief, "*he fitted his means to his end: he was neither a devil nor an angel, he was a craftsman.*"²⁴² Caesar was clear-sighted enough to understand what was required and unscrupulous enough to execute it. He was a brilliant example of the pinnacle of development in warfare and degree of civilization of his time. As Clausewitz wrote, "*possession of military genius coincides with the higher degrees of civilization: the most highly developed societies produce the most brilliant soldiers, as the Romans and the French have shown us.*"²⁴³ It was just that even the Roman civilization, representing the best in the Occidental world, still did not wish to acknowledge the value of human life. Caesar was a brilliant commander-in-chief but the general level of civilization did not yet require limiting the suffering inflicted on the barbarian enemies. When the enemy consisted of his own countrymen and he was required to fight other Roman legions, Caesar chose a completely different approach. In a letter he described the chosen method as almost a predecessor to what the U.S. attempted in Vietnam.

"Let us see if by moderation we can win all hearts and secure a lasting victory, since by cruelty others have been unable to escape from hatred and to maintain their victory for any length of time (...) This is a new way of conquering, to strengthen one's position by kindness and generosity."²⁴⁴

Had he chosen to treat his countrymen as enemies in the same cruel manner he employed against the barbarians, it would likely have become a Pyrrhic victory. Caesar would still have emerged victorious, but the desire for revenge probably would have discredited possibilities for a prolonged peace. Caesar understood that such a devastating war as he waged on Gaul would not have worked in Italy because it was a civil war in which it is necessary to win the goodwill of population and not only subdue the adversary.²⁴⁵

When we study operational art we are not required to evaluate whether someone was a good person but focus on his professional abilities as a soldier and a commander²⁴⁶. Many of the great captains of the past and present are not among the great humanitarians or philosophers of all time. They were artists, but the masterpieces were painted with blood. From the perspective of art of war or operational art their leadership and command matter the most²⁴⁷. Napoleon was an egotist, Cromwell a zealot, Sherman devoid of compassion and Suvorov almost a misanthrope but they performed their military task admirably.²⁴⁸ Some combine the good with the bad. Often they are opportunistic and ruth-

 $^{^{240}}$ Ibid. See also Schelling (2008), p. 126 and (1963), pp. 75-77 who argued that there was no clear reason not to use gas in WW II, but as if by common agreement it was not.

²⁴¹ See e.g. Creveld (2005), p. 129.

²⁴² Fuller (1965), p. 182.

²⁴³ Clausewitz (1989) p. 101. See Heuser (2002), pp. 72-74 for a discussion on Clausewitz and the concept of military genius.

²⁴⁴ Caesar, cited in Fuller (1965), p. 182.

²⁴⁵ Fuller (1965), p. 181.

²⁴⁶ This is an approach for example Colby (1943) chose in his discussion of Malriborough. Similarly, Wylie argues that strategy has no inherent moral quality of its own since the morality of a chose strategy can be viewed only through cultural value judgements of its critics. Wylie (2014), pp. 15-16.

²⁴⁷ An immensely important corpus of research on WW II German generals comes from the notes Liddell Hart made of the discussions with them during their captivity waiting to be tried for their war crimes. As is only natural to men in such a predicament, they polished their own shields by either actively denying their knowledge and perhaps participation in the atrocities committed by the Nazi regime or did not discuss those topics at all. Thus, we get imperfect portrait of the men, but very detailed accounts of how they conceived of tactics and operational art. For a relatively thorough description of the interplay between the imprisoned commanders and Liddell Hart see Danchev (1998), pp. 223-234.

²⁴⁸ On these statements see for example Jomini (2007), pp. 15-16; Freytag-Loringhoven (1991), p. 299; Delbrück (1990d), pp. 188.-191; Sherman (1957), p. 11; Fuller (1961), pp. 43, 108-109; Longworth (1965), p. 132. The theorists are not necessarily any more engaging. Clausewitz, for example was characterized by some

less men to whom the ends justified the means and this was a guiding principle of their operational art. In discussing Caesar's methods of fighting first the Gallic and then the Civil Wars Fuller wrote;

"In the one, the atrocities he perpetrated on the unfortunate Gauls have seldom been exceeded by a civilized soldier; in the other, his leniency toward his enemies has seldom been equaled even in more recent civil wars. This again reveals his amorality. He was a man totally governed by his end, and whether the means he employed to gain it were good or evil meant exactly nothing to him."²⁴⁹

Interestingly the Roman Empire did not fall victim to a more powerful contender but rather collapsed from the inside. This is to say that the Barbarians never conquered Rome, but they rather were accepted into the empire. The Germanic barbarians to a large degree came to replace the Roman legions as the protectors. As Delbrück put it, "the army of the *Roman nation was becoming Germanic. The Roman legions were not finally defeated and overthrown by the barbarians, but they were replaced by the sons of the North.*"²⁵⁰ The entire concept of *Völkerwanderung* meant that along with the warriors who joined the Roman army, their wives, children and eventually whole tribes moved into Roman territory and their entry started to signal the end of the ancient world and the emergence of new political systems. The blending of the Romans and Germanic barbarians began from peace treaties.²⁵¹

The collapse of the Roman Empire was not caused so much by the fact that the barbarians would have corrupted the "purity" of the empire but rather by the fact that they assimilated too well into it. It took over two centuries, but the barbaric Germanic and Gothic tribes who first took over the protective duties of the Empire became civilized and "*in the atmosphere of civilization, their warlike nature melted away along with their barbarism*."²⁵² Rome did not overextend itself nor did a rival defeat it. It simply became too widely civilized to hold itself together.²⁵³ Traditionally civilization was always under threat from the barbarians occupying its peripheries and had to defend its borders actively²⁵⁴. This applied to Rome against the German tribes as well as China and the Mongolian hordes. During the Third Wave the situation is different. As Bertrand Russell wrote, "*It is not now barbarians who constitute the danger. On the contrary, it is those who are in the forefront of civilization*."²⁵⁵

From the time of the Peloponnesian wars onwards the mercenary soldiers were the main means of warfare for a long time. Knights were the most expensive mercenaries and simultaneously the most unreliable. Once a battle seemed to be lost, the knights would dash off on their horses and leave the masses of foot soldiers to die.²⁵⁶ The light mercenary infantry troops were relatively cheap to raise and in time their efficiency increased.²⁵⁷ Professional soldiers remained through the Middle Age the primary tools in the art of war. This led the Swiss mercenaries to dominate warfare even if the country was small. In fact Switzerland was perhaps the only place where the art of war progressed dur-

as a cold and introverted person. See Heuser (2002), p. 5. The same applies to Fuller and as Brian Holden Reid (1987), p. 9 wrote, "greater social intercourse might have lent Fuller's severe views a flexibility and humanity that they often lacked."

²⁴⁹ Fuller (1965), p. 55. As Caesar's own account tells us, in the Civil War he thoughtfully weighed the methods to be used. "*Caesar therefore thought it time at length to give over the attempt which he had often made in vain, and act with energy in the war.*" Caesar (2010), p. 164.

²⁵⁰ Delbrück (1990b), p. 220.

²⁵¹ Delbrück (1990b), pp. 253, 317.

²⁵² Delbrück (1990b), p. 419. See also Delbrück (1990c), p. 66.

²⁵³ See also Gat (2001), pp. 355-356 in which the ideas of von der Goltz are discussed. According to him civilization makes culture proper and culture is unfavorable to the art of war thriving among the people.
²⁵⁴ Keegan (1998), p. xiii.

²⁵⁵ Reegan (1996), p. Xiii.

²⁵⁵ Russell (1959), p. 83.He was of course referring to nuclear weapons, but with the destructive power the superpowers today have along with their nuclear capability is a frightening thought.

²⁵⁶ Delbrück (1990c), p. 455.

²⁵⁷ Fuller (1960), p. 42.

ing the Middle Age.²⁵⁸ For the Italian *condottieri* war was a business in which mercenaries had no desire to lose their lives in the service of their employer and the princes employing the mercenaries didn't wish to incur any risk themselves. As du Picq described the situation, "*The soldier of our day is a merchant. So much of my flesh, of my blood, is worth so much. So much of my time, of my affections, etc. It is a noble trade, however, perhaps because man's blood is noble merchandise, the finest that can be dealt with."²⁵⁹ But for just that reason warfare was relatively humanitarian, since soldiers did not wish to waste their lives and risks taken were compensated for with money. Money could buy soldiers to fight for the belligerents who kept a distance between themselves and their messy business. Mercenaries were a necessity, since without them, "<i>rich man without arms must be a prey to a poor soldier.*"²⁶⁰

Machiavelli did not favor mercenaries, but wanted the army to consist of citizens. He hated the *condottieri* of his time because their armies were composed on horsemen and he considered the infantry to be the decisive arms just as it had been for the Romans whom he idolized.²⁶¹ The turning point back to the concept of citizen-soldiers occurred in Napoleonian warfare and subsequent rise of the mass armies. Instead of being the profession of relatively few warriors from knights to *condottieri*, war became everybody's business again as it had been in the primitive societies. Napoleon's novel thinking on war was the starting point of creation of mass armies through mobilization and was transformed later into the concepts of total mobilization and as a result to paradigms of total war.²⁶²

Liddell Hart argued that the 18th century was a turning point in the customs of war and the ability to reduce its evils was a great civilizational achievement opening up a prospect of progressive limitation of war.²⁶³ Bond argued that 18th century warfare was truly limited in comparison to the religious wars that preceded it and the revolutionary and nationalist wars that followed it.²⁶⁴ Whenever there is a setback in the destructivity of war, as opposed to the tendency of wars becoming more and more humanitarian, these are caused by either political or technical developments that manage to destabilize the existing order.²⁶⁵ When the social forms and the stability of status quo are shaken, war regains some of its savagery. We saw this happen after the collapse of the Soviet Union and in the War on Terror. But these are momentary setbacks in the long run. Not only do weapons characterize war but civilization itself. As Coker noted, "*War is protean – it adapts to the external environment: it changes culture by culture, and over time.*"²⁶⁶ The degree of weapon sophistication or tactics used is dictated by the level of civilization. Furthermore, different types of civilizations act differently. It is difficult for one type of civilization to fight another.

To return to the American Civil War, an often-quoted comment from the true military gentleman of the said war, Robert E. Lee, tells everything about his attitude to the war. Lee stated during the Battle of Fredericksburg that "*it is well that war is so terrible, otherwise we should grow too fond of it.*" We must remember that to save the Confederacy from more casualties Lee surrender his troops when he deemed the result to be clear. He was a

263 Liddell Hart (1950), p. 369.

²⁵⁸ Delbrück (1990c), p. 429. Much more about the success of the Swiss mercenaries can be read in Delbrück (1990d).

²⁵⁹ du Picq (1987), p. 244.

²⁶⁰ Machiavelli (1965), p. 204.

²⁶¹ Delbrück (1990d), pp. 17. 101-113. See also Creveld (2008), pp. 96-97.

²⁶² On this see Heuser (2010), pp. 137-138. As we can see, there are so many interpretations what a total war is that we can practically speak of degrees of totality. Ludendorff had extremist notions, but for Montgomery (2000), p. 15 it just meant that "*morale of the whole nation is involved*" and "the whole manpower of a nation, and vomanpower too, together with its industrial strength, is mobilized to provide the necessary sinews of war." Bellamy (2007), pp. 31-38 agrees and argues that among other nations, Russia prepared itself for total war before WW II.

²⁶⁴ Bond (2006), pp. 14-15.

²⁶⁵ Liddell Hart (1950), p. 370.

²⁶⁶ Coker (2010), 11. See also Keegan (1998), p. 72 who agrees that war is protean and adds that "*like disease, it exhibits the capacity to mutate, and mutates fastest in the face of efforts to control or eliminate it.*"

man infused with the Southern agrarian traditions.²⁶⁷ Opposing Lee were men of different breed. As Fuller described them,

"Sherman, and to a lesser extent Grant, Sheridan, and other Federal generals belonged to the age of the Industrial Revolution, and their guiding principle was that of the machine which was fashioning them – namely, efficiency. And because efficiency is governed by a single law, that every means is justified by the end, no moral of spiritual conception, or traditional behavior, can be tolerated should it stand in its way.

Sherman was the leading exponent of this return to barbarism. He broke away from the conventions of nineteenth century warfare, and waged war with steel as ruthlessly as Calvin had waged it with the world.²²⁶⁸

Even if a more 'advanced' civilization ended up winning this contest and dragged the South kicking and screaming into the industrial era this did not mean that the fighting methods and tactics of the Union had been any more sophisticated. Sherman, in particular was in favor of total war that he practically waged on the civilian population of the South as well as its army. He felt no remorse, stating bluntly *"if the people raise a howl against my barbarity and cruelty, I will answer that war is war (...) If they want peace they and their relatives must stop the war.*"²⁶⁹ It is quite an accomplishment that in such a deadly and violent art form one man can have such a huge impact that the destruction he caused is still resented a century and a half later.²⁷⁰ Yet Sherman's march was not senseless rampage, but a deliberate acts stemming from the strategic need to destroy the material base of the South.²⁷¹ There is no reason why the technically more advanced civilization should be that ethically. Warfare can't be isolated from its cultural, political, social and temporal contexts. They influence greatly the general character of war.²⁷² Clausewitz wrote how politics

"reduce war to something tame and half-hearted. War is often nothing more that armed neutrality, a threatening attitude meant to support negotiations, a mild attempt to gain some small advantage before sitting back and letting matters take their course, or a disagreeable obligation imposed by an alliance, to be discharged with as little effort as possible."²⁷³

We saw during WW II that nations declared war on each other based on alliances and sides chosen without their troops ever getting engaged in actual fighting. War as a political tool is not always used to its fullest potential but as gradually increased and rationally calculated pressure. Clausewitz maintained that

"war is simply a continuation of political intercourse, with the addition of other means. We deliberately use the phrase "with the addition of other means" because we also want to make it clear that war in itself does not suspend political intercourse or change it into something entirely different. In essentials that intercourse continues, irrespective of the means it employs."²⁷⁴

²⁶⁷ Lee would deserve more discussion on the pages of this study but he did not himself write down even the tenets of his military thought. Among his numerous biographies the most read like hagiographies. See for example Freeman (1961). On the other hand Fuller (1982) reserved perhaps a too critical judgement on his personality and gave too much credit for Grant. See also Reid (1987), pp. 108-110, 121. For a more neutral approach to Lee and his merits as well as faults see Reid (2013).

²⁶⁸ Fuller (1961), p. 107.

²⁶⁹ Sherman, W.T. (1957), p. 11. Also cited in Fuller (1961), p. 108.

²⁷⁰ Davis (2001), p. 13.

²⁷¹ Smith (2008), p. 88.

²⁷² Bond (1998), pp. 15-16.

²⁷³ Clausewitz (1989), p. 218.

²⁷⁴ Clausewitz (1989), p. 605. Many scholars, for example Strachan (2013), pp. 13, 52 criticize the Howard and Paret translation that I am using here because by making their translation more readable they altered and changed the expressions originally used by Clausewitz and due to their emphasis on the first book are at least partially responsible for the misunderstanding that Clausewitz's focus had been on the relationship of war and policy. Nevertheless by inserting consistency of terminology and fluency into the text the readers have mostly benefitted from their work. For a brief history of the Howard-Paret translation see Howard (2007), pp. v-vii. As Paret has claimed, all translation is in the end interpretation. Honig (2007), p. 60.

When war is viewed as a political tool, there are many ways of employing it and absolute war would only be the penultimate end of the spectrum²⁷⁵. War is merely an extension of the political dialogue. It can be used gradually with new elements included should the political dialogue demand extra pressure. Intercourse continues on all levels simultaneously and warlike measures are just added to the toolbox of persuasion and coercion on the enemy. As Schelling noted, "In warfare the dialogue between adversaries is often confined to the restrictive language of action and a dictionary of common perceptions and precedents."²⁷⁶ This study deals with operational art and therefore focuses on the time when the armed forces of the belligerents have commenced actual fighting against each other. "In short, at the highest level the art of war turns into policy – but a policy conducted by fighting battles rather than by sending diplomatic notes."²⁷⁷ At no point do traditional diplomacy and other forms of political communication cease. Diplomacy of the Middle Ages was different from that of today and so is warfare. War has indeed become "not so much a contest of military strength as a bargaining process – dirty, extortionate, and often quite reluctant bargaining on one side or both – nevertheless a bargaining process."278 Warfare reflects the characteristics of civilization. Already Clausewitz pointed out that all wars were products of the societies that fought them²⁷⁹. Alberts et al claim that

> "war is a product of its age. The tools and tactics of how we fight have always evolved along with technology. We are poised to continue this trend. Warfare in the Information Age will inevitably embody the characteristics that distinguish this age from previous ones. These characteristics affect the capabilities that are brought to battle as well as the nature of the environment in which conflicts occur."²⁸⁰

Naturally at any given age the most sophisticated means, be they longbows, Spitfires, drones, or computers, are employed in warfare. We live in an age of abundant information and this has an effect not only on our methods of war but especially on our minds and the way we live our lives. Our mental capabilities are always more crucial to operational art than the tools we employ. The Third Wave has altered the battlespace by adding a new virtual domain to the existing physical ones. We are in the middle of a shift from a paradigm of industrial war to an information war or perhaps even a cyberwar. Wars are fought to secure a better peace and not be as destructive to the societies waging them as possible²⁸¹. It is the hope of all military thinkers that wars could be less destructive than they are and that the violence involved could be reduced. With today's potential lethality of weapons unrestricted war between great powers would be consensual suicide by proxy. Still, violence is an integral part of war and cannot be completely eliminated. Sir Rupert Smith has suitably claimed that

"Military fights are brutal because force is applied by military forces armed with lethal weapons. When unleashed, they will kill and destroy. That is what they are trained to do – and that is actually what we, civil society, ask of them. However, this is an unspoken contract, which is encased within the clear frameworks of war and peace that have evolved over the ages, but most especially in the past two centuries. And the fact that these no longer suit

²⁷⁵ See Bellamy (2007), pp. 17-19.

²⁷⁶ Schelling (2008), p. 141.

²⁷⁷ Clausewitz (1989), p. 607. Gray (2007), p. 84 argues against this point of Clausewitz that grand strategy as the highest level of war should not be allowed to be confused with policy.

²⁷⁸ Schelling (2008), p. 6.

²⁷⁹ See Howard (1983), p.48.

²⁸⁰ Alberts et. al. (2000), p.1.

²⁸¹ Naturally there are different viewpoints as well. As an example we can use Mitchell, who claimed that "To gain a lasting victory in war, the hostile nation's power to make war must be destroyed - this means the manufactories the means of communication, the food products, even the farms, the fuel and oil and the places where people live and carry on their daily lives. Not only must these things be rendered incapable of supplying armed forces but the people's desire to renew the combat at a later date must be discouraged." Mitchell (1999), p. 489. The events after World War I or second Gulf War are a testament of the idiocy of destroying the capabilities of the enemy completely.

the reality in which we live does not stop us from rearranging reality into the frameworks we know."²⁸²

The art of war and operational art must adapt to the social, political and civilizational contexts in which they would be employed and not attempt to mold their external environment to adapt to them. As Stempel wrote, "*as humanity continues to develop, war alters to keep pace; that has been war's great constant since its inception.*"²⁸³ The ways and means of fighting are different in each society and though they are largely dependent on existing technologies and cultural patterns of though they generally lag at least a little behind the civilian development. One of the best words of advice how to adapt to changes and how to avoid future shock comes from Freytag-Loringhoven;

"In the future, as in the past, war will be conducted man against man; the form will change, the essence will not. General von Kleist's advice still holds, although written in the days when the first suggestions of smokeless powder were giving rise to the most sterile mis-givings: "Very well, then, let us pass without hesitation into the age of smokeless powder. The world still belongs to the bold." Today, as always, the way to overcome all our difficulties in war, large or small, is to be found in the proper development of the military personalities of officers and men."²⁸⁴

A persistent part of our contemporary thought seems to be the incredulity towards the possibility of a major war becoming reality in the future. Samuel Huntington wrote in the aftermath of the Cold War his prediction that wars between great powers are over but clashes between different civilizations would mark the post-Cold War world order.²⁸⁵ Francis Fukuyama went even further claiming that the ending of rivalry between the superpowers would mean that history itself had ended.²⁸⁶ The belief in the impossibility of future great wars is not necessarily backed by empirical observation and some realists continue to argue against the majority that the age of such wars is not over.²⁸⁷

Some of the more belligerent military thinkers have claimed that a perpetual peace would not even be sustainable for mankind.²⁸⁸ To cite Freytag-Loringhoven, "*eternal peace would be an evil fate, for it could be purchased only at the price of man's noblest qualities and highest destinies.*"²⁸⁹ This may be a step too far, but wars have often pushed societies and *not even a beau-tiful one, and war is a law of God's order in the world, by which the noblest virtues of man, courage and self-denial, loyalty and self-sacrifice, even to the point of death, are developed."²⁹⁰ Wars have occurred for all of recorded history and they are despite man's noblest aspirations not likely to ever vanish completely. The old proverb that history always repeats itself is untrue, but has a grain of truth underlying it. Statesmen and commanders have paid only scant intellectual service and insufficient attention to the history of war and records of past conflicts. Therefore, Fuller argued, while history does not repeat itself, "<i>it is the ignorance of history which does so, with the result that identical blunders recur in every age.*"²⁹¹ Ignorance and not belligerence is the biggest threat to peace. Wars are fought for no gain time after time.

Military historians extol the way Polish economist Jean Bloch was able to predict in the first years of the 20th century how a future World War would be fought.

²⁸² Smith (2008), pp. 27-28.

²⁸³ Stempel (2012), p. 169.

²⁸⁴ Freytag-Loringhoven (1991), p. 276.

²⁸⁵ Huntington (1996).

²⁸⁶ Fukuyama (1992).

²⁸⁷ See e.g. Mearsheimer (2014).

²⁸⁸ See e.g. Foertsch (1939), p. 7. On the other hand, even Kant himself as the main propagator of perpetual peace saw war as a natural state of being among men who live together, but argued that in the long run even wars are part of the rule of the "hidden hand" and play their part to bring about eventual harmony in the shape of the perpetual peace. On this see Howard (2008), p. 17.

²⁸⁹ Freytag-Loringhoven (1991), p. 347.

²⁹⁰ Moltke in a letter to Prof Dr. Bluntschli, cited in Gat (2001), p. 327.

²⁹¹ Fuller (1960), p. 306.

There are several very accurate estimations of future warfare such as the claim that war "will become a kind of stalemate, in which neither army being able to get at the other, both armies will be maintained in opposition to each other, threatening each other, but never being able to deliver a final and decisive attack."²⁹² Bloch was able to predict the immobile nature of the war to come, claiming that it would "be a great war of entrenchment. [...] Battles will last for days and at the end it is very doubtful whether any decisive victory can be gained."²⁹³

There are many other perspicacious arguments in Bloch's long book, but ultimately all of them are nullified by the main argument of the book. Bloch made precise economic calculations of the resources of European powers and contrasted them with what he saw to be the prevailing political and military tendencies of the time to argue

"that war has become impossible alike from a military, economic, and political point of view. The very development that has taken place in the mechanism of war has rendered war an impracticable operation. [...] Thus, the great war cannot be made, and any attempt to make it would result in suicide. Such, I believe is the simple demonstrable fact."²⁹⁴

Such an outright denial of a possibility of a large-scale war in the future lessens the importance of the predictive illustrations of how such a war would be since it simply could not become reality. In a way, then, Bloch described what he thought would never occur and by giving future wars such a despairing and destructive character he wished to underline the irrationality of such a war and strengthen his argument that it just could not be. Sherman had a more realistic view of the economics of war since he wrote in a letter that

"the cost of the war is, of course, to be considered, but finances will adjust themselves to the actual state of affairs; and, even if we would, we could not change the cost. Indeed, the larger the cost now, the less will it be in the end; for the end must be attained somehow, regardless of loss of life and treasure, and is merely a question of time."²⁹⁵

Wars will be fought even if all logic dictates that the countries about to participate in them cannot afford to do so. Economic suffering did not lead to wars shortening in duration then any more than they are likely to do so today. Wars are fought for some kind of material gain, unfortunately the gain can be of almost any type, since for example symbols and beliefs are just as material as anything else.²⁹⁶ Furthermore, assuming the economic perspective into the conduct of war logic would dictate that it would be beneficial to sacrifice money and resources heavily in the early stages of the war so that the conflict could not become prolonged and continuously drain the nation. Time was and is money also in the sense that the longer the conflict lasts, the higher the accumulated costs will be in the end.

The more horrifying Bloch made war look the truer seemed his argument that it could not occur. It speaks volumes of the inseparable bond between the human condition and fighting wars that not only one but two World Wars broke out in the three decades following the publication of Bloch's book. Bloch's expertise consisted of taking a truly multilevel approach into understanding warfare and especially the economic, political and social driver that could lead to the emergence of war²⁹⁷. For all his careful calculations and reasonable arguments Bloch was to be proved wrong. He lamented how "*in preparations against that impossible war that these so-called practical men, who are the real Utopians of our time, are*

²⁹² Bloch (1914), p. xvi. (His first name is often written also as "Jan".) In this sense Bloch was one of the very few people perceptive enough to learn the lessons of past wars such as the American Civil War and combined with painstaking economic analysis predict the outlook of future war. See Stempel (2012), p. 124.
²⁹³ Bloch (1914), p. xxvii.

²⁹⁴ Bloch (1914), p. xvi. Indeed, Echevarria (2000), p. 221 has claimed that the main contribution of Bloch which simultaneously shows his visionary nature were the painstaking calculations and analysis of all possible political and especially economic consequences of waging a large-scale war. The stupidity and bellicosity of mankind that led to a war should not be allowed to reduce the importance of his findings.

²⁹⁵ Sherman (1890), p. 370.

²⁹⁶ Dillon - Reid (2009), p. 15. Even if war is profitable or not, it seems to have an unquestionable ability to fascinate men in all times. Creveld (2008), p. 1.

²⁹⁷ Mandeles (2005), pp. 52-53.

wasting the resources of civilisation.^{"298} Bloch was a pacifist and despite his deep analysis ultimately it was he who turned out to be the Utopian optimist.²⁹⁹ A more realistic prediction was given by von der Goltz who argued that

> "though the principles of modern warfare may demand the most rapid decisions, and though, perhaps, those principles may lead to bloody battles at the very beginning of the struggle, it is yet probable that the whole result will take the form of a severe contest, in which the combatting armies, as followed on the map, either move but little from the spot, or, in comparison to the extent of ground involved, make but very insignificant progress."³⁰⁰

The bloodiest battles tended to occur in WW I after the combatting armies had become immobilized in their trenches. This was, however, mostly due to the utter disregard for the lives of soldiers of the commanders on both sides³⁰¹. The importance of swathes of land was grossly overestimated and thousands of lives were wasted fighting over a few meters of useless soil. The stupidity of mankind exceeded the limits of imagination of Bloch, von der Goltz and several others. The predictions denying the possibility of future wars argue that since war is an irrational option and against the long-term interests of the states, it cannot occur, but they err in their assumption that rationality would prevail and short-term conditions would seem overriding.³⁰²

Even if civilization has progressed at an accelerated pace in the latter half of the 20th century and the beginning of this one, we maintain that progress has been experienced in the fields of science and technology and not necessarily in ethics and morals. It is a characteristic nature of societies with a high degree of civilization and sophistication to again imagine war as an utter impossibility because of its very destructiveness. The argument usually runs along the lines of highlighting economic concern and the interlinked structure of global economic web and the emerging problems if a nation would be cut free of its flows. In any case, should for some unfathomable reason armed conflict impact a civilized society, it would necessarily be short in duration and very limited in scope. We need only look back to the George W. Bush presidency and the War on Terror. Its active part lasted for over a decade. Strachan called the global war on terror "astrategic" since it was not bound beforehand in any way by considerations of time and space. Calling it the "long war" robbed it of any meaningful strategic focus in time. What is long and what is short depends upon the eye of the beholder, but to declare a war long before it has even started is not a prudent strategic decision.³⁰³ Perhaps the purpose was to prepare the voters for a long economic strain caused by the seemingly temporally unrestricted war. Economic concerns have not been able to curb war - they have only managed to make war more destructive in new ways to the entire society involved in it with the weakest members having to suffer the most.

Our post-industrial Third Wave societies have many more elements in their toolboxes to be used to wage wars. Economic sanctions of today can constrict and strangle an aggressor worse than ever in the past. Our capabilities to arm the nation are not restricted to action in the physical battlespace through the traditional and conventional means on waging war but have expanded into the information and cyber domain. We would no longer fight the armies, nor even the hearts and minds, but truly all physical, intellectual, and

²⁹⁸ Bloch (1914), p. x.

²⁹⁹ Nevertheless, Bloch should not be discarded, because his errors were caused more by his lack of understanding human nature and not for any lack of visionary qualities. He made better predictions concerning the nature of future war as an amateur than the military men of their times, who lacked the imagination and visions. On this idea see of amateurs and their predictions and further discussion on failures and successes see Echevarria (2007), pp. xiv-xv. Bond (2006), pp. 88-91 argues that even if Bloch made a strong case, his antiwar stance made him overstate it somewhat.

³⁰⁰ von der Goltz (1906), p. 89.

³⁰¹ With his characteristic witty but scathing style Lawrence (1997), p. 210 wrote that the British generals "often gave away in stupidity what they had gained in ignorance."

³⁰² Freedman (2006), p. 6.

³⁰³ Strachan (2013), p. 11.

ethical structures of the enemy. Every means of high technology could and would be used to further the war effort and thus a war between two developed societies would spread to spheres of life and society it is almost impossible to even fathom beforehand. Yet this does not seem to occur very often. Azar Gat has noted that the modernized and economically developed part of the world constitutes a peaceful zone and the new center of gravity in warfare is among those countries that have not yet been able to embrace modernization.³⁰⁴

The history of war shows us that civilizations formed around different developmental paradigms have huge difficulties in waging war on each other. It is by no means automatic that the more advanced society would have an edge on the less developed and sophisticated. When Attila the Hun ravaged Europe or Genghis Khan's horde of horsemen beat everyone on their way, they were from society on an inferior level of development. The Mongols were essentially still a tribe of nomads when they beat agrarian cultures and the Huns just as the Goths who laid much of the Roman Empire to waste were barbaric peoples. Yet there are lessons to be learnt. Genghis Khan's campaigns serve as lessons in maneuver theory. "*With the unique organization of his armies, Khan was able to attain a degree of tactical and operational mobility unparalleled even by today's mechanized armies.*"³⁰⁵ His methods were summarized by a survivor; "*They came, they sapped, they burst, they slew, they plundered and they departed.*"³⁰⁶ While undoubtedly effective, this is not a description of civilized warfare. The army of Genghis Khan reflected the nature of the Mongol society.³⁰⁷ And indeed, since the Mongols left no political, cultural or intellectual footprint, as Keegan wrote, "*they ended as they began, an army on horseback.*"⁶⁰⁸

To cite other examples the warfare of the Arabs in which Lawrence of Arabia participated was not successful because T.E. Lawrence had imbued them with the spirit of the industrial society but just because he hadn't and the tribes fought in their traditional ways. By attacking the industrial base of war, such as railways, the fights they engaged in tactically stretched the Turks on the operational level. Smith called their methods an "antithesis of interstate industrial war."309 The most advanced network society of today, the U.S., was in enormous trouble fighting the tribal Taliban in Afghanistan just as it suffered in the heyday of air-mechanization against an agrarian pheasant army raised by Viet Cong. With these examples I wish to show that just like in all spheres of warfare the idea of "like fights like" is harmful, so it is with societal paradigms of war. It is a part of the asymmetric nature of warfare that less developed societies can confront their opponent best if they adhere to the ways and means that suit them best. These are not only technological tools but also cultural understandings and perceptions that combine to create a culture-specific way of interpreting and applying the principles of the art of war. Thus, a technologically more advanced nation should use its assets fully in warfare and the less advanced nation benefits from using less sophisticated methods that are, nevertheless, characteristic to it.

As Delbruck put it, "when modern peoples come into conflict with the barbarians, the outcome is determined from the start by the differences in weapon technology. In antiquity this relationship was not so simple."³¹⁰ The barbarian has always had an advantage through the warrior spirit prevalent in his community. Even if the Goths were backwards, they managed to ravage Rome. Genghis Khan rode down his more civilized enemies. Modern times and the destructivity of weapons temporarily ensured the victory of civilization but the tide may have turned again today. The destructivity of contemporary weapons and the resulting desire to limit the ravages of war and human suffering have given edge to the less civilized societies again. The Third Wave societies of the West do not tolerate losses in their conflicts and

³⁰⁴ Gat (2011), p. 30.

³⁰⁵ Leonhard (1991), p. 35.

³⁰⁶ Juvaini (1958), p. 107.

³⁰⁷ Smith (2008), p. 24.

³⁰⁸ Keegan (1998), p. 38

³⁰⁹ Smith (2008), pp. 167-168.

³¹⁰ Delbrück (1990), p. 509.

this has led to war being fought with precision and long distance weapons with preferably no boots on the ground. To master warfare a society should be both civilized and bellicose like barbarians of the past. Either-or-approach does not suffice.³¹¹

As Strachan noted, one of the most visible characteristics of warfare in the twenty-first century so far has been the role of high-technology and one of the least visible the decision to withhold the full capability of high-technology weapons³¹². Based on self-imposed restrictions to the destructive potential we can claim that the Western art of war has become more "civilized", but there are other indicators as well. The unwillingness to commit troops and endangering them more than is absolutely necessary has lately created fiascos like Afghanistan in which the smoldering of the war could not be extinguished. Against a society that is from the start committed to accepting large amounts of casualties and degradation in its living conditions one that cannot afford such an outcome is severely disadvantaged. Freytag-Loringhoven in his book dedicated to the power of the command-er's personality as an important factor in the art of war extolled the professionalism gained from experience which enabled Ney

"to say to a wounded soldier who begged for help during the retreat from Russia in 1812, "How can I help you? You are a part of the wreckage of war." In these quietly spoken words there was no cruelty; there was only the expression of an old truth - the soldier in war is doomed to destruction; a truth almost forgotten in our peace-loving age."³¹³

Our contemporary Third Wave societies cannot handle large casualties in war and thus being face-to-face with an enemy employing attrition tactics and strategies we would be extremely vulnerable to pressure from within our own societies to end the war. We are reluctant to let our own soldiers die and for this reason U.S. and other western armed forces have created operational plans and even entire strategies that enable the use of force without suffering casualties of one's own. As Smith put it, "we fight so as not to lose the force, rather than fighting by using the force at any cost to achieve the aim."³¹⁴ This type of warfare has been labeled "virtuous" by James Der Derian³¹⁵ or "Post-Heroid" by Edward Luttwak.³¹⁶ It may not be as heroic as the ancient wars Homer described, but it minimizes one's own casualties and serves as a protection against attrition warfare. In warfare the excessive civilized element has led us from heroic warfare to one of striking from a distance. Mitchell hailed air power as the "ereatest civilizing element in the future"³¹⁷ because it could reach anywhere in the world and beyond exerting power, it could be a force for good. Air power has been efficient in all the wars it has been used, but its civilizing mission has failed. At the core of the virtuous war lies "the technical capability and ethical imperative to threaten and, if necessary, actualize violence from a distance - with no or minimal casualties."³¹⁸ The idea of virtual and virtuous war is to distance war from the dying soldiers and civilians, but even Der Derian admits that, ultimately, "in the final analysis that it seeks to evade, virtuous war is still about killing others."³¹⁹ Leonhard saw this tendency of non-committance as a fallacy of U.S. warfare.

> "American military decision makers as a whole believe that the great of warfare is to blow up the bad guys at extreme distances. Artillery or air-delivered fires can pretty much solve any military challenge to our nation, if we commit enough funding to indirect-fire weapons, their munitions, and the capability to detect the enemy. The argument in favor of long-range

³¹⁷ Mitchell (1999), p. 443.

³¹¹ Heuser (2002), p. 51 argues that according to Clausewitz military brilliance can be found when a people is both civilized and war-like.

³¹² Strachan (2013), p. 167.

³¹³ Freytag-Loringhoven (1991), p. 206.

³¹⁴ Smith (2008), p. 19.

³¹⁵ Der Derian (2001), pp. xiv-xv.

³¹⁶ Kaldor (2007), p. 29, see also Luttwak (1995).

³¹⁸ Der Derian (2001), p. xv. Italics in the original.

³¹⁹ Der Derian (2001), p. xvii. See also Lonsdale (2007), p. 236.

fires is compelling, well respected, universally agreed to, and flat wrong. Belief in the effectiveness of indirect fires is the single most commonly held delusion in American history."³²⁰

Post-Cold War history has shown that the use of air power without committing troops is likely to lead into no conclusive victory. One may save lives by employing drones, but loses time if and when ultimately one needs to commit ground forces to gain victory. Post-heroic societies are not eager to go to war, but momentarily may be fired with enthusiasm by constant mass media excitement³²¹. In operational art heroic and post-heroic warfare are just labels attached on different ways of fighting. Post-heroic generally refers to the fact that damage on the enemy is inflicted from afar with no or little personal risk and generally airto-ground. In the antiquity when the Persian and Greek armies dominated warfare, fighting centered on heroes and their deeds. Shooting from afar was cowardly and unmanly and did not constitute a proper test of manhood since someone like Paris was able to kill the great Achilles³²². As Fuller described it, "war was still in its heroic phase; much of the decisive fighting took the form of duels between heroes. Leadership was personal and not delegated: a general-in-chief led his army into battle and did not direct it from the rear."³²³ Christopher Coker is among the many who have lamented the end of the heroic phase in warfare and subsequent demise of military heroes³²⁴ and for all of his Information Age ideologies Leonhard still views warfare as heroic activity and a great drama. "Warfare will expose man's meanest nature and worst characteristics: greed, ambition, indecision, cowardice, cruelty and hatred. It will also provide a stage upon which man can give expression to his virtues: selflessness, loyalty, courage, restraint, and love."³²⁵ Yet, perhaps, life is better when we don't have Achilles or Hector or any other Homeric heroes among us. Perhaps moving into post-heroic period in combination with the ever-increasing destructive potential of warfare will help curtail war. Unfortunately the same impulses that lead to minimizing casualties through stand-off precision strikes in post-heroic forms of warfare simultaneously place restrictions of operational art and diminish the chances of success.³²⁶

2.5. **CRESTING THE WAVE OF INDUST-REALITY**

"The fundamental limits to the velocity of operations are no longer governed by space or time. Instead, the fundamental limits are governed by the act of deciding, by the firings of neurons, by the speed of thought."327

Martin van Creveld has argued that one of things that kept operational art as a distinct art form separated from tactics and strategy from evolving was the fact that over thousands of years the technologies of transport and communication remained essentially the same. Thus the birth of true operational art was delayed because most forms of information could not move faster than the troops themselves.³²⁸ The commanders could not get information from the battlefield faster than the horse-carried messengers could bring them. This changed fundamentally during indust-reality as both transport and communication technologies advanced in huge bounds and yet again as we started to ride the Third Wave.

Since muscle power no longer set a limit to acceleration of speed in the age of mechanization, more and more could be performed in the same amount of time, and this influenced the effectiveness of military operations. Time always had to be manipulated,

³²⁰ Leonhard (1998), p. 210.

³²¹ Münckler (2007), p. 228.

³²² See Creveld (1991), pp. 80-83 for a more thorough discussion how dislike for long-distance weapons has been part of practically every culture that revered its heroes and continued all the way to the firearms. 323 Fuller (1960), p. 152.

³²⁴ Coker (2004).

³²⁵ Leonhard (1998), p. 216.

³²⁶ See. e.g. Lonsdale (2007), p. 241.

³²⁷ Alberts et. al. (2000), p. 14.

³²⁸ Creveld (2011), pp. 10-12.

but in the indust-reality there was simultaneously less time to do anything. When pace of movement quickened, reaction time was reduced. Nevertheless, I argue that the change was bigger than just merely a reduction of the time at the commander's disposal. The entire meaning of time changed profoundly during the indust-reality and one no longer could satisfy oneself with finding opportune moments for action but needed to accelerate speed to gain the advantages of each and every moment. This placed different demands to the commander-in-chief than one in the agrarian times had to answer to.

The Second Wave or the indust-reality brought along with it more exact quantification of time and its division into smaller and smaller measurable units. Clocks and watches became commonplace objects when the factories spawned by industrial revolution demanded a synchronization of labor.³²⁹ When demands on production increased it was no longer possible to work from dawn till dusk, but work had to be continuous and different shifts emerged to keep the factories producing non-stop. Soon hours and minutes were no longer suitable measures for time and temporality had to be sliced thinner and thinner. Furthermore, as the industrial age accelerated, the idea of timing activities and synchronizing them infiltrated the "non-working" hours also. In the words of Toffler,

"jobs were timed and split into sequences measured in fractions of a second. "Nine-to-five" formed the temporal frame for millions of workers.

Nor was it only working life that was synchronized. In all Second Wave societies, regardless of profit or political considerations, social life, too, became clock-driven and adapted to machine requirements. Certain hours were set aside for leisure. Standard-length vacations, holidays, or coffee breaks were interspersed with the work schedules.³³⁰

In this way the production rates and times of the industry began to dictate how the entire life of the people was timed. The factory or the office set the schedule to follow and all other activities were synchronized to fit its pace.

Thus, as activities were timed and synchronized together one more principle arose in direct relation to these. It was not enough for the industrial civilization to produce stuff at a frenzied pace. The product had to be sold and thus, as Toffler put it, "*the rise of the market gave birth to yet another rule of Second Wave civilization - the principle of concentration.*"³³¹ We start to see the emergence of different rules or principles that guided life in an industrial age society. All of them emerged from the combination of production and consumerism. Toffler listed the half-dozen principles that ruled life in the industrial age. These were standardization, specialization, synchronization, concentration, maximization and centralization.³³² This bears a resemblance to the systematic principles of war that began to emerge into consciousness at the same time. During the First Wave texts on the art of war were general guidelines when to act, tied to particular season or other favorable moment in the continuous flow of time. Time to act was chosen if it seemed auspicious.

During the industrial age the focus shifted from suggestions of specific and intangible timings into principles to follow. Suggestions turned into directives, guidelines into orders and more and more of them told not only exactly how but often also when precisely something is to be done. Above all else synchronization of actions dominated all spheres of life. Toffler argued that the industrial age society consisted of an info-sphere, a socio-sphere and a techno-sphere and that these had to be brought into alignment with one another. Integration, synchronization and coordination characterized life in these societies and brought about the big government as the ultimate coordinator.³³³ It fit everything together on the level of the society. Time-wise the driving force behind the whole process of industrialization and extending it globally was the idea of "synchronization of human behavior with the rhythms of the machine. (...) everywhere the people of industrialism appeared to outsiders to be

³²⁹ Toffler (1990), p. 52.

³³⁰ Toffler (1990), p. 52.

³³¹ Toffler (1990), p. 53.

³³² Toffler (1990), pp. 59-60.

³³³ Toffler (1990), p. 64.

*time-obsessed, always glancing nervously at their watches.*³³⁴ To create the required consciousness of time the way people thought about time had to be altered. Agricultural societies dependent on crop cycles had ways of measuring long spans of time but had little need for the measurement of precise units because labor did not have to be synchronized.³³⁵

The synchronization of men and machines was rudimentary, but revolutionary during early indust-reality. The aim on synchronization was merely to get the machine and its user to operate so that they would be temporally compatible. Basically that meant that the human user was replaced with another when he was tired and the machine did not stop its work. People had to schedule their lives to fit with the demands of production. This had an influence on the synchronization of the entire society. The same was evident in the military theories of the time. The enthusiasm was not related only to the machines available, like the tank to Fuller, but a general tendency of the modernism and technological society that in many countries came to bloom in some form of fascism.³³⁶ As Toffler described the prevailing mood,

> "today, machine synchronization has reached such exquisitely high levels, and the pace of even the fastest human workers is so ridiculously slow by comparison, that full advantage of the technology can be derived not by coupling workers to the machine but only by decoupling them from it?"³³⁷

The machines, whether civilian or military, be they tools of productions, weapons of war or products of information technology are too fast to be still synchronized to human physical or psychological activity. Either the machine has to work slower, decreasing the quantity of production or the human must work faster than his powers of intellect allow, decreasing exponentially the quality of the product. This "desynchronization" is a complex process in which priorities have to be set for the outcome and the military is about to get a rude awakening. An example of possible discord is the meaning of punctuality in our lives. We, as soldiers and civilians of the indust-reality, have been taught to be always and everywhere on time. Only this enabled the industrial society to function.

We are moving toward "*selective of situation punctuality*."³³⁸ Our jobs are increasingly carried out in flexi-time. We are present at the workplace only when it is necessary. We may have to decide when punctuality is required and when flexibility is on demand. We must fundamentally alter our perceptions concerning time and since the two are tightly interconnected, of space as well.³³⁹ Do we have to be 'there' and 'then' wherever and when 'it' is? If we do, how we adjust to the acceleration and speed, a combination of time and space? There are many different solutions, some more applicable than others, some clearly dysfunctional. These range from created more automation thus allowing machines to make decisions for machines of reducing the overall pace of activity and acknowledging that the maximal level on output is not even desirable. Unless the pros and cons of each solution are evaluated in advance, confusion is bound to reign for a considerable time period.

Time and space developed hand in hand not only with war but also with the civilization itself. The latter made the development of the former possible. The indust-reality taught us to compress time and attempt to get more done during a determined and standardized time period. The effect on space was not that clear-cut. Toffler claimed that indust-reality was a "*spatially extended culture*."³⁴⁰ With this he meant that goods, ideas and people were transported from far away, if necessary. This required creating connections and coordination between the flows. What was supposed to flow where and when was the

³³⁴ Toffler (1990), p. 103.

³³⁵ Ibid.

³³⁶ See Gat (2001), p. 524-530. Just as another example of an ardent fascist among the leading military thinkers of that time alongside with Fuller we can use his description of Douhet. pp. 532, 571.

³³⁷ Toffler (1990), p. 253.

³³⁸ Ibid.

³³⁹ Toffler (1990), p. 298.

³⁴⁰ Toffler (1990), p. 106.

dilemma. Toffler describes this as "food, energy, people, and raw materials had to flow into the urban nodes, while manufactured goods, fashions, ideas and financial decisions flowed out. The two flows were carefully integrated and coordinated in time and space."³⁴¹ What this meant was that specialized spaces had to be coordinated to get both the goods and the people to the right places at the right moment. This coordination of spaces and places was the "exact spatial analogue of temporal synchronization. It was, in effect, synchronization in space. For both time and space had to be more carefully structured if industrial societies were to function."³⁴² This is basically the same perspective as the military dilemma on getting maximum force concentrated in the desired place at the right time. Synchronization of all activity occurs in both time and space.

During indust-reality there was a huge jump in productivity. According to Toffler, the Third Wave is an information age because of our need to know more and expand our knowledge as fast as possible. There is "an enormous jump on the amount of information we all exchange with one another. And it is this increase that explains why we are becoming an 'information society."³⁴³ As we have seen, the demands of productivity and the market caused the indust-reality to accelerate its pace. More and more had to be produced in the same time in the name of creating progress. New inventions emerge continuously and enrich our scientific knowledge and knowledge accumulates at a faster and faster rate. If indust-reality sought to produce more, our information society seeks to know more and more. Changes in the rate of production and science develop the society and adhering to the principle of progress the pace of change in society increases. This allowed Toffler to argue that

"As change accelerates in society it forces a parallel acceleration within us. New information reaches us and we are forced to revise our image-file continuously at a faster and faster rate. Older images based on past reality must be replaced, for, unless we update them, our actions become divorced from reality and we become progressively less competent. We find it impossible to cope:"³⁴⁴

Most of the Western societies have either entered the information age and are about to leave the industrial age behind - but we are not out of it yet. Because of the time lag between society and its military, the armed forces are between waves. It is crucial to understand the characteristics of the Second Wave that has carried us this far. This gives us a perspective of the present. The theories of cyberwar, information war and robotic war are currently attempts at this tumultuous period to attempt to understand what is to come. They are attempts to make decisions today to alter the future. The future of war is not frozen but fluid. We need to understand the agrarian age to understand what changed when Toffler's Second Wave came along in order identify the characteristics of the indust-reality and its art of war. As to decoding the Third Wave, we in the military need to look around at the society we are a part of to decipher our future outlook and to understand what our contemporary context demands of us. While our societies are continuously shaping what they wish to be in the future, our armed forces can see their future in the development patterns of their societies. We need to theorize about future warfare to perceive and anticipate what it might expect from us and our operational art. But once the Third Wave will sweep us we are forced to go along. Then it becomes a struggle to remain on the crest of the wave, to be carried as far ashore as possible rather than be tossed around in the waters below the surface.

As soon as we fully embrace in our practices and procedures that we have moved beyond indust-reality we can start to prepare ourselves for the requirements of the Information Age. Even if many have intellectually understood the constant acceleration in our lives, that knowledge has not been truly internalized³⁴⁵. We are entering a more advanced stage but this does not mean that we would necessarily be able to accomplish this

³⁴¹ Ibid.

³⁴² Toffler (1990), p. 107.

³⁴³ Toffler (1990), p. 167.

³⁴⁴ Toffler (1990), p. 158.

³⁴⁵ Toffler (1990b), p. 20.

feat in a civilized manner. As it has been claimed earlier, we live in the period between the waves and this has considerable destabilizing potential. This is a revolutionary time and some revolutions are bathed in blood. The French Revolution, with its aspirations and ideals, was violent and its fervor was exploited to the full in Napoleonic warfare.³⁴⁶ Similarly

"the transition from First Wave to Second Wave civilization was one long blood-drenched drama of wars, revolts, famines, forced migrations, coups d'etat, and calamities. Today the stakes are much higher, the time shorter, the acceleration faster, the dangers even greater."³⁴⁷

The transformation in our societies and the activities of the societies, of which warfare is only one example, is more time-sensitive that the shift from First to Second Wave. This time we are pressurized to do it faster, since everything has accelerated. We must strive, as a society, to remain the master of the pace and not its mindless servant. Furthermore, the next wave might be about to arrive sooner than we can suspect. What its distinguishing feature might be, we cannot know but only guess. Maybe it is artificial intelligence, maybe something else. The First Wave of agriculture lasted for thousands of years, the Second one of industrialism only a few centuries³⁴⁸. How long can we surf on the Third Wave if we are unable to crest it? We need to pay attention to today to understand what the future may look like. As Douhet wrote,

"There is a simple method of foretelling the future, simply asking of the present what it is preparing for the future, asking of the cause what its effect will be. Tomorrow is only the outgrowth of today; and the man who foretells it is like the farmer who knows what he will reap from what he sows, or the astronomer who can tell the precise instant at which the conjunction of Venus and Mars will occur."³⁴⁹

This brings us to an interesting question we need to confront in making sense of both today and tomorrow. If the birth of different principles to dictate the 'right' way and pace of living and resulting mechanisms and systems of integration, synchronization, concentration and coordination were products and ideals of the industrial society, they applied to all societal activities and not only producing and consuming. They started to not only influence but to dominate the art of war as well. If, again, war is a product of the society that wages it and reflects the characteristics of the said society, some freedom of the agrarian age vanished as mechanistic approaches seeped into the art of war. If, as Toffler argued, the Third Wave of the information society started to become the dominant paradigm in the developed Western world already in the fifties, should its effects not be felt in our art of war by now? Nevertheless, we still talk of coordination, concentration –only now of 'fires'– and especially synchronization in our doctrines of information age warfare. Does this in effect show us that in terms of time and its meaning in the art of war we still have not truly entered the information era, since we hold the old principles to be true and still not only applicable but relevant to our art of war today?

To summarize, we might say that the main theme of the art of war in the 20th century was industrialization and its numerous offspring like mass-production, motorized-mobility, enhanced destructivity and mechanization. It was a time of machines dominating warfare. The Third Wave is different.

"If twenty-first-century warfare has any theme, it is information. We have vaguely understood that we have nearly reached the physical limits of the technology of violence. We have perfected destruction. In fact, in nuclear weapons, our destructive capability exceeded the needs of warfare, and we had to unbuild it to a degree. As we emerge into the twenty-first century, we can literally kill damn near everything."³⁵⁰

This chapter has been a further introductory note into how we should be able to view the

³⁴⁶ Bond (1998), pp. 2-3.

³⁴⁷ Toffler (1990), p. 440.

³⁴⁸ Toffler (1990b), p. 15.

³⁴⁹ Douhet (1999), p. 383.

³⁵⁰ Leonhard (1998), p. 219.

development of the art of war in the course of time. In the long run throughout the ages the evolution has always been present but the curve of progress is not linear. The evolution occasionally accelerates and then may decelerate and even reach a standstill. The main argument thus is that development has been cyclical with old ideas making a re-emergence in slightly altered form to better correspond to the level of civilization and social and cultural characteristics of the time. Development has followed the pattern of waves in which a new and powerful civilizational factor picks societies and their armed forces along with them like driftwood. These waves seem to occur at quicker intervals as development cycles keep accelerating but yet between every wave there is a period of confusion when the receding wave negates the momentum of the next one until the one following it sweep everything along with it again. We are now living in one of those times between the waves in which the Third Wave of Toffler has crested in the most technologically advanced societies and only picking up momentum in the less developed ones. We must do our utmost to be able to surf the next wave and closely follow societal development and its future trends.³⁵¹ This conundrum of what to be in the present and what to strive for in the future in the case of the U.S. armed forces was elegantly posed by Echevarria,

"However, the result for the military itself is that its identity is divided along at least three pathways: it is in part still that of a legacy of industrial-age force; in part a small, fast-moving, information-centred force; and in part a tool for countering insurgencies. It is not clear yet which of these identities will emerge as dominant, if any will, or whether one might see a hybrid of the three, or something entirely different."³⁵²

There is more than an echo of the Second Wave and Indust-reality present simultaneously with the Third Wave information age armed forces. Yet fighting insurgencies may often require almost agrarian train of though. All of these Waves are valid, yet none of them is clearly dominant enough to provide direction at the present. If the waves and cycles seem to blend together and influence each other, this is part of development.

³⁵¹ On the idea of changing trends in warfare and operational art see Rekkedal (2013) who focuses on the development of thought and trends up to our times.
³⁵² Echevarria (2011b), p. 438.

chevarria (2011b), p. 438.

TIMING IN THE ARTS OF POLITICS AND WAR

"The first way to lose your state is to neglect the art of war; the first way to win a state is to be skilled in the art of war."

3.1. TEMPORAL LIMITS TO OPERATIONAL ART SET BY POLITICS AND STRATEGY

"War at all times, whether civil war between sections of a common country or between nations, ought to be avoided, if possible with honor."⁵⁵⁴

The often repeated cry of armies preparing for the last war may not be accurate, but Smith concedes that they often prepare for the wrong one, since the government funds preparation against the primary enemy only.355 Strategy struggles to cope with the political demands and balancing them with the allocated resources. One way to approach the troubled marriage of politics and strategy is to view the affairs of the state through the prism of grand strategy. Fuller used Alexander as an example how strategy was consistently subordinated to policy and called this the essence of grand strategy.³⁵⁶ We can argue that it is a conclusive level of strategy as a whole, or, following Mearsheimer, "the relationship between military means and international commitments."357 But the concept is hard to define since it is so intangible and only a few states have a properly thought-out grand strategy of their own.³⁵⁸ According to Liddell Hart's definition the role of grand strategy is "to co-ordinate and direct all the resources of a nation towards the attainment of the political object of the war - the goal defined by national policy."³⁵⁹ This is a relatively simplistic approach, since it focuses on action toward attaining political goals and furthermore, focuses on the war effort of the nation³⁶⁰. Liddell Hart emphasizes the context of war and that is, indeed, the pinnacle of grand strategic activity, but practically all grand strategical action is carried out in peacetime. Thus, while grand strategy can be seen as the doctrine declared by a state, this is perhaps too narrow, since more often than not all things that are in the interests of a state are not spelled out, especially if the purpose is to enhance one's own power by exerting power on other states. Grand strategy can be treated as "the totality of what happens between states and other participant in international politics."361

As Bucholz noted, armies do not exist to manage the ordinary day-to-day problems of the everyday world. They exist to deal with future contingencies.³⁶² Bernard Brodie argued succinctly the relationship between the military and politics by explaining

³⁶² Bucholz (2001), p. 5.

³⁵³ Machiavelli (2003), p. 47.

³⁵⁴ Grant (2004), p. 241.

³⁵⁵ Smith (2008), p. x.

³⁵⁶ Fuller (1960), p. 83.

³⁵⁷ Mearsheimer (2010), p. 17. On recent articulations of grand strategy see e.g. Murray (2010) or Miller (2012).

³⁵⁸ Luttwak (1987), p. 178.

³⁵⁹ Liddell Hart (1932), p. 83.

³⁶⁰ Grand strategy is something that would undoubtedly be most effective if a "dictator" was appointed to take care of it and provide it with a unified direction, but in practice grand strategic direction must be given by constitutional means and a manner that conforms with the principles of democracy. On this see Martel (1945), pp. 41-44 who discussed possible options for post-world war Britain.

³⁶¹ Luttwak (1987), p. 178.

that far from attempting to escape the control of the government, the professional soldier rather expects to gain instructions. In his view,

"the professional military officer is dedicated to a career that requires him to brood on the problems of war, in which activity he finds himself with very little civilian company. He does not have to be persuaded of his need for seasoned political guidance; the problem is rather one of making such guidance available to him on appropriate occasions and at appropriate levels."³⁶³

One of the main problems of employing the military in a timely and optimal manner is the lack of understanding of its restrictions and potential alike. It was recognized after WWII that a major war between only two great nations as belligerents was a thing of the past and that many other nations would be drawn in almost immediately. Thus the "higher direction of *war*" becomes a problem of coordinating the efforts of allied nations.³⁶⁴ In addition to international coordination, the national system is not without challenges either. For the politico-strategical cooperation to work, the politicians require a thorough understanding of their military tool. Von der Goltz has argued how "ne may unbesitatingly lay down the maxim that without a sound policy success in war is improbable."⁵⁶⁵ The reason for this is that policy directs and guides warfare and if the commander-in-chief is required to have a clear intention what the outcome of his campaign should be, he requires a clear statement what is the political intention. This has often been omitted from relatively recent wars. One of the main reasons the U.S. lost the war in Vietnam even if it won every battle is the lack of clear and immutable political will and statement of objective. Since the requirements of what the armed forces were to accomplish were constantly changing the military apparatus was not able to create a desired end-state as an objective that would have tied battles into a campaign to fulfill the strategic objective.

However, as von der Goltz noted, victory without sound policy is merely improbable and not impossible. When power-ratios of warring factions are imbalanced enough, even with a floundering political objective and resulting lack of ability to plan strategically the war may yet turn out to be victorious, but at the same time it is likely to become a drawn-out affair and last much longer consuming more resources that would have sufficed.

Therefore, old maxims still provide worth guidance to the commanders-inchief and even politicians of today. Leo VI used *De Re Militari* by Vegetius as one his primary sources and advises to "*make a law for yourself to look first to the end of the course of the war and only then to begin it. It is despicable and mistaken to make a movement in war and then to have the army turn back again*."³⁶⁶ If the end-state of the war has not been determined beforehand, the execution of operations becomes erratic and illogical and likely to demoralize one's own troops and erode the popular support for the war effort. Unless the objective is predetermined, the operations conducted to fulfill strategic objectives are unable to proceed linearly. It is just as potentially harmful to start the war too early as to start it too late. The timing has to be right and one should be neither too impetuous nor patient to start.³⁶⁷

What, then, should be the ultimate political goal of war? It is easy to determine that the goal of military strategy and operational art is to subjugate the enemy and either destroy his armed forces or make him surrender. Nevertheless, grand strategy and policy have to aim higher. In the words of Leonhard, "*it is necessary to distinguish between national (or grand) strategy and military strategy. The former deal with the whole of foreign policy in both*

³⁶³ Brodie (1959), p. 9. Smith (2008), p. 316 wrote that based on his experience in UNPROFOR, "when I operated in a political vacuum, I have no doubt that any form of political involvement is better than none."

³⁶⁴ See for example Martel (1945), p. 39.

³⁶⁵ von der Goltz (1906), p. 77.
³⁶⁶ Leo VI (2010,) p. 597.

³⁶⁷ Stoker (2010), pp. 32-33 used the Confederate States of America as an example of a war that was started too early since they were not prepared well enough either militarily or economically.
peace and war and integrates military factors with political, economic, and diplomatic efforts."³⁶⁸ A military strategist has to ask the question posed by Marshal Foch; *De quoi s'agit il?* What is it all about? There can be no other worthwhile goal of war than peace. War is not fought just to win it. It has to aim at a peace that follows it.³⁶⁹ While the idea to fight a war to attain peace sounds like an oxymoron, many great thinkers agree on the idea. To illustrate the logic it suffices to quote at length St. Augustine, who wrote that

> "the warrior would but conquer: war's aim is nothing but glorious peace: what is victory but a suppression of resistants, which being done, peace follows? So that peace is war's purpose, the scope of all military discipline, and the limit at which all just contentions level. All men seek peace by war, but none seek war by peace. For they that perturb the peace they live in, do it not for the hate of it, but to shew their power in alteration of it. They would not disannul it, but they would have it as they like; and though they break into seditions from the rest, yet must they hold a peaceful force with their fellows that are engaged with them, or else they shall never effect what they intended:"³⁷⁰

Peace is the ultimate desire of every warmonger, but it is the peace of their choosing and one they have been able to design or dictate. Thus, if one is to postpone the beginning of the next war by somebody else's aggression, the peace should be created in a manner all warring factions are able to accept. Thus a stable and lasting peace can only result from a war that has ended reasonably to the loser as well as the winner. The failure to comprehend the need to fight a war so that peace afterwards is qualitatively better than the one before the war led to WWII very soon after the Great War. The emasculation of Germany and its total humiliation were seen as just punishment for the aggressor, but ultimately had disastrous consequences. The Treaty of Versailles did not secure peace but laid foundations for a new war by sowing "*the dragon's teeth.*"³⁷¹ The failure of the treaty was that it reduced

"a nation to a state of idiocy or of anarchy only means that it will be deprived of the power of fulfilling its contract – the terms laid down in the peace treaty. And if these terms are not fulfilled, then, from the point of view of policy, the war will, to a great extent, have been fought in vain; for policy should aim at attaining a more perfect peace than the one unhinged by the outbreak of hostilities. Conversely, the contract must be reasonable; for to compel a beaten foe to agree to terms which cannot be fulfilled is to sow the seeds of a war which one day will be declared in order to cancel the contract. Thus the national object is a better peace, and the means of attaining it is the conquest of the will of the hostile nation."³⁷²

A new war can be the result of an intolerable state of peace and war should thus be conducted in such a manner that the resulting peace can be a lasting one. To ensure this, the minimum of damage that suffices him to succumb has to be inflicted on the enemy. If peacetime is unfair, war has to be fought fairly to create a more perfect peace. From Sherman's memoirs we can read a completely contrary view to this. For him the American Civil War was practically a result of a criminal rebellion and thus he was an advocate of a violent and relentless war fought until the bitter end. As he put it, the war needed to continue

> "till all traces of the war are effaced; till those who appealed to it are sick and tired of it, and come to the emblem of our nation, and sue for peace. I would not coax them, or even meet them half-way, but make them so sick of war that generations would pass away before they would again appeal to it."³⁷³

³⁶⁸ Leonhard (1991), pp. 6-7. See also, for example Brodie (1973), p. 6.

³⁶⁹ Slessor (1954), p. 8.

³⁷⁰ St. Augustine (1909), The City of God, Book XIX, Chapter 12, p. 225.

³⁷¹ Fuller (1948), p. 20. Fuller named his book 'Dragon's Teeth' with the intention that it should bite someone and admitted the possibility that it would be him. Trythall (1977), p. 171.

³⁷² Fuller (1926), p. 71. Foch had stated the required terms from Germany in WW I that "*Why does one make* war? It is to enforce one's policy. What is our policy? To clear the Germans of France and Belgium, to make it impossible to them to continue the war, and finally to dictate peace." Foch, cited in Greenhalgh (2011), p. 479. The problem was precisely that the peace was dictated and not negotiated in the least.

³⁷³ Sherman (1890), p. 368. In a letter.

Unfortunately his vision became the reality and the war was extremely harsh to both belligerents and destructive for the South. But this was not to remain an isolated example. The prevailing tendency for the 19th century and the first half of the 20th was to fight wars to their bitterest ends.³⁷⁴ This led Fuller to complain that the prevailing idea in the war was "to destroy each other, and so blinded were they by the means that they could not see that in the very act they were destroying themselves, not only during the war but in the peace which must someday follow the war."³⁷⁵ It is the nature of war to be destructive and chaotic, yet policy has to be able to place restraints upon the use of force during a time of war. The goals of war are those of policy and warfare cannot be allowed to escalate to a level when political goals become unreachable due to the amount of destruction waged on both sides.

> "A mad war can only lead to a mad peace, and to fight a war is such a way that an unprofitable peace is a certainty is clearly idiotic. It is this idiocy which, throughout history, has made the military mind so dangerous an instrument of government, for the warrior takes to destruction like a duck takes to water – chaos is his element."³³⁷⁶

It is not enough to plan one's operations since if they succeed the resulting peace has to be pre-planned as well. If a nation state does not know under what conditions it will enter a war and what conditions need to exist in order for peace to return, the war is unlikely to result in a more than a short-term peace interval. As Brodie wrote, "*WW I was the purposeless war, which no one seemed to know how to prevent and which, once begun, no one seemed to know how to stop.*"³⁷⁷ Germany was devastated by the peace terms dictated to it perhaps even worse than the war itself.³⁷⁸ In less than two decades the world was aflame again. Yet, when WW II was reaching its inevitable conclusion, the demands of the future winners were just as draconian as earlier and the prospect of severely punishing peace helped the war to drag on longer than it could have if the Allies had not demanded unconditional surrender.³⁷⁹ Many of the reasons why some peace agreements are 'idiotic' result from political reasons, but the commander-in-chief or the operational artists are not innocent in creating these idiocies.

It is the task of the soldier to destroy and the task of the politician to rein him in. According to Napoleon, "*the government must have entire confidence in its general; allow him great latitude and only provide him with the aim he should attain.*"³⁸⁰ The task of the operational artist is to as quickly and completely as possible to defeat his enemy and indirectly make the enemy willing to agree to terminate the war. The commander-in-chief should have only one objective: destruction of the enemy. The head of state or the political decision-makers are responsible for setting, re-evaluating, and reforming the political objectives of war continuously and their responsibility is to determine whether the conditions are suitable to start negotiating the peace treaty. Until this decision has been made, the commander-in-chief and operational artists will continue carrying out their own tasks to the best of their abilities.³⁸¹ If the soldier strives for utter chaos and destruction he is only doing his duty as best he can. Yet it is not always the armed forces that yearn to destroy. The problem lies in the heart of the democratic system – the people. Whether nations enter war to seek a change for the better or is forced to fight, hopes of a better peace

³⁷⁴ Yet from this it does by no means directly follow that they would have been "total wars". In the American Civil War there were isolated campaigns that bore the characteristic features of total war but on the whole a war should not be branded total only because it is "big" and creates a lot of casualties. Stoker (2010), p. 6.

³⁷⁵ Fuller (1923), p. 29. The same mistake was repeated in World War II. See Fuller (1948), p. 27.

³⁷⁶ Fuller (1946), p. 208.

³⁷⁷ Brodie (1959), p. 55.

³⁷⁸ This type of devastating peace treaty seemed to be just a part of thinking at the time especially in the context in which Germany and France had always been rivals. Moltke had been just as adamant in 1870-1 that the French must be totally crushed. He had spoken of the necessity to *"throw France completely to the ground"* so that "*we can dictate the kind of peace we want.*" Moltke, cited in Gat (2001), p. 340.

³⁷⁹ See e.g. Fuller (1948), p. 275, Goodspeed (1966), p. 269 or Kesselring (1989).

³⁸⁰ Fuller (1961), p. 45.

³⁸¹ Seeckt (1930), p. 46.

"are rarely fulfilled is due to the ignorance and uncontrolled passion, and these fatal conditions are apt to be more marked on the side that is forced into the war in self-defence. It is the peaceful nations, above all, who need to learn that moderation in war is the best guarantee of subsequent peace."³⁸²

Once aroused from its peaceful slumber a democratic nation is a formidable enemy and the passions of its people fuel the war to be destructive and more often than not, even punitive³⁸³. As Svechin wrote, "*mistaken policies will also bear the same pitiful fruit in war as they do in any other field.*"³⁸⁴ Policy can be supportive of or in juxtaposition to the military objectives but there is no denying the need of the strategist to follow the dictates of policy in his conduct of the war since "*political goals are not some kind of abstract digression for the strategist; they defined the main directions of the war*."³⁸⁵ The politician should keep a cool head, remain above the situation and keep his task in mind. Here was the fallacy of politicians in both World Wars. They took upon themselves to determine that the enemy should indeed be devastated and not if political objectives of the war had been reached. A democratic system with a conscript or reservist army, having been committed to the war effort makes ending the war more difficult. As Fuller put it,

> "armies of the Revolution had one crucial defect which, politically, annulled one and all of them. This was the difficulty for a conscripted nation – that is, a nation in arms – a nation fed on violent propaganda, to make an enduring peace. The peace treaties wrung from the vanquished were generally so unreasonable that they were no more than precarious armistices; the losers only signed them through duress, and with the full intention of repudiating them at the first opportunity."³⁸⁶

This was painfully evident after WW I and it is a huge political success that just as punitive peace measures adopted after WW II did not result in yet another war. When the passions of the entire nation are aflame, a peace as a compromise is hard to reach. A total and unconditional surrender and widespread destruction from having to fight unto the very end was often the result when a democratic nation waged a war with its entire potential. There is no proof whatsoever to the common claim how democracies would be more adverse to war. Rather, based on the weight of history, as Fuller wrote, "*the motive force of democracy is not love of others, it is the hate of all outside the tribe, faction, party or nation. The 'general will' predicates total war, and hate is the most puissant of recruiters.*"³⁸⁷ When a democracy starts on the warpath, warfare traditionally has been of highly destructive nature because of the passions and the extent of the involvement of citizens.

Yet in today's context, there have been claims that liberal democracies have a certain structural attitude to war and their conduct in it that rises from general parameters within which the liberal society works and thinks and this creates a "*liberal democratic way*" of conflict.³⁸⁸ However, these societies have been spared from devastating war for decades and even liberal passions might flame up should that occur.³⁸⁹ In the words of Schelling, "*Pure violence, like fire, can be harnessed to a purpose; that does not mean that behind every holocaust is a shrewd intention successfully fulfilled*."³⁹⁰ Alexander the Great had a pre-set political objective even if he gave Persia as his primary enemy no chance

"of suing for peace, which after his crushing defeat at Issus Darius vainly attempted to do, nor of a negotiated treaty, because Alexander's aim was conquest, and at the minimum

³⁸² Liddell Hart (1946), p. 76.

³⁸³ As Howard (2008), p. 36-37 noted, the people, "for whatever reason, can be very bellicose indeed."

³⁸⁴ Svechin (1992), p. 85. Paret (2009), p. 3 echoes this idea in his claim that *'the employment of violence can be rational. And yet violence and its effects are always emotional and subject to the irrational – even when the violent act is justified, as it may be in self-defence.*"

³⁸⁵ Svechin (1992), p. 100.

³⁸⁶ Fuller (1961), pp. 36-37.

³⁸⁷ Fuller (1961), p.41.

³⁸⁸ Gat (2011), pp. 36-37. See also Howard (2008) for a thorough discussion on liberal thinking and war.

³⁸⁹ See also Dillon-Reed (2009), pp. 1-11.

³⁹⁰ Schelling (2008), p. 9.

expenditure of force and the minimum dislocation and damage of the Persian empire: his policy limited and moderated his strategy."³⁹¹

This does not seem like a description of a moderate strategy to us today, but it must be viewed through the perspective of dethroning an existing empire and supplanting a new one it its place. The important idea in Alexander's grand strategy was to reach this end state as quickly as possible, with as little force and energy spent and the Persians' lives inflicted to the least manner possible. Alexander was a master strategist and managed to construct *"a campaign in which he combined successful tactical operations with far-reaching stability operations in a continuous cycle."*³⁹² The greatness of Alexander was not that he had full freedom of executing his plans but that he managed to wield such power so moderately.

It is in the level of politics where wars are not only kept in check but won or lost. Through their operational art commanders-in-chief are able to influence the political decision to discontinue war. Even if we ridicule Foch's idea that one has lost only when one admits it is so, psychologically a nation has effectively lost its war at the moment it feels it has lost³⁹³. Von der Goltz echoed this idea when he wrote "*the victory is won, as soon as the conviction has been brought home to the adversary that he has lost the day.*"³⁹⁴ He essentially wrote about the fighting troops, but this applies better to the state. When the will to fight evaporates among the citizens, they influence politicians and once they take an unfavorable stance, there is nothing the military can do. Beaufre wrote that

"the struggle in the "local zone of action" is in fact of only passing importance; the real contest takes place on the psychological action level and in particular on that of the political leaders' decisions. These are the factors which govern the action and in the light of which the action must be conducted. In other words considerations relating to internal politics, whether of our own side, the enemy's or the world at large, are of capital importance; in the final analysis they are the determining factor in the participants' freedom of action."³⁹⁵

Both sides and their political masters can be influenced through activities in the battlefield and in execution of operational art. If the war looks like a disaster, the government may decide to start negotiating for peace. When the war proceeds favorably, it is unlikely that the government will involve itself in it. The Third Wave has added a new element since "*the people of the audience have come to influence the decisions of the political leaders who send in force as much as – and in some cases more than – the events on the ground. (...) This is not so much the global village as the global theatre of war, with audience participation.*"³⁹⁶ Moral feelings of the nation, therefore, may dictate the freedom of action of the military. In strategy and policy during the World Wars the contact between the soldiers and their political masters did not occur even on hourly basis. As Odom noted, ever since the Cold War the White House and the Pentagon get involved minute by minute.³⁹⁷

Time is more important in warfare of today than ever before because change and evolution have accelerated and events still keep speeding up. In the level of operational art this means that commander has to make decisions at drastically elevated pace but on the political-strategical level the change is even more fundamental. As the Tofflers write,

> "hot-spots can materialize and wars erupt into the global system almost overnight. Dramatic events demand response before governments have had time to digest their significance.

³⁹¹ Fuller (1960), p. 284.

³⁹² Leonhard (1998), p. 160.

³⁹³ It would be tempting to claim that this might stem from the fact that even if he commanded a corps, an army and an army group in WW I, before the war he had never commanded troops in battle. See Greenhalgh (2011), pp. 1, 88-89. This would be a too easy and intellectually reckless. Foch had his theories but was unable to put them to practice on tactical level when he would have been involved in the heat of battle.

³⁹⁴ von der Goltz (1906), p. 176.

³⁹⁵ Beaufre (1967), p. 121.

³⁹⁶ Smith (2008), p. 291.

³⁹⁷ Odom (1993), p. 48.

Politicians are compelled to make more and more decisions about things they know less and less about at a faster and faster rate.³⁹⁸

Politics must unfailingly coordinate the planning of the war effort very thoroughly up to the moment when planning phase is replaced by execution. From that point onwards events accelerate and political control gradually recedes into the background and when the peak of activity is reached in the war, events follow each other so rapidly that there can be no detailed political control. Strachan has described this by arguing that "*the dynamic and reciprocal nature of war shapes strategy more than strategy shapes war*."⁶⁹⁹ As our civilizations have developed towards the Third Wave the accelerating speed of life has begun to shape the ways and means politics has to control the military. In war and in all other interaction between the states the cycle of events spins too rapidly to be manageable. When we look at recent international crises, the speed at which governments need to react to stimuli and the actions of other states is too rapid for the decisions to be informed. When we descend from the political level to strategic and operational level, the same problem is evident.

> "In the view of the swift march of modern military operations, politics will retire more and more into the background after the first roar of the cannon. In the wars of the previous century the Powers, even after open hostilities had already commenced, almost invariably kept part of their armed forces in hand for other possible complications, and politics decided whether the stake should be increased or not. Now all is staked on the first throw, and the lot of war falls as destiny wills:"⁴⁰⁰

Furthermore, once the responses of the state in the political sphere have been set in motion, it is very difficult to curtail them. If the pressure for rapid decisions is intense enough, they get made without being analysis to support them. Once the die is cast, much of the responsibility is transferred to the operational artists because of demands related to time. The normal decision-making cycle of the government is far too slow to be in charge of warfare. Already Ludendorff complained in retrospect about the conduct of WW I since the German high command had to seek decisions from the civilian government⁴⁰¹. The conduct of war demanded from the operational commanders at all times quick decisions that would impact the direction of war. Often answers to pressing questions took several weeks to arrive from Berlin. He claimed that "*a fire burned in our souls*" since only rapid actions could prevent extensive damage.⁴⁰² The parliamentary system is too slow to react and too cumbersome to produce results at the pace managing the war effectively would require. The most efficient method of leadership in war is still to leave strategy and policy to the parliamentary system of government and allow the commander-in-chief to conduct his operations as his military experience dictates. Sikorski continued to demand that

> "whatever the regime of a country, the freedom of action of the High Command must be absolute with regard to the conduct of operations. Should the High Command lose the confidence of the government, it might be dismissed, but this should be done without interfering with the conduct of operations."⁴⁰³

The government has the power to dismiss the commander-in-chief from his duties, but this should not affect the ongoing operations. The change in command should not create even a momentary situation when operations pause or no one is in charge of them. The ability to

fall of Ludendorff and his relations with the early Nazis, see Goodspeed (1966), pp. 298-310.

⁴⁰³ Sikorski (1943), p. 70.

³⁹⁸ Toffler (1995), p. 247, Toffler (1990), pp. 410-411.

³⁹⁹ Strachan (2011b), p. 507.

⁴⁰⁰ von der Goltz (1906), p. 76.

⁴⁰¹ This is a highly biased opinion reflecting Ludendorff's personal agenda, since he had relatively free hands in conducting the war. Corum (1992) has even called him "Germany's de facto wartime dictator."

⁴⁰² Ludendorff (1919), p. 5. It must be stated that the memoirs of Ludendorff I use as my source reflects his thoughts on the World War and while they are naturally somewhat self-serving and whitewashing, they are a far cry from his later very obscure pamphlets when he had become a supporter of the Nazi regime and even quarreled with them for their too tender treatment of Catholics and Jews. During this period he published another book, "*Der Totale Krieg*" which I have chosen to exclude from my sources. On the intellectual down-

call an end to military operations at any given time when political objectives have been reached is the most important way to keep the military in tight leash, but micromanaging should be avoided during active phases in operations. This effectively means that prior to war the political system should be able to dictate very clearly the objectives military action should reach and then allow the operational artists leeway in the spirit of *Auftragstaktik*. Naturally conditions change and what was started as a minor skirmish may escalate. Then the political measures are and allow the use of additional measures. Setting and adjusting the limits for the military is a task for the political decision-makers, but they should not dictate how the military is to fight, only the means at their disposal. In our times military strategy is "*the art of coercion, of intimidation and deterrence. The instruments of war are more punitive than acquisitive. Military strategy, whether we like it or not, has become the diplomacy of violence.*"⁴⁰⁴ Moltke as a strategist was a typical product of the Prussian army who saw war as a part of *Realpolitik*. He argued that

"policy cannot be separated from strategy, for politics uses war to attain its objectives and has a decisive influence on war's beginning and end. Politics does this in such a manner that it reserves to itself the right to increase its demands during the course of war or to satisfy itself with minor successes. [...] Strategy thus works best in the hands of politics and only for the latter's purposes. But, in its actions, strategy is independent of policy as much as possible. Policy must not be allowed to interfere with operations."⁴⁰⁵

It is politics that go to war and thus determines its purpose.⁴⁰⁶ Moltke, however, wanted to keep the military as a tool factually separated from political chain of command⁴⁰⁷. The military apparatus of the state could thus perform its appointed duty without political guidance or restrictions to the means it chose to use in its operations. "In no instance must the military commander allow himself to be swayed in his operations by policy considerations only. He should rather keep military success in view. What policy can do with his victories or defeats is not his business."408 We could then argue, following Simpkin, that war is such a complex phenomenon that the government should "not impose on their generals constraints which conflict with this nature."⁴⁰⁹ If we view war as a continuation of politics with additional means, we must understand that the relationship will be altered during wartime since "the center of gravity of the political struggle is transferred from the non-military to the military. Politics exchanges the pen for the sword and new relations and laws become operative."410 Furthermore, a statesman needs to make one momentous decision of initiating a war - a commander-in-chief is afterwards forced to make continuously decisions that affect entire nations on a daily basis.⁴¹¹ Arguing that once the army has been set in motion it should be left to deliver the desired policy objectives is un-Clausewitzian. Rather there is a more pressing need for politicians and soldiers to re-engage so that war and policy are brought into step.412

Svechin argued that the idea of giving "full power to a chosen military leader is an obsolete formula which never reflected any kind of reality."⁴¹³ Exception proves the rule and we must remember that Alexander just as Napoleon were practically sovereigns in charge of both strategy and politics. They were not given full power but took it upon themselves and were uniquely free of political restrictions. "In modern times the conduct of war has ceased to be a matter for the individual 'captain', combining the roles of commander and strategist; it has passed into the hands of

⁴⁰⁴ Schelling (2008), p. 34.

⁴⁰⁵ Moltke (1993), p. 36. The same argument can be found almost verbatim on p. 44.

⁴⁰⁶ Foertsch (1939), p.11. Kesseli (2001), p. 7 argues that despite its nature as a combination of a simplified handbook and a field manual, Foertsch's book provides a window on German military thinking in the 1930s.

⁴⁰⁷ This may be due to the strained relation he had with Bismarck who politically reined Moltke in. See Bond (2006), pp. 75-76.

⁴⁰⁸ Moltke (1993), p. 36.

⁴⁰⁹ Simpkin (1985), p. 76.

⁴¹⁰ Sokolovsky (1963), p. 22.

⁴¹¹ Ludendorff (1919), pp. 41, 63.

⁴¹² Strachan (2013), p. 55.

⁴¹³ Svechin (1992), p. 100.

government."⁴¹⁴ Especially during the Third Wave the fusion of politics and strategy under the military would have dire consequences⁴¹⁵.

Napoleon was free to execute his strategical stratagems through his operational art. Based on this Jomini wrote that "*the prince should receive an education both political and military. He will more probably find men of administrative ability in his councils than good statesmen or soldiers; and hence he should be both of the latter himself.*"⁴¹⁶ Napoleon, despite his egotism or perhaps because of it, was in his temporal context uniquely well poised to combine the necessary characteristics of the statesman and soldier in himself. However, in contrast to Alexander who created an empire by allowing to a large degree the locals rule themselves, Napoleon's empire was to crumble rapidly. Alexander allowed the local satraps to retain their satrapies and a policy or partnership followed the policy of liberation as Alexander advanced.⁴¹⁷ Napoleon sought to concentrate power in himself and this could not create a lasting foundation. This was, according to Freytag-Loringhoven, because "ambition of the kind that fired Napoleon can overthrow a world, can bring it under control for a time, but cannot create anything permanent. Defeat and ignominy will always be the end-result of a purely self-seeking military ambition."⁴¹⁸ Egotism was the primary reason for Clausewitz that made Napoleon not only one of the greatest captains of the history and a "god of war" but simultaneously a reason why he could not build something that would last⁴¹⁹.

Clausewitz and Jomini are often seen as two opposing thinkers who often contradict each other in their texts.⁴²⁰ Even if Clausewitz viewed Napoleon from the "receiving end" as his enemy albeit far junior in rank and standing, he nevertheless reached many of the same conclusions as Jomini. The impact of Clausewitzian thinking has lately been dominant, but as Bond argued, Jomini was the strategic thinker who had the most profound impact up to and even beyond World War I because he offered a more systematic approach⁴²¹. Clausewitz was more philosophical in his approach than Jomini with his rather mechanistic formulae of war.⁴²² There is mainly a perspectival difference between the two thinkers. According to Paret, Jomini writes about warfare and Clausewitz attempts to explain war in its political context.⁴²³ Of the two Clausewitz is more difficult to comprehend because due to a lack of re-writing On War reads as two books combined causing Clausewitz to occasionally contradict himself. There is the Clausewitz, who emphasized battle, and the other one who discussed the relationship of war and politics and the two do not always blend together seamlessly.424 Concerning the highest echelons of the art of war Clausewitz, however, shared the same perspective as Jomini. Namely, that "to bring a war, or one of its campaigns, to a successful close requires a thorough grasp of national policy. On that level strategy and policy coalesce: the commander-in-chief is simultaneously a statesman."425 In the course of time, the necessity of understanding politics in addition to strategy and operational art has be-

⁴¹⁴ Tukhachevsky, cited in Simpkin (1987), p.103.

⁴¹⁵ See e.g. Gray (2007), p. 51 or Foertsch (1939), pp. 14-15.

⁴¹⁶ Jomini (1992), p. 49.

⁴¹⁷ Fuller (1960), p. 271. It is noteworthy that Fuller gave an impression of Alexander as a veritable saint with nothing but virtuous characteristics both as a man and as a commander. Quintus, whom Fuller justifiable criticized for his views gave us a different – and equally as flawed, but in another manner – perspective into Alexander's personality. "*The man whom the arms of Persia had failed to crush fell before its views. There were parties early in the day; drinking and mad revelry throughout the night; games; women by the score.*" Quintus (1988), p. 119.

⁴¹⁸ Freytag-Loringhoven (1991), p. 299.

⁴¹⁹ Moran (2007), p. 102.

⁴²⁰ Heuser (2002), p. 2 went far enough to call Clausewitz a "francophobe". Clausewitz was a German nationalist and indeed seemed to hate France. See Strachan (2013), p. 35.

⁴²¹ Bond (2006), p. 3.

⁴²² According to Bassford (1994), p. 18-20 Jomini wished to teach his readers practical lessons, but was not as completely in opposition to Clausewitz as commonly is thought. The styles were different but often the thoughts are similar.

⁴²³ Paret (2009), p. 129.

⁴²⁴ See Echevarria (2013), pp. 4-5.

⁴²⁵ Clausewitz (1989), p. 111.See also Howard (1983), p. 37.

come a prerequisite of contemporary commanders and operational artists.⁴²⁶ As Leonhard claimed, "the modern general must think seriously about many more factors that fire and maneuver. Political, economic, and cultural elements exist not only as constraints, but as positive opportunities to gain the advantage in conflict."⁴²⁷

Moltke argued that "*rapid conclusion of a war undoubtedly constitutes the greatest kindness. All means not absolutely reprehensible must be used to accomplish this end*."⁴²⁸ Kindness does not lie in the methods of fighting or attempting to spare individual lives but above all in the quick resolution of the conflict. No matter how harsh the measures used, as long as they ended the war rapidly, they were excusable. The thought of giving the army a *carte blanche* to choose the ways it wants to use to fulfil the political objective given to it is alien in our contemporary context. Nevertheless, if we wish to maximize the effectiveness of the army, it would be a necessary step to take. Too close political scrutiny of the army and supervision of its actions does not mean making wrong decisions but making them too late. As Moltke explained, the fundamental problem of supervision is that

"all independence, rapid decision, and audacious risk, without which no war can be conducted, ceases. An audacious decision can be arrived at by one man only. [...] If the highest military authority is not with the army, then it must allow the commander a free hand. War cannot be conducted from the green table. Frequent and rapid decisions can be shaped only on the spot according to the estimates of local conditions."⁴²⁹

War is a period of gravest national emergency and the commander in chief is in charge of rescuing the nation from this situation. Once he is given the go-ahead by the system of governance, he should be allowed to make decisions himself, without asking for permission. As operational art becomes for a moment the grammar of violence as part of politics, the ability of the operational artist to manipulate time has consequences on the political level as well. As Sikorski wrote,

"the initiative of the Commander-in-Chief cannot be restricted any more than that of the captain of a ship in a storm. He must be the absolute master of his decisions, not only by reason of the rapidity characteristic of military operations in modern warfare, but also because the element of surprise and consequently of secrecy."⁴³⁰

3.2. TIMES OF WAR AND PEACE IN RELATION TO OPERATIONAL ART

"What is, however, absolutely certain, is that wars are the fate of mankind, the inevitable destiny of nations; and that eternal peace is not the lot of morals in this world."^{A31}

We live in a world lit by lightning. The current moment is but a flickering instant and what holds true today may be utterly altered by tomorrow. One must avoid being infatuated with the outlook of warfare today in order to be able to develop one's means of fighting to adapt to the changing realities of upcoming times. By following and analyzing the entire narrative arc describing the process of development of warfare through the ages into today one is able to chart a possible course of future development. Instead of searching for individual factors influential to the means of fighting one should attempt to chart more comprehensive tendencies, or, megatrends of war and peace alike.

⁴²⁶ Schwarzkopf (1993), Clark (2001), Franks (2004), Smith (2008), and McChrystal (2013) all give evidence how the contemporary commander in involved with the political leadership.

⁴²⁷ Leonhard (1998), p. 58.

⁴²⁸ Moltke (1993), p. 24.

⁴²⁹ Moltke (1993), p. 77.

⁴³⁰ Sikorski (1943), p. 70.

⁴³¹ von der Goltz (1906), p. 283.

The development of warfare is by no means teleological in the sense that it would gradually improve towards perfected methods. As we have discussed, war is cyclical in its nature. This applies not only to development in between wars, but the fact that the time 'in-between', or, peace, is only itself a part of war. It is merely a lull in the struggle of states in the anarchic realm of international relations. To argue this, we do not have to resort to citing Clausewitz or even the classical realists with their worldviews. According to Michel Foucault political power cannot be separated from war power since both were born in the same crucible. War ministered the birth of nation-states and rights, laws, and peace were born out of battles. War is the *éminence grise* behind institutions of the state and the order it brings. He sees peace as waging a secret, coded war and no nation-state can be a neutral subject since everyone is inevitably someone's adversary.⁴³²

Among the military thinkers Von Seeckt argued against the famous dictum of Clausewitz. He did not see war as a continuation of politics with other means but argued that the need to resort to war is a bankruptcy of policy. He wrote that there is no way to eradicate war, but only to attempt to fight it only to resolve the "great controversies of life."⁴³³ These controversies result in the birth of new and alternating periods of war and peace that are just dual themes of the great cycle of human progress. Fuller cited William James, the religious philosopher, to illustrate the cycle of peace and war.

"Every up-to-date dictionary," he writes, "should say that 'peace' and 'war' mean the same thing, now in posse, now in actu. It may even reasonably be said that the intensely sharp competitive preparation for war by the nation is the real war, permanent, unceasing; and that battles are only a sort of public verification of mastery gained during the 'peace' intervals."⁴³⁴

Wars in the late Second Wave and Third Wave societies no longer start with formal declarations of wars, but rather as surprise attacks.⁴³⁵ During the Cold War Sokolovsky wrote that even before WW II Soviet "military theory came to a proper conclusion concerning the initial development of a future war. It was believed that under modern conditions, wars as a rule will begin suddenly without a formal declaration of war."436 This was true already in WW II and the offensive movements Germany used in invading Czechoslovakia or Poland.437 This argument has been strengthened by the activities of the U.S. Indeed, the last time the U.S. had officially declared a war was when it chose to join WW II in 1942. Since WW II most regional wars have started without any formal declaration of war.⁴³⁸ Declaring wars is a courtesy of the past from a time when wars were conducted along the rules of gentlemanly behavior. Thus, we should perhaps lay less emphasis on the division of time into peace and war and be prepared to view peace as a form of 'pre-war'. Peace may not be all that peaceful but rather a prequel to war. War begins at the time of peace and the nature of the peace shapes the war to come. This led Fuller to claim that prior to the World Wars, the soldiers were divorced from societal and technical progress and "they could not see that, because civilization was becoming more and more technical, military power must inevitably follow suit: that the next war would be as much a clash between factories and technicians as between armies and generals."⁴³⁹

Peace and war are two sides of the same coin. There is so much of one in the other that it is not an exaggeration to argue that peace is war and war peace. Or, as Fuller wrote, "in spite of the shrieking peace-mongers, the fact is that the state of peace is the state of war, and the horror of peace is the horror of war; this may not be rational, but it is, nevertheless, true, true even if history

⁴³² Foucault (2003), p. 50.

⁴³³ Seeckt (1930), p. 53.

⁴³⁴ Fuller (1946), pp. 26-27.

⁴³⁵ As Creveld (2008), p. 104 notes, "Over the last six decades formal declarations of war, which used to be seen as signs of 'civilization,' have become almost an endangered species."

⁴³⁶ Sokolovsky (1963), p. 130.

⁴³⁷ In the case of the Polish campaign Manstein severely criticized Hitler for his indecision in alternatively ordering the attack and cancelling it. Manstein (1982), p. 32.

⁴³⁸ Vego (2009), p. III-22.

⁴³⁹ Fuller (1946), p. 134.

*be only but an indifferent witness.*²⁴⁴⁰ Thus the focus of military study should not be restricted to understanding the nature of war, but in addition to study peace and the conditions that prevail in it. Since war is a political tool, we must concede that "*peace is war without bows and bloodshed, and war is peace with them; therefore, their instruments of war must be such as can control strife in both these spheres of human activity.*²⁴⁴¹

While Guderian and other German panzer-theorists prior to WW II revolutionized operational art by increasing mobility and penetrative abilities of the mechanized forces the Nazi political theorists simultaneously created a new temporal definition of war. The dividing line between war and peace was blurred in their theories that used war as a metaphor for peace and vice versa.⁴⁴² The idea of peace between the World Wars was denied since peace became just a period of preparation or "*the war between wars*."⁴⁴³ Treating war and peace as essentially the same thing seems to be characteristic to totalitarian societies. *The Communist Manifesto* considers both as phases of the same continuous class struggle that could only end in the revolution of the proletariat. At times the fight was hidden, at other times it was open for anyone to witness.⁴⁴⁴ Fuller argued that Marxist thought considers peace to be no more than

> "an instrument of subversion – that is, of conquest – as well as a breathing space in which to prepare for war. Should peace be concluded between a Communist and a Capitalist power, it is not in order to end hostilities, but instead to shift them from the battlefield of armies to the battlefield of classes. Peace is, therefore, no more than a manoeuvre in an unbroken struggle." 445

A classical thinker of political realism, Thomas Hobbes saw the distinction between war and peace as not one of actions per se, but of intentions and attitudes. War was much more than the time when battles are actually fought. Even the intervals between battles and campaigns were war if the disposition of the belligerents so dictated. Hobbes wrote that

> "Warre consisteth not in Battell onlely, or the act of fighting; but in a tract of time, wherein the Will to contend Battell is sufficiently known: and therefore the notion of Time, is to be considered in the nature of Warre; as it is in the nature of Weather. For as the nature of Foule weather, lyeth not in a showre or two of rain; but in an inclination thereto of many dayes together; So the nature of Warre, consisteth not in actuall fighting; but in the known disposition thereto, during all the time there is no assurance to the contrary. All other time is PEACE."⁴⁴⁶

War is a tract of time that interrupts the peace. If we return to the ideology of Cold War, according to Hobbesian definition it was a war proper and not only a time of heightened tension between the superpowers. History treats incidents such as the Cuban missile crisis as periods were war could have begun. It is the unpredictability of what could happen that defines a crisis. "*The 'crisis' that is confidently believed to involve no danger of things getting out of hand is no crisis; no matter how energetic the activity, as long as things are believed safe there is no crisis.*"⁴⁴⁷ Even if there were no actual battles fought between the belligerents' forces, the disposition thereto was clearly present and expressed by the numerous "proxy wars" fought in the Third World. In the First and Second world the Cold War was primarily a "*bleak cold war of the mind.*"⁴⁴⁸ Even today, we should not judge the situation by strict binaries of war and

⁴⁴⁰ Fuller (1923), p. 19. As Trythall (1977), p. 94 noted, in this particular book we see his "*rational irrationality which characterized his worst writing and thinking.*" Yet the book is full of veritable gems as well.

⁴⁴¹ Fuller (1932), p. 198.

⁴⁴² Coker (2010), 57.

⁴⁴³ Toffler (1995), p. 41.

 $^{^{\}rm 444}$ Marx and Engels (1848).

⁴⁴⁵ Fuller (1961), p. 213.

⁴⁴⁶ Hobbes (1929), Chapter XIII, p. 96.

⁴⁴⁷ Schelling (2008), p. 97.

⁴⁴⁸ Slessor (1954), p. 38.

peace. As long as the disposition on one side exists the former may gradually slide into the latter almost unnoticeably.⁴⁴⁹

Simpkin argued that history proves that there will always be a 'top nation' and a challenger to its power. The important question is how this challenge manifests itself. "Even if it can be restrained short of war, superpower rivalry is bound to continue."⁴⁵⁰ If the challenge is open, the means used are more like not to conform to entirely peaceful means. When times of war and peace blur together into "a fuzzy temporality" 451 things become increasingly complicated. Woodrow Wilson in 1917 evoked a new term by calling every war the United States has fought in its turbulent history a "crusade for peace". If peace is somehow contained in the act of war and vice versa, then war will always remain with us.452 There is no complete fusion of war and peace but because of the intimate connections a strategist and a politician must always perform for one with regard for the implications his actions have on the other⁴⁵³. Borden made a perceptive observation concerning the blurring of boundaries of war and peace of the policy of a state. He wrote that "where war and peace are one, foreign and domestic policy are also indistinguishable."⁴⁵⁴ This relationship has managed to become even more convoluted in the information age when on occasion the "line between war and beace and between friend, foe, and neutral is blurred beyond recognition. Asymmetric warfare presents a unique set of challenges, not the least of which is finding successful strategies for deterrence, detection, and response."⁴⁵⁵

If temporal definitions blend into each other, so out of necessity do spatial definitions as well. Issues of essentially domestic policy are reflected in foreign policy and even war, the penultimate tool of foreign policy, can be depicted as an internal issue of a state that supposedly is fighting for its survival. Temporality and spatiality are interrelated and a warlike stance distorts essential political differences in both. This creates anomalies in politics and strategy. Other affairs of the state start to blend with its war efforts and belligerent attitudes permeate politics. Viewing war as a constant element of national policy by mentally blending the times of war and peace together and perceiving war to exist in every sphere of political activity leads quickly to an idea of wars being total.

"Total war' is a concept that can be found in many military theories and it may mean different things. We could, for example, claim that Caesar in his campaign of Gaul waged total war since he slaughtered whole tribes and burnt villages just as William T. Sherman's march to the sea that left Georgia devastated and targeted the means of living of the civilian population. If we define total war by its object, namely unlimited or almost limitless devastation caused to civilians as well, these campaigns fall within the realm of total war. However, this perception of total war in fundamentally flawed. A truly total war, "both in theory and in practice, is a relative anomaly in history. Most armed conflict come to a political decision long before the actual destruction of enemy armed forces."³⁴⁵⁶

Another and more realist approach to defining total war is to evaluate the means of warfare. In this case we can view the German Ludendorff as the originator of total war since he wanted to reverse the Clausewitzian order of military being subordinate to policy. While Clausewitz wrote about "*absolute war*" it was an idealization that suspended the effects of time and space⁴⁵⁷, the concept of 'total war' does not appear in his texts and

⁴⁵⁵ Alberts et. al. (2000), p. 59.

⁴⁵⁶ Leonhard (1998), p. 82. Sherman indeed observed some taboos in his conduct of total war that Caesar discarded completely. The ethic of restraint was missing from the latter in Gaul. Keegan (1998), p. 26.
 ⁴⁵⁷ Bassford (1994), pp. 12-13. What is to be considered total war depends on the interpreter. For example

Bucholz (2001), pp. 15-16 claims that Napoleon was the father of total war since he wanted destroy and rec-

⁴⁴⁹ As so often happened the rhetoric of the Soviet Union and its actions were irreconcilable. The official policy echoed the idea that "*It is obvious that only armed conflict is a sign of war; its beginning and end determine, in fact, the beginning and end of war.*" Sokolovsky (1963), p. 170.

⁴⁵⁰ Simpkin (1985), p. 18.

⁴⁵¹ Herman (2002).

⁴⁵² Coker (2010), 35.

⁴⁵³ Gray (2007), p. 9.

⁴⁵⁴ Borden (1946), p. 5.

the two cannot even be made coincide⁴⁵⁸. For Ludendorff, in the words of Alvin and Heidi Toffler, "*total war was to be waged politically, economically, culturally, and propagandistically, and the entire society converted into a single 'war machine-' It was the industrial-style rationalization carried to its ultimate.*"⁴⁵⁹ Even if this is an extreme view, it is also a logical extension of following the idea of 'nation at arms.' All means and resources of society are included in a unified effort to wage war. After all, this is only the fulfillment of the industrial society hell-bent on maximizing productivity.

Clausewitz had written about a people's war or *Volkskrieg* in which the entire able-bodied population would be mobilized⁴⁶⁰ but after the WW I Ludendorff put the meaning of nation in arms in a different context. He argued that it became impossible to determine where the power of nation ended and that of the navy or the army began. The military and the citizenry were one and thus the battle on vast fronts against the military might of the enemy was joined by the fight against the soul and vital energy of the nation itself.⁴⁶¹ Even with all its destructiveness, World War I was not generally identified as a total war until after it was over⁴⁶². Total war required a total commitment from the state waging it and the nation itself increasingly engaged in armed conflict instead of only its army. Ludendorff thus attacked Clausewitzian thought and turned it around⁴⁶³. With the nation in arms politics was the continuation of war and war was an unrestricted national struggle for survival.⁴⁶⁴

Ultimately the concept of nation in arms is too limited to its temporal and civilizational context. It was a product of the indust-reality and all its tenets relied on mass production, whether of weapons, ammunition or soldiers. The nation's resources were harnessed to support the war effort, but generally this concerned only production. Even Liddell Hart, the progressive thinker that he is occasionally seen as, defined prior to WW II strategy as *"the distribution and transmission of military means to fulfill the ends of policy. It is concerned not merely with the movements of armies, as its role is often defined, but with the effect.*"⁴⁶⁵ As we can see, Liddell Hart's thinking focused only on the military aspect of strategy, whether fighting or maneuvering.

The idea of total war required a conceptual expansion of what is meant by strategy. Today the concept of strategy has expanded beyond the context of war. The use of diplomacy, espionage, propaganda, economics, fifth columns and population, among others, play their own strategic roles alongside the purely military means. Directly after WW II Borden wrote that strategy *"includes any means whereby one nation seeks to impose its will upon another:"*⁴⁶⁶ Luttwak argued along similar lines and extended the idea to include peace-time as well as war. For him, contemporary strategy deals with

"not merely warfare underway but human conduct in the context of possible war. Insofar as states act to prepare or to avoid war, or use a capacity for warmaking to extort concessions by intimidation without any actual use of force, the logic of strategy applies in full, just as

reate not only the armies but also the states of his enemies. According to Heuser (2002), pp. 29, 116-117 Clausewitz's "absolute war" was war it its purest form and set free from political constraints. Absolute war reached its perfection at Napoleon's hands but Clausewitz never wrote about total war.

⁴⁵⁸ See Honig (2007), pp. 64-65.

⁴⁵⁹ Toffler (1995), p. 41

⁴⁶⁰ See Heuser (2007), pp. 146-147.

⁴⁶¹ Ludendorff (1919), p. 1. In time Ludendorff's thinking became more radicalized and in 1935 he proposed that total war should include the elimination on the entire enemy population. See. e.g. Heuser (2007), pp. 151-152; Heuser (2002), pp. 67-69.

⁴⁶² Strachan (2013), p. 274.

⁴⁶³ For Clausewitz absolute war was an abstraction and limited war the reality. See Sumida (2007), p. 165. Ludendorff wished to discard all political and other limitations.

⁴⁶⁴ Creveld (1991), pp. 45-46. Then again, it is easy to agree with Goodspeed (1966), p. 201 in his claim that Ludendorff was a highly competent officer but simultaneously "*naïve to the point of imbecility in the wider realm of international politics*."

⁴⁶⁵ Liddell Hart (1932), p. 83.

⁴⁶⁶ Borden (1946), p. 1.

much as in war itself and regardless of what instruments of statecraft are employed. Thus, except for their purely administrative aspect, diplomacy, propaganda, secret operations, and economic controls are all subject to the logic of strategy, as elements in the adversarial dealings of states with one another."⁴⁶⁷

Strategy, then, temporally spans the times of war and peace alike and the two differ from each other through the means and ways in which strategy is put to action. Even the choice of this or that instrument does not immediately mean that war has replaced peace as the current state of affairs. The result of employing different tools of strategy at different times blurs the distinction between war and peace since in the interactions between states peaceful and warlike measures may be utilized. Peace and war in our contemporary conjunction are no longer binaries but rather opposite ends of a scalar spectrum where the actual point when one changes into another becomes increasingly difficult to pinpoint.

André Beaufre has defined "total strategy" as "the art of applying force so that it makes the most effective contribution towards achieving the ends set by political policy" and "the art of the dialectic of two opposing wills using force to resolve their dispute."⁴⁶⁸ What makes strategy total then, is precisely the same element that makes a war total, namely the use of all possible strengths of the society to support the purely military capabilities. War is total because it "is never a purely military phenomenon; it is invariably a phenomenon of a total nature in which internal policy, external policy, economics and military operations combine and overlap."⁴⁶⁹ The task of total strategy is to "lay down the object for each specialized category of strategy and the manner in which all – political, economic, diplomatic and military – should be woven in together."⁴⁷⁰ In other words, then, total war during the Third Wave needs to be different from indust-reality. It should not mean unrestricted warfare in which every atrocity would be allowed. It merely means that all capabilities of the nation state are amassed together for a common cause.

We can argue, following Heuser that the type of thinking of total war that emphasized massive damage and nearly unlimited means of dealing it peaked in WWI and witnessed its point of culmination in WWII.⁴⁷¹ Total war suitable for the paradigms of today and tomorrow thus needs to be a unified effort on behalf of the nation, pooling resources for the purpose of victory. If we stick to Sherman's or Scharnhorst's vision of what total war is, it is simply not a viable option in the nuclear age⁴⁷². If a war between two states can be made 'unwinnable' so, that from the start it is evident to both sides that the eventual outcome is first, distanced in time, and, second, unfavorable, a peace could be upheld if logic applies to the plans of war. As Kautilya wrote, "when the advantages derivable from peace and war are of equal character, one should prefer peace; for disadvantages, such as the loss of power and wealth, sojourning, and sin, are ever-attending upon war." ⁴⁷³ If there are no benefits to be gained from a war, the temptations to start one dwindle. Sound politics cannot start with the supposition that war is omnipresent but that it is at all times a possibility, sometimes smaller, sometimes larger. Jomini was

> "far from advising that states should always have the hand upon the sword and always be established on a war-footing: such a condition of things would be a scourge for the human race, and would not be possible, except under conditions not existing in all countries. I simply mean that civilized governments ought always to be ready to carry on a war in a short time - that they should never be found unprepared. And the wisdom of their institu-

⁴⁶⁷ Luttwak (1987), p. 65.

⁴⁶⁸ Beaufre (1965), p. 19.

⁴⁶⁹ Beaufre (1967), p. 28.

⁴⁷⁰ Beaufre (1965), p. 30.

⁴⁷¹ Heuser (2010), pp. 194-197.

⁴⁷² Scharnhorst was an influence on his pupil Clausewitz who somewhat adopted his contempt of dogma and tendency to test the allegedly scientific principles of war against practical reality through analysis of operations within their historical context. See Paret (2009), pp. 80-81. Nevertheless, the idea of total war in Scharnhorst was more concrete than the ideal of absolute war in Clausewitz's thought. On Scharnhorst and Clausewitz see Howard (1983), pp. 6-8, Strachan (2007), pp. 37-38 or Paret (2015), pp. 20-27.

⁴⁷³ Kautilya, Book 7, Chapter 2, page 4.

tions may do as much in this work of preparation as foresight in their administration and the perfection of their system of military policy."⁴⁷⁴

Therefore, saving time and ensuring a military victory starts during a time of peace and the political machinery of the state is the prime mover. Here the question of macro-level preparation enters the equation. No matter how profound the strategic and operational plans of the armed forces are, only political decision-making is able to provide them with the resources to complete their tasks. The best plans are useless unless the conditions for their execution are created. *Sic vis pacem, para bellum* remains a convincing argument. One needs to prepare for war to maintain peace but a war may still break out. Planning is a pre-requisite of victory but what is well thought out is only a work half done. One must also prepare the plans for execution as thoroughly as possible. Foch wrote that

"preparation in modern war is more necessary and must be pushed further than in the past. Unless one acts thus, one is forestalled and out-distanced by the adversary. One thing alone is of import: the point of preparation reached at the actual outbreak of war. It is not by months, or weeks, but by days and hours that the progress of these preparations has now to be measured. The results of mere moments in this matter reach very far."⁴⁷⁵

Again, the combination of having to be quick and still thorough is a Catch-22-situation. Nevertheless, war is often a zero-sum game between the belligerents and what matters is being more thorough and faster than the enemy is in his preparations⁴⁷⁶. Proper intelligence and other early-warning systems may enable one to gain enough information about the enemy to be able to deduct his upcoming attack. Then one is able to start preparations and it depends on the level of commitment within the society if the head start of the enemy can be caught up with. For Niccolo Machiavelli the capacity of the state to carry out a war successfully is a matter of long preparation. Thus,

"to form an army, he must not only raise men, but arm, discipline, and exercise them frequently – both in large and small battle formation; he must teach them to encamp and decamp; and he must make the enemy familiar to them gradually [...] These preparations are absolutely necessary in a field war, which is the most necessary and honourable of all wars." 477

Moltke similarly understood that while combat is the core business of an army, actual battle is but a brief period in the whole span of its activities. "*The field of real activity for an army is war.* Nevertheless, its development, its normal state, and the largest portion of its life fall in times of peace."⁴⁷⁸ Thus an army has to remain active during the times of peace as well, because drills and practice hone the skills of the army and prepares it for the "real activity." Moltke wrote how "the army is not makeshift. It cannot be improvised in weeks of months; it requires long years of training because the foundation of all military organization rests on permanency and stability."⁴⁷⁹ Following Corbett's idea that there cannot be separate strategies for war and peace Strachan has argued that strategy had to be applied in peacetime, since the way a nation would fight its war is to a large part a product of preparations, planning and procurement carried out in the time of peace.⁴⁸⁰ Thus, war is a practical application of peacetime strategy and warfare is the active manifestation and a continuation of the self-same strategy. As Martel wrote, prior to WWII "Germany realised full well that a nation starts a war with the armament that it can afford to

⁴⁷⁴ Jomini (2007), pp. 33-34.

⁴⁷⁵ Foch (1920), p. 44.

⁴⁷⁶ Creveld (2008), p. 130 denies the argument that war is always a zero-sum game, but he discusses mainly the limitations to the destructivity of war being beneficial to both sides. In terms of time, the gain of one is in operational art the loss of the other.

⁴⁷⁷ Machiavelli (1965), p 24. On the idea of making acquaintance with the enemy see Vegetius (1985), pp. 152-153. Machiavelli is often conceived of only a political realist, but his thoughts have influenced and continue to influence numerous military thinkers. Clausewitz, for example, was very much taken with his ideas. See Heuser (2002), p. 7.

⁴⁷⁸ Moltke (1993), p. 172.

⁴⁷⁹ Moltke (1993), pp. 34-35.

⁴⁸⁰ Strachan (2013), p. 16.

*build in peace time.*³⁴⁸¹ Therefore preparation for war creates the basis on which operational art in the beginning of a war is built. Operational art is all too often conceived of only as operations with armed forces in warfare, but planning is an important facet of operational art and it is mostly carried out in peacetime. As peace and war blend into each other temporally through strategy and the boundaries of strategic and operational level become harder and harder to discern, the operational artist sets up the tools of his art in peacetime. To commence planning once war has started means losing time.

3.3. PREPARATION AND MOBILIZATION IN SEARCH OF A QUICK WAR

"Detailed planning in peacetime is a prerequisite for success in time of crisis or war."⁴⁸²

Every war ever fought probably started with the premise that surprise combined with speed as in offensive operational art would ensure a rapid victory. According to Liddell Hart the

"two world wars have seen the aggressor being beaten in the long run. But that did not suffice to prevent the first being repeated, nor even the renewed threat of a third. A surer way of prevention would be to make it plain that an aggressor cannot even count on victory in the short run."⁴⁸³

In 1914 national defense was constructed throughout the West to counter a war that would last only a few weeks or in the worst-case scenario at the utmost a few months⁴⁸⁴. Reality proved to be different. Moltke envisioned in May of 1890 how a future war might turn out. According to him war had by that time already hung over the heads of the Germans like the sword of Damocles for more than a decade. He predicted that once war erupted, it was impossible to guess how long it would take of how it would turn out. The great powers of Europe would fight each other better equipped and supported than ever before and thus a few campaigns would not be enough to convince them to have been beaten. Moltke guessed that the war might just as well drag on for seven or thirty years.⁴⁸⁵ Fortunately his most pessimistic estimations of the duration turned out not to be accurate, but the World War I still lasted for years and managed to ravage the continent unlike any one before it. To wage a war is costly and likely to be a great strain on the economies of the countries involved in it. The further war has progressed from its agrarian origins and the more materiel is needed for the armies, the higher the costs have become. For Fuller

"time is an all-embracing condition, and in war, more so even than in peace, time must be reckoned in minutes, and not only from a military point of view, but from an economic one as well, since in a war, such as the Great War of 1914-1918, every minute of time was costing Great Britain from four to five thousand pounds. The economy of time becomes, therefore, not only of military but of economic importance; it is never unlimited in its remunerative sense, and its loss can seldom be made good; in fact, of all losses it is the most difficult to compensate."

The costs of the WWI are naturally incomparable to those of our contemporary warfare – the expenses have increased exponentially during the past century. Yet, even from these numbers it is easy to deduce that even then the potential economic losses of a protracted

⁴⁸¹ Martel (1945), p. 126.

⁴⁸² Vego (2009), p. IX-65.

⁴⁸³ Liddell Hart (1950), p. 112.

⁴⁸⁴ Sikorski (1943), p. 57. It has to be noted that this seems to be a self-repeating pattern. Likewise WWII was supposed to end quickly and today, again, a possible war in the Western world is expected to be short and swift.

⁴⁸⁵ Moltke, cited in Ludendorff (1919), p. 195.

⁴⁸⁶ Fuller (1926), p. 179.

war made it a necessity to attempt to end the war quickly. If war dragged on for as long as both World Wars did, there could be no talk of winners and losers among the nations involved in it from the beginning. The costs were so enormous that every party was a loser. There is, then, a huge difference between the wars of the Second and Third Wave civilizations and those of the agrarian age. In the agrarian age and the first phases of the industreality war could still be financially profitable. As Jomini noted, "wars of conquest, unhappily, are often prosperous - as Alexander, Caesar, and Napoleon during a portion of his career, have fully proved."⁴⁸⁷ Conquest could bring considerable new resources with a relatively limited cost. This possibility disappeared with the emergence of mass armies and their mass-produced capability for destruction. Thus, economizing time in warfare is a necessity.

History shows us that when major powers or other states that are relatively equal in strength go to war the initial surprise may indeed in some rare cases lead to a collapse of the enemy, but commonly the war effort is likely to attract and involve other states to counter the initial aggressor. One of the big lessons of WW I, according to Guderian, was that "*in 1914 the offensive power of our army was not sufficient to bring about a rapid peace.*"⁴⁸⁸ This did not stop the Germans from resorting to the same gamble again in WW II. In general we can claim, following Mahan that "*modern states aim at developing the whole power of their armed force, on the outbreak of war, with such rapidity as to strike a disabling blow before the enemy can organize an equal effort.*"⁴⁸⁹

Operational level surprise affected with this disabling blow may become strategic and may even resonate on the level of international relations beyond the states involved in the conflict. In this sense a decisive battle or campaign in the early stages of war may help end the war before the public opinion on the international level turns against one of the belligerents and draws other states into the war. Beaufre demanded that,

> "once the action has been initiated it should as a rule be rapid and brutal in order to reach the military objectives as quickly as possible and so produce an international fait accompli. This is increasingly essential because of the greater and greater interdependence between nations and their public opinions. If matters drag, there is a considerable risk that the enemy will be able to mobilize the support available to him, prolong his resistance and so cause the operation to slide into the indirect strategy mode."⁴⁹⁰

This is a double-edged sword, since international opinion is influenced not only by operational art and strategy, but more importantly by diplomacy, public relations, propaganda, strategic communication, media coverage and a multitude of other factors. The aggressor must aim for surprise and mass his force for a decisive attack. When this happens unexpectedly the international community will recoil and condemn such action. The assailant has to press for a rapid termination of hostilities before the international community can join in a common effort against the aggressor either through sanctions or military action. The longer the war continues, the more the defender is likely to benefit and the assailant suffer from the influence of other states. Thus, for the defender, emerging victorious from the first battles in which the attacker seeks decision is beneficial since in the long run it may gain the support of the international community. Operational art is always of utmost importance, but in the early phase of a war it may decide it.

The belligerent who completes his mobilization first, that is, has his troops in the right places for the future operations, holds a great advantage over his enemy⁴⁹¹. With small, mobile and professional armies an offensive can be initiated very quickly for the fulfillment of limited objectives, but a mass army requires time to prepare and mobilize. Thus, even if Milan Vego argued that in the 21st century the forces necessary for a major opera-

⁴⁸⁷ Jomini (2007), p. 15.

⁴⁸⁸ Guderian (1992), p. 23. Guderian was critical of the German military system from early on in his career, but remained an inveterate optimist that perceived weaknesses could be rectified. See Hart (2006), pp. 6-8. ⁴⁸⁹ Mahan (1999), p. 100.

⁴⁹⁰ Beaufre (1967), p. 110.

⁴⁹¹ von der Goltz (1906), pp. 97-98.

tion can be gathered without mobilization, this is true only in the case of relatively large states and only certain components of their professional armies. Especially in the late phases of indust-reality the speed of mobilization was a key factor to winning initial victories.⁴⁹² Von der Goltz described one time the German army was mobilized;

"in the year 1870 mobilisation was ordered on the night of July 16; and as early as August 4 the frontier had been passed and the first victory won. Nowadays we wish to be quicker still. A work must be accomplished which not only requires long and careful preparation in time of peace, but which in the moment of execution also sets the governmental and administrative machine in feverish activity, and makes it put froth its utmost energy, which even affects the whole of the nation. All private interests are deeply concerned. The days of mobilization are days of great excitement and exertion for every one."⁴⁹³

There is no doubt that exertion was great in a mobilization this rapid. In less than three weeks, an army in the early stages of the age of mass armies was able to initiate an attack. This is quite an accomplishment. Naturally we do not know the details of preparation carried out beforehand and shrouded in secrecy. But putting an army into action in this time is a veritable feat of planning and execution and the level in which the society committed itself to this purpose is unlikely to be repeated today. When the entire nation goes to war it does not happen in an instant and it is possible that during the course of a relative quick war the entire machinery of national defense may not even be completed. Especially in the case of a surprise attack, as Mahan said, "*to use a familiar phrase, there will not be time for the whole resistance of the national fabric to come into play.*"⁴⁹⁴

All in all, it is inconsequential how well the operations actually have been planned within the military if the groundwork of mobilization is not assisted by the society. As von der Goltz put it, "the plans of the supreme commander are mere castles in the air, without good preparation for rapidly placing the army upon a war footing. The enthusiasm of a whole nation cannot replace a deficiency in this respect."⁴⁹⁵ The high fighting spirit prevailing in the society is a morally important factor of the war effort, but it must be turned into early effective action. Time must be won in mobilization, but nothing should be done with undue haste. "Valuable as all time gained in mobilization may be, yet it must not be bought at the expense of order."⁴⁹⁶ Yet, when it comes to preparations for an eventual war the old guidance by Sun Pin is still valid today, "move only after all affairs have been prepared."⁴⁹⁷ But once movement commences, there is no time to waste.

"The modern conduct of war (Kriegführung) is marked by the striving for a great and rapid decision. Many factors press for a rapid termination of the war: the struggle of the armies; the difficulty of provisioning them; the cost of being mobilized; the interruption of commerce, trade, business, and agriculture; the battle-ready organization of the armies, and the ease with which they can be assembled."⁴⁹⁸

In the entire war as well as the smallest skirmish, one must aim at the rapid termination of fighting. This is due to saving time, forces, resources, and energy. Likewise, according to Sun-Tzu, when the army has to be deployed, proper strategic planning must be carried out to shorten the war, since

"a victory that is long in coming will blunt their weapons and dampen their ardour. If you attack cities, their strength will be exhausted. If you expose the army to a prolonged campaign, the state's resources will be inadequate. [...] Thus, in military campaigns I have

⁴⁹² Vego (2009), p. III-23.

⁴⁹³ von der Goltz (1906), p. 99.

⁴⁹⁴ Mahan (1999), p. 100.

⁴⁹⁵ von der Goltz (1906), p. 100.

⁴⁹⁶ von der Goltz (1906), p. 101.

⁴⁹⁷ Sun Pin (1995), p. 84.

⁴⁹⁸ Moltke (1993), p. 176. See also p. 125.

heard of awkward speed but have never seen any skill in lengthy campaigns. No country has ever profited from protracted warfare."⁴⁹⁹

Adhering to the principles of indust-reality war has to be a sharp and systematic process, with massed violence compressed into as short length of time as possible. This way the country will not deplete its resources in warfare, and, furthermore, it will be able to reap profits from the spoils of war, since the length of war has not caused its costs to pile up excessively. Economizing time in warfare had during indust-reality a direct impact on the economy of state. The tendency to avoid over-stretching applies also to lower levels of strategy, operational art and even tactics. In agrarian China "the Three Armies should not be on the alert for more than three days; a single company should not be vigilant more than half a day; while the guard duty for a single soldier should not exceed one rest period."500 Exhaustion is to be avoided and thus a part of military planning is always concerned with the length of any particular action. "The Tao of Warfare: Neither contravening the seasons nor working the people to exhaustion is the means by which to love our people."501 Warfare had a pace that made it seem that the Chinese strategy was not overtly concerned with being as quick as possible time but conserving energy. In Occidental thinking wars should likewise be kept short, but by winning time even with the risk of over-exhaustion. Surprising the enemy was the way to quick solution, but as technology progressed Ardant du Picq optimistically claimed that, in comparison to the Thirty Years' War, "the effect of surprise would certainly not last long to-day. However, to-day wars are quickly decided."502 This shortening of the wars has proved itself to be only an illusion.

The length of war is not connected to the level of development of the societies waging them. Prolonged wars have always occurred interspaced with short ones. If no decision is gained and if the objectives of the belligerents remain unfulfilled the war will continue. There will be alternating cycles of increased violence and aggressive peace until a decision is reached or either side is forced to capitulate. This can occur due to the depletion of its resources or the unbearable strain on the society. Neither in the past, nor today, has war been a rapid clash of arms that would leave both sides with only slight damage. A study of the development of past wars and the events in them might shine light into how a future prolonged war is likely to develop. As states began to develop, the possibility of rapid and decisive victories diminished since to bring a state to its knees tended to take more than one campaign season⁵⁰³. The more war has become the affair of the entire state, pervading the life of every citizen and including most of the adult male population, the longer the duration of war has become. Even if there is less and less time to do more and more in industrial and information age warfare, wars themselves do not seem to be compressed temporally. The only wars that have ended soon are those that were won or lost quickly. There are instances in military history when a success in war was quick to attain due to proper preparation. As Franks summarized his experience in leading the second Gulf War, "The war was over. Months of preparation. One hundred hours of combat."⁵⁰⁴

3.4. OPERATIONALIZING THE ART OF WAR

"War differs from battle. War is defined as going from the beginnings to the end, that is, the cessation of hostilities, and it includes many battles in its course. Battle is defined as a partial war that occurs frequently in the course of the entire war, and its cessation does not

⁴⁹⁹ Sun-Tzu (1993), p. 159. For Sun-Tzu war as violence disturbed the balance of *Tao* and this was another reason along avoidance of exhaustion why fighting was to be kept short. See Creveld (2005), p. 37.

⁵⁰⁰ Ssu-ma (1993), p. 140.

⁵⁰¹ Ssu-ma (1993), p. 126.

⁵⁰² du Picq (1987), p. 132.

⁵⁰³ Bond (2006), p. 2.

⁵⁰⁴ Franks (2004), p. 163.

always bring about the end of the war but, as need requires, battles can take place two or three times or more often in the course of the entire war.⁵⁰⁵

There is a relatively shared understanding of the number of levels in warfare. Warden wrote them down as grand strategic, strategic, operational and tactical.⁵⁰⁶ Often the highest level is discussed with the more common term "politics." In every healthy society politics should always remain the unquestioned master of strategy and its manifestation in warfare. Strategy is divisible to operational art and branch-specific subtypes of operations and further into numerous different tactics. Yet the same principles that guide war as a phenomenon apply to its constituent units. Mahan argued that the principles vary on all levels of the art of war depending mostly on the change and evolution of weapons and technology, but that the changes are smaller in strategy than they are on the level of tactics⁵⁰⁷. Thus the recognition of principles and estimating their validity is easier on the higher levels. Fuller ties the different levels of warfare together by arguing that the principles of war "are as applicable to strategy (operations in plan) as to tactics (operations in action), two terms which should never be separated by a bulkhead, because their components flow into each other and together constitute the art of war.²⁵⁰⁸ The art of war is constructed out of several different blocs that describe specific tactics and forms of operational art and all of them influence each other. As an example the operational art of today in the most developed societies is most commonly perceived to consist of joint operations in which each branch of service supports and complements each other for a unified purpose. In the words of Michael R. Matheny, "the planning and execution of large-scale operations combining air, land, and sea forces form the essence of modern operational art."509 Yet such a description excludes the intellectual and artistic aspects and focuses on the practice of operational art.

Time and its complex relationships, dependencies and influences to warfare are elusive to pin down for analysis. Strategic and grand strategic level issues are not a matter of seconds and minutes, not even hours or days. Grand strategic viewpoint may span all actions of a nation-state for decades ahead; strategic viewpoint generally concerns itself with years and operational viewpoint with months. For Gray time is the least forgiving dimension of strategy but also one that is seldom discussed in depth. Most authors quickly note its importance and move on to tractable matters. In matters of strategy once time is lost, it cannot be recovered⁵¹⁰. But what happens when we move down to the level of operational art? We are mostly interested in operational level and the shorter times involved and construct a narrative of temporality there.

It is suitable to start the discussion of levels of war and how time manifests itself on them with Miyamoto Musashi who saw strategy as the professional skill of the soldier regardless of the artificially constructed levels⁵¹¹. Upon turning thirty he began to study strategy or the Way of War and at fifty he finally began to understand it⁵¹². The Way has to be known to every soldier, but carried out by the leader. The Way is two-fold; that of the sword and that of the pen, and the warrior needs to follow both paths.⁵¹³ There is a time and place to use weapons⁵¹⁴. The Way begins with knowing the basics thoroughly and on this a strategy is built. Thus, to be able to conquer one means the same as vanquishing

⁵⁰⁵ Leo VI (2010), p. 385.

⁵⁰⁶ Warden (2000), p. 1.

⁵⁰⁷ Mahan (1999), p. 65.

⁵⁰⁸ Fuller (1960) p. 293

⁵⁰⁹ Matheny (2012), p. xiii.

⁵¹⁰ Gray (2007), p 70

⁵¹¹ Musashi associated his thinking on the art of war with Shinto and not Zen Buddhism. He saw "*the art of the advantage*" to be the abstract core of the art of war and that it refers to the science of strategy in general. On this see Cleary (2005), pp. 24-25.

⁵¹² Musashi (1995), pp. 44-45.

⁵¹³ Musashi (1995), p. 47.

⁵¹⁴ Musashi (1995), p. 56.

ten million. To know one thing properly equals knowing ten thousand, since the proper strategist includes the small into the vast.⁵¹⁵ One can become a master of strategy by practicing to understand the plots of the enemy as well as his strength and means. Even alone one learns to utilize strategy to vanquish ten thousand enemies.⁵¹⁶ Mushashi echoed the idea of the nature of war that Clausewitz was the first in the occident to write about:

"War is nothing but a duel on a larger scale. Countless duels go to make up war, but a picture of it as a whole can be formed by imagining a pair of wrestlers. Each tries through physical force to compel the other to do his will; his immediate aim is to throw his opponent in order to make him incapable of further resistance. War is thus an act of force to compel our enemy to do our will."⁵¹⁷

A general wields an entire army and a swordsman his *katana*. It is still a duel⁵¹⁸ and as Antoine-Henri Jomini later came to point out, the difference between levels of war is mostly concerned with the viewpoint and the direction of the planning process. "In strategy the general begins with the planning of the entire war and campaigns within it and descends to the details. A tactician begins at the grass-roots level and ascends to combining details together to create a system of forming and handling an army."⁵¹⁹ In Musashi's writings all actions of a warrior are a part of strategy. His idea was more inclusive that the division into separate levels today but in order to understand the differences and to be able to learn to handle the humongous scale of an army as well as that of a company these levels are useful tools. To conceive of war as a true art and to learn to appreciate its terrible beauty in its multiple forms, the ideas of Musashi are beneficial for the strategist and operational artist⁵²⁰.

Many of the principles Musashi used in describing a swordfight can be applied easily to wider context of battle by the occidental mind as well. When the warrior picks up his sword, he should not think about striking or slashing, but only of continuing his movement to the very end, the penultimate strike.⁵²¹ With the example of a single swordsman Musashi argues for a grand strategy for an army or even a state. All actions should be carried out so that they result in the ultimate victory. The same applies to his concept of "*striking the enemy with one timing*." This means that when close to the enemy one needs to strike without moving one's position, without pausing to gain courage, but striking at the blink of an eye, before the enemy knows whether to back off or perform his strike.⁵²² This instantaneous strike corresponds beautifully with the contemporary dogma of operational art. Since time is of essence, it cannot be given to the enemy.

The modern levels of warfare and the difference between them are evident in Helmuth von Moltke's writings. "There are essential differences in the goals and in the manner of command of large and small units. What is necessary for the former is not right for the latter. Space and time have for each a different meaning."⁵²³ Despite their different meanings space and time do not vary in importance. The details of terrain, for example, become more meaningful the lower down the ladder we descend. Nevertheless, one would plan his entire offensive differently in Sahara than in the glaciers of Himalaya. The same idea applies to time as well. In

⁵¹⁵ Musashi (1995), p. 53.

⁵¹⁶ Musashi (1995), p. 77.

⁵¹⁷ Clausewitz (1989), p. 75. See also Gray (2007), p. 66 who argues that there can be no war without a self-willed foe.

⁵¹⁸ Even today warfare is often compared to a duel. Smith (2008) p. 16 saw the art of war to like boxing, albeit that "Queensberry rules do not apply, and the art of tactics is more like a lethal brawl in the gutter where there are no rules or referees, and where low cunning matched with the maximum force available wins the day."

⁵¹⁹ Jomini (1992), p. 66. Warden (1995) with his systemic approach chose the first as his vantage point.

⁵²⁰ This is partly because Musashi differs from many other Zen masters in a profound way; he was almost obsessed with the Way of the warrior instead of many other cultural aspects. He represents a militaristic way of thinking using Zen techniques without Buddhist ethics. See Cleary (2005), pp. 79-80, 125.

⁵²¹ Musashi (1995), p. 67.

⁵²² Musashi (1995), p. 67.

⁵²³ Moltke (1993), p. 130.

tactics the units of time are smaller than in operational art, but in both the idea of consuming as little time as possible is crucial in indust-real warfare.

One thing that concerns the functions and perceptions of time between the different levels of the art of war is that an event in one is likely to affect the others, but with a delay or a time lag. Warden notes this in passing mentioning that the destruction of the sun would only be evident to us some nine minutes after it occurred. This led him to claim that "*one must always assume a delay between strategic events and subsequent tactical effect.*"⁵²⁴ This is true and as an example we may use the signing of a peace accord since actual fighting will continue until the information has been relayed to the last soldier. But the time lag is of bi-directional nature. When a tactical level decisive victory has been gained in a battle its importance and consequences on the operational level takes time to be understood and evaluated. The same applies between operational, strategic, and political levels. But how do we distinguish between the different levels?

In the ancient world the relationship was simple. Strategy was the art of the general and tactics guided the actions on the battlefield.⁵²⁵ Both the Greeks and the Romans excelled in these arts of war. But they have not remained stable over time. There have been times, for example the Dark Middle Ages, during which both tactics and strategy degenerated too badly to be considered as art.⁵²⁶ Yet they were revived with the Enlightenment and expanded during the indust-reality. As Isserson noted, prior to WW I the Soviet military art spoke only of two main elements. They were "strategy as teaching on war, and tactics as teaching on battle."527 Only relatively late many new terms have sprung up and expressions such as 'operational-strategic' or 'theatre-strategic' are widely used. Yet in this analysis we do not have to engage so deeply in the discussion. We can start from the basics. Jomini provided us with taxonomy of the different branches of the art of war. He divided them into five purely military ones; Strategy, Grand Tactics, Logistic, Engineering, and Tactics. The sixth branch he named "Diplomacy in its relation to War"528 and argued that while it is more the statesman's business than the soldier's, it needs to be understood by commanders since "it enters into all the combinations which may lead to a war, and has a connection with the various operations to be undertaken in this war."529 Most of Jomini's terms are self-explanatory, but in contrast with modern division of war into strategic, operational and tactical levels Jomini used his 'Grand Tactics' as we would use 'operational' today.

The name is highly fitting, since operational art is to some degree tactics on a higher level. According to Jomini's definition "*Grand tactics is the art of making good combinations preliminary to battles, as well as during their progress.*"⁵³⁰ Temporally the realm of grand tactics begins from the moment of planning how strategy could be realized and extends through the period of actual operations until the goals dictated by strategy are reached. It does not enter the realm of tactics, but prior to battle attempts to create such force concentrations that enable victory and after the battle creates its "combinations" based on the outcome. In addition, between planning and combining outcomes of battle into future plans was a realm governed by other than grand tactical factors. According to Jomini,

> "the maneuvering of an army upon the battle-field, and the different formations of troops for attack, constitute Grand Tactics. Logistics is the art of moving armies. It comprises the order and details of marches and camps, and of quartering and supplying troops; in a word, it is the execution of strategical and tactical enterprises."⁵³¹

⁵²⁴ Warden (1995), p. 5.

⁵²⁵ See e.g. Bülow (2013).

⁵²⁶ Delbrück (1990c), p. 323-329.

⁵²⁷ Isserson (2013), p. 13.

⁵²⁸ Here may be a risk of misunderstanding since Jomini used the term "*politique*" and it has often been translated as "diplomacy." Bassford (2007), p. 82. Such a small confusion between the actant and the act is not very relevant in understanding Jomini.

⁵²⁹ Jomini, (1992), p. 13. See also Matheny (2012), p. 8.

⁵³⁰ Jomini (2007), p. 131.

⁵³¹ Jomini (2007), p.51.

This is somewhat alien to contemporary armed forces in the western world. Strategy outlines how the entire military might of a nation is to be used. Grand tactics consists of positioning and maneuvering an army on the battlefield and logistics was for Jomini the art of moving armies to the battlefield as well as supplying them. In other words, "Logistics comprises the means and arrangements which work out the plans of strategy and tactics. Strategy decides where to act; logistics brings the troops to this point; grand tactics decides the manner of execution and the employment of the troops."⁵³² Once the troops have reached the location of future battle, tactics govern them for the duration of the battle. Meanwhile grand tactics plans how they are to be re-employed after the battles are over.

The first person to write about grand tactics was Jacques Antoine Hipolyte de Guibert. From his perspective it was an art of assembling forces, unifying them and executing grand maneuvers with them. Thus grand tactics was an art of executing, combining and leading these grand maneuvers.⁵³³ It was a compilation of all military knowledge and Napoleon, for example, shied from using the word 'strategy' but preferred 'grand tactics' for what he called the 'higher parts of war.⁵³⁴

Operational art is a relatively new concept in the English-speaking world and its art of war.⁵³⁵ It can be conceived of as a modernized version of grand tactics. If the function of strategy was for Gray to hold a bridge between politics and action, especially military action⁵³⁶, operational art is another bridge that connects the tactical level to the strategic level and in fact there is a certain level of overlap at each end. Operational art is not clearly definable due to this overlapping, but its primary meaning is to act as the level of thinking that on the functional side as the conduct of operations connects the two separate spheres of military action and allows us to treat the art of war as a unified whole.⁵³⁷ In ancient times and even the dawn of the indust-reality there was no need for such a concept. In battles the great captains of the past forged their strategy and even policy. They often were the leaders of their nations and wars were somewhat simpler since individual battles could influence directly the outcome of the whole war. In fact, the entire war could be comprised of one single clash of arms that would decide the destiny of the loser. Tactical level had direct interlinks to strategy as late as the Napoleonic Wars.

After Napoleon came a change in the structures of the armies and governments alike. Indust-reality brought with itself the cumbersome state machinery as an organizer and the concept of bureaucracy entered every societal equation. Even if the armies of the time had somehow in theory managed to avoid adopting processes of the society, the internal complexity of mass armies created a gap between strategy and tactics and a need for a new level somewhere in the grey zone between the two. At least from the nineteenth century onwards the art of war has had different manifestation on tactical, operational and strategic levels.⁵³⁸ The need for creating a separate concept of operational art to govern operations instead of talking about campaigning as had been done in the past was a byproduct of the indust-reality and the concept of nation in arms as its reflection in military affairs. In the words of Simpkin, "*the term the French adopted and the British followed was la grande*

⁵³² Jomini (1992), p. 69.

⁵³³ Guibert (1773), p. 5 "Il s'agit de rassembler ces corps, de les amalgamer, de les faire concourir a l'exécution, de la combiner, de la diriger, qu'on appelle Grandge Tactique."

⁵³⁴ Vego (2009), p. I-15. Strachan (2013), p. 29, notes that it was only during his exile on St Helena that Napoleon used the word strategy. Even if he can be called the father of operational art, this expression was not in his vocabulary either, but a result of later scholars turning his art into science and making in into a doctrine and theory. See Strachan (2011), p. 98.

⁵³⁵ As late as 1965 even the French Beaufre argued that alongside tactics and strategy the only other level of war is logistics as "*the science of supply and movement.*" Beaufre (1965), p. 22. For him "operations" were "*the sum total of the dispositions and manoeuvres*" required to get the two armies to oppose each other on the battlefield. Beaufre (1965), p. 59.

⁵³⁶ Gray (2010), pp. 15.

⁵³⁷ Gray (2010), p. 21. shows skepticism toward the bridging function of the operational level stating that may on occasion function as a barrier.

⁵³⁸ See Matheny (2012), p. 15.

tactique (grand tactics). On the German side the word chose was operativ, quickly borrowed by the Russians as operativnyi and now rendered in English as 'operational'?"⁵³⁹

The Soviet theorists implemented it as the level in-between strategy and tactics since single battles could no longer be combined into strategy. The span of operational level covered military hierarchy from army group or army to corps and occasionally division.⁵⁴⁰ The term 'operational art' was first coined by Aleksandr Svechin in 1922.⁵⁴¹ Svechin argued that it was a critical conceptual linkage between tactics and strategy since combat actions are not self-contained but basic material out of which an operation is created. One single battle could no longer bring about a victory of the war and one had to follow a path "broken down into series of operations separated by more or less lengthy pauses which take place in different areas in a theater and differ significantly from one another due to the differences between the immediate objectives one's forces temporarily strive for."542 Battles had to be joined together but even the creation of this path was insufficient to fulfil strategic objectives. Something in between was required to make sense and simplify the complexity. Isserson noted that "instruction about contemporary operations is insufficiently worked out and remains the least elaborated aspect of military art."543 The Soviet thinkers took a head-start in the conceptual development of operational art. This was possible because they were the first to perceive that the growth of armies had created a new characteristic of warfare. As Sokolovsky put it, theory of operational art was born "in agreement with the concept that the ultimate war aims cannot be accomplished by one blow, our military theory considered it necessary to conduct a series of integrated campaigns and operations."544

It must be noted that when English-language theorists discuss operational art they point out that it is inherent in Russian and German theorists but often overlook the fact that while it was 'invented' in the Occident, the concept itself is universal.⁵⁴⁵ In translations the operational level is often expressed in talking about 'campaigning.' Even in Mao and Giap with their guerrilla doctrines we find this understanding of a middle level between strategy and tactics. Mao argued that "the science of strategy is to study those laws for directing a war that govern a war situation as a whole. The task of the science of campaigns and the science of tactics is to study those laws for directing a war that govern a partial situation."⁵⁴⁶ Strategy explores war as a phenomenon and science of campaigns concerns itself with its constituents.

For Giap, the Vietnamese "*military art determines the organic relationship and interaction among strategy, campaign, and tactics, which are the components that make up this art, and it correctly determines the role of each component.*"⁵⁴⁷ Strategy creates the conditions that allow for objectives of both campaign and combat to be fulfilled and in turn, by fulfilling the tasks on the battlefield are problems related to campaign solved and a basis created to achieve stra*tegical objectives.*⁵⁴⁸ As Giap argued, "*tactics are inseparable from strategy.*"⁵⁴⁹ The meanings of the words vary but the three-tiered structure is evident.

One way to define the content of operational art is to use Leonhard. Thus operational art is "the planning level of war that constructs campaigns and major operations in order to accomplish the theater goals articulated at the strategic planning level; the intermediate planning level that

 ⁵³⁹ Simpkin (1985), p. 14. Fuller, for example, never wrote about operations or operational art with those specific expressions. He wrote about "grand tactics" but we can safely follow Reid (1998), pp. x-xi, 17-18 in claiming that taking the perspective of operational art enables us better to understand his theories.
 ⁵⁴⁰ Simpkin (1985), p. 14, Glantz (1991), p. 10.

⁵⁴¹ Vego (2009), p. I-23. See also Lalu (2014), pp. 80-82.

⁵⁴² Svechin, cited in Vego (2009), p. I-24. See also Kipp (2011), p. 65.

⁵⁴³ Isserson (2013), p. 10.

⁵⁴⁴ Sokolovsky (1963), p. 129.

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⁵⁴⁵ For example Matheny (2012), pp xv-xix argues that even if many U.S. military thinkers argue differently, during the inter-war period between the world wars operational art was being developed in the U.S. even if the expression was not used.

⁵⁴⁶ Mao (1963), pp. 79-80.

⁵⁴⁷ Giap (1970), p. 75.

⁵⁴⁸ Giap (1970), p. 75.

⁵⁴⁹ Giap (1968), p. 40.

*integrates tactical efforts and events into a campaign.*³⁵⁵⁰ This definition is suitable to keep in mind. Operational art is the practical execution of strategic plans and the creation of sequential operations and campaigns in planning and combining the battles one fights to adhere to this plan for the purpose of attaining the desired strategic end-state. To put the task of operational art in as simple form as possible, "What the strategic plan demands, operational art must supply. Likewise tactical objectives must slavishly submit to the operational plan, or they become disastrous-ly inappropriate."⁵⁵¹

Clausewitz has defined strategy as the use of battle for the purposes of war. In his time strategy was the art of the commander.⁵⁵² In his words it was "*the combination of individual engagements to attain the goal of the campaign or war*."⁵⁵³ This is close to what we today call operational art. Strategy for Clausewitz was a little less than how we perceive it today. It would be justified to say that 'strategy' has expanded into the realm occupied by politics and as its highest level has distanced itself from tactics, the intermediate area was occupied by operational art combining battles into operations.⁵⁵⁴ In the time of Napoleonic field armies the need to combine the effort of different branches of service was different from today. Thus, art of war was simpler and this led Clausewitz to highlight the role of tactics over the lowest levels of what he called strategy. For Isserson tactics and operational art "*differ only I scope and dynamics. The not only co-exist during combat actions, but they organically flow into one another*."⁵⁵⁵ Tactical successes should become operational ones⁵⁵⁶. Since tactical, operational, and strategic levels exist in the same time-frame and permeate each other it is useful to focus one's short time attention on the possibility of tactical victory.

"If we know how to fight and how to win, little more knowledge is needed. For it is easy to combine fortunate results. It is merely a matter of experienced judgment and does not depend on special knowledge, as does the direction of battle."⁵⁵⁷

In a way Clausewitz is exactly right. It is not difficult to move from a victory to the next battle and build upon success operationally when compared to the problems one encounters in rallying the troops after a lost battle. Furthermore, actual tactical command in battle requires detailed knowledge of the troops and specialized skills of a soldier. In operational art or strategy these are not as important and much of the detail is omitted from the bigger picture of war. Clausewitz argued that "only great tactical successes can lead to great strategic ones; or as we have already said more specifically, tactical successes are of paramount importance in war."⁵⁵⁸ To emerge out of the war crowned with victory one must be able to build tactical victory upon tactical victory and this is the purpose of employing operational art.

"In strategy there is no such thing as victory. Part of strategic success lies in timely preparation for a tactical victory; the greater the strategic success, the greater the likelihood of a victorious engagement. The rest of strategic success lies in the exploitation of a victory won."⁵⁵⁹

This ability to exploit the success is not a meager task either, since "*the strain will gradually increase and in the end resources may be exhausted. Time is thus enough to bring about a change unaided.*"⁵⁶⁰ Therefore, in order to avoid stagnation one must not allow himself a moment of relaxation but to use every means available to push onward after a victory, because that is

⁵⁵⁰ Leonhard (1991), pp. 8-9.

⁵⁵¹ Leonhard (1991), p. 10.

⁵⁵² See Strachan (2013), p. 11.

⁵⁵³ Clausewitz (1987), p. 349.

⁵⁵⁴ According to Matheny (2012), pp. 9-10 both Clausewitz and Jomini wrote about operational art even if they called it strategy. This is overstating the case. It is, rather, that in time strategy moved further from the actual battles and operational art became the intermediate connecting tactics and strategy. Strategy today creates links between war and policy. See Strachan (2013), p. 57.

⁵⁵⁵ Isserson (2013), p. 35.

⁵⁵⁶ Ibid.

⁵⁵⁷ Clausewitz (1989), p. 349.

⁵⁵⁸ Clausewitz (1989), pp. 228-229.

⁵⁵⁹ Clausewitz (1989), p. 363.

⁵⁶⁰ Clausewitz (1989), p. 598.

the time the enemy is most vulnerable. In this as many other things Moltke followed Clausewitz⁵⁶¹ by writing that

"the tactical result of an engagement forms the base for new strategic decisions because victory of defeat in battle changes the situation to such a degree that no human acumen is able to see beyond the first battle."⁵⁶²

The outcome of a battle is always a game changer and dictates what future actions remain open options. True operational art lies in flexibility and the skill to recover after a loss. To build a victory on the foundation of a battle one has lost and return on the operational line leading to the achievement of set goals is the pinnacle of operational art. Knowing how to fight and to win does not ensure success, since much in warfare depends on so many circumstances and even sheer luck. Knowing how to make the best of what is at hand at any given moment and utilize the resources optimally to reach pre-set objectives is the hard part of operational art. Ultimately the victory in war is not achieved by winning all the battles, as the U.S. proved in Vietnam. Every battle has to be a part of a chain of operations and these operations combine together to achieve the strategic goal. In a way, then, operational art is the art of campaigning. It was after the humiliation in Vietnam that the receptivity to the concept of operational art started to increase and a conceptual leap from winning battles to winning operations occurred⁵⁶³. Operational art is a popular phrase today but in the early nineties amidst the hype of developing it Leonhard wrote that "*the American army is generally untrained in operational art, despite our promiscuous use of the term of late.*"⁵⁶⁴

Operational art is a very peculiar art form, because it is not suitable for everyone. Marshal Foch was absolutely right when he wrote that war is not "an art for dilettante, a sport. You do not make war without reason, without an object, as you would give yourself up to music, painting, hunting, lawn tennis, where there is no great harm done whether you stop altogether or go on, whether you do little or much."⁵⁶⁵ Operational art is far too serious in its consequences to be dabbled with. It cannot be practiced for a fleeting moment and discarded when it is no longer fun. A symphony, a painting, or a sculpture can be left unfinished when the fancy no longer grips the artist. War is an artwork that has to be finished with blood, tears and perspiration when inspiration is long gone. One is able to plan his actions and meditate on them, but at some point comes a time when this mental Rubicon either has to be crossed or one must stand down. "Every attack, once undertaken, must be fought to a finish; every defence, once begun, must he carried on with the utmost energy."⁵⁶⁶

In this chapter we have discussed in depth how the different levels of politics and war influence and blend into each other and how the meanings of time on each level vary and, even more importantly, how the temporalities flow into each other. The boundary between war and peace evaporates and this, in effect, causes operational art to be involved not only in warfare, but during peacetime. The actual execution of operational art is confined to war, but development, thinking, planning and preparation, in other words much of the intellectual part of operational art, are conducted during peace. In strategy and operations alike, preparation is the most important way of trying to manage time in warfare. Now, having discussed how operational art came to be, we will in the next chapter follow its development.

⁵⁶¹ Howard (1983), p. 59 claimed that apart from the Bible and Homer Clausewitz as an author had the biggest influence on Moltke and his endorsement probably ensured that *On War* did not become a forgotten curiosity.

⁵⁶² Moltke (1993), p. 92.

⁵⁶³ Adamsky (2010), p. 60.

⁵⁶⁴ Leonhard (1991), pp. 5-6.

⁵⁶⁵ Foch (1920), p. 13.

⁵⁶⁶ Foch (1920), p. 340.

TIMES OF REVOLUTIONARY EVOLUTION

"In real life we cannot ask for "ever-victorious generals", who are few and far between is history. What we can ask for is generals who are brave and sagacious and who normally win their battles in the course of a war, generals who combine wisdom with courage. To become both wise and courageous one must acquire a method, a method to be employed in learning as well as in applying what has been learned.

What method? The method is to familiarize ourselves with all aspects of the enemy situation and our own, to discover the laws governing the actions of both sides and to make use of these laws in our own operations.³⁵⁶⁷

For an operational artist the most important time professionally is not war but peace. That is the time to learn to master operational art and to develop it. All too often the military minds enter a state of lethargy during peacetime. Just after a war has ended there is a peak period of activity where lessons learnt are accumulated, assimilated and incorporated into tactics and training. This is an important task, but when the past lessons have been fully included as parts of the doctrines and functions of the army the process seems to solidify. One is satisfied with merely honing the current methods into perfection and their actual development ceases. If the army is not trained according to modern tactics in the peacetime, the lessons have to be learnt in battle and are too dearly paid for⁵⁶⁸. Fuller warned us that

> "it is during peace, much more so than in war, that the struggle for scientific knowledge and industrial survival is acutest. Each new discovery, each new invention, by modifying the forces of peace modifies the force of war. The soldier must understand these modifications, because in the next war they will confront him as actual conditions."⁵⁶⁹

The ways of thinking should be directed to following the present societal development and attempting to incorporate every invention into the military art before the potential future enemy does so. Foch agreed. In order to prepare for a coming war, an officer needs to keep himself "*constantly abreast of the events and problems of his time*"⁵⁷⁰ Progress must be not only followed but embraced by the military thinkers.

"In the days of the stone age, when progress stood almost at a standstill, weapon development was proportionately slow, and may be said to have been always up to date. To-day, conditions are diametrically reversed, civil progress being so intense that there is not only a danger but a certainty that no army can in the full sense be kept up to date. This means that in war time evolution will be extremely rapid, and consequently that the army which is mentally the better prepared to meet tactical changes, will possess an enormous advantage over all others."⁵⁷¹

This requires a flexibility of mind in order not to waste any time in adapting oneself to perform in the new situation. The peacetime armed forces must build such mental capabilities and flexibility of operations that it can develop its full capability without any hindrances. This is what Liddell Hart lamented in the case of Britain. According to him, "armies were tardy in grasping the possibilities of mechanical power and in appreciating its effect on their theories. Only with reluctance did they accept the new tools forced on them by civil progress, causing an immense and need-

⁵⁶⁷ Mao (1963), p. 83

⁵⁶⁸ Zukov, (1969), p. 89.

⁵⁶⁹ Fuller (1926), p. 187.

⁵⁷⁰ Foch (1931), p. xxxii.

⁵⁷¹ Fuller (1932), p. 213.

*less time-lag between the invention of these tools and their provision.*²⁵⁷² This time lag must be avoided and it can only happen if the army is able to shed its conservatism and adopt new ideas and tools from the civilian sector and incorporate them into its tactics without undue delay. However, this is more demanding than one would imagine. Fuller was not completely off his mark when he wrote that "novelty is a mental laxative which is not tolerated by the military monk. [...]—gunpowder, cannon, naval armour, rams, rifles, breech-loading guns, gas and tanks have all been opposed by the military hierarchy of their day.²⁵⁷³ Should a nation find itself in a situation where the "military monks" are not aware of societal developments about to be manifested on the battlefields, there is a need for someone above the military elite to point the way. Co-

"a total revision of their military outlook. They must be brought to visualize that the past is only a road to the future, that to-day the epoch of all former wars, an epoch based on muscular force, is rapidly closing down, and that a new epoch, based on mechanical energy, is rapidly opening up."⁵⁷⁴

Today a "new epoch", whatever it may be, is again opening up. At the time of Fuller's writing the mechanized age was dawning. Progress never ceases and the armed forces cannot help but to follow it. Foch embraced Napoleon's idea that an army should alter its tactics every ten years⁵⁷⁵ but this requires thorough reorganization and revision. "Total revisions" need special catalysts to set them off. Freytag-Loringhoven agreed that ten years is a good timespan in which to adapt tactics according to battlefield innovations especially if one wants to maintain superiority.⁵⁷⁶ At the same time the most pressing dangers for operational and strategic level plans are routine, conservatism and traditions since they "in time turn into a kind of sacred truth and acquire a kind of absolute value, particularly when their content is a major secret and only a narrow circle of augurs is allowed to criticize them."⁵⁷⁷ This makes it very difficult to create innovative new ideas since the "circle of augurs" consists often of traditionalists. However, those who make the total revisions must have sufficient experience and understanding of the evolutionary pattern of warfare instead of rushing after the latest trends since "revolutionary changes in operational views are hazardous and detrimental."578 To combine the eagerness for true evolution and minimize the zeal of a revolutionist to turn everything upside down would show true flexibility of mind.

This chapter illustrates one pattern of development within operational art. It emphasizes that there are periods of evolution when progress advances in such huge leaps that development seems linear and maybe even exponential but there are alternatively periods of revolution when the evolutionary patterns takes an entirely new course and direction. Furthermore, the reader may perhaps catch a glimpse of the idea that 'revolution' as an expression refers to a cyclical concept of time by conveying the idea of things revolving.

4.1. REVOLUTIONS OR EVOLUTION

"In the social field, in the struggles between conscious human beings, every change brought about is often the result of a very complex process of evolution. The revolutionary leader must discover the general and particular laws of development in a maze of phenomena in which the false is hardly distinguishable from the true, and where there are innumerable and entangled relations, all moving and developing unceasingly. The accurate, scientific forecast of trends, of how major situations are likely to develop in the future, is of the utmost

⁵⁷² Liddell Hart (1936), p. 57.

⁵⁷³ Fuller (1923), p. xii.

⁵⁷⁴ Fuller (1923), p. 236.

⁵⁷⁵ Foch (1931), p. xl.

⁵⁷⁶ Freytag-Loringhoven (1991), p. 276.

⁵⁷⁷ Svechin (1992), p. 219.

⁵⁷⁸ ibid.

*importance in revolutionary work. Such predictions will be severely tested by events and time. It takes genius to make an accurate forecast.*⁷⁵⁷⁹

Foch argued as a general principle that "*war, like all other human activities, undergoes changes; it does not escape the law of evolution.*"⁵⁸⁰ Evolution is a universal constant that dictates all life. For Fuller even the principles of war were grounded in evolutionism⁵⁸¹. In this particular case evolution in warfare is not connected to evolution in the humans as a species but in the societies and civilizations humans formed. But the speed of such evolution is not constant. Occasionally societies evolve rapidly, at other times they seem almost to get disqualified from the human race. Operational art has occasionally in the past stood still for long periods of time. One of the longest periods of such stagnation occurred during the First Wave in the Dark Middle ages when the European art of war remained fundamentally unchanged for centuries. When scientific, economic and social development slowed to a standstill, so did military progress. Second and Third Waves follow a different pattern. Technological development has kept speeding up and since the 1990 Americans have argued that it has led to a dramatic revolution due to information technology to support them, and target acquisition systems together in a manner that completely changed the combat environment⁵⁸².

Bernhardi argued that not even the most momentous inventions and social revolutions are able to suddenly produce a change of all factors influencing war.⁵⁸³ We must distinguish between those changes in military technology that have spurred tactics and operational art into a period of rapid evolution and those that have truly created fundamental changes in the perception of war and conduct of warfare and which therefore deserve to be called revolutions. This category excludes gunpowder, smokeless gunpowder, aviation, machine guns, and gas and shows that they are merely catalysts for evolutionary measures that have changed how the game is played. Bülow claimed that the invention of gunpowder led to sinking of the art of war⁵⁸⁴. The same arguments have been voiced about most of the technical innovations, but every time after a short period of adaptation tactics and operational art have prevailed and the impact was proved not to be truly revolutionary. An example of using the epithet of revolution to describe a fundamental change is found in Liddell Hart, who claimed that with the subsequent successes of Napoleon, the French Revolution "*created a military revolution, the greatest before the advent of mechanization*."⁵⁸⁵

The French Revolution created a change in the ways of thinking and viewing the world and the mental readjustments permeated the military as well. As van Creveld wrote, to create a revolution in military affairs, "*two things are normally needed: an objective development that will make it possible, and a man who will seize that development by the horns, ride it, and direct it.*"⁵⁸⁶ Napoleon was this man and he was not afraid of a rough ride. Echevarria wrote that Clausewitz created a revolution in military theory.⁵⁸⁷ Perhaps, but his texts were written due to the heavy influence of experience in the Napoleonic Wars and can be seen as the military extension or evolution of the same revolution that started in France. And to some degree through his influence and numerous reinterpretations throughout the years Clausewitz still seems to spur revolutions.

⁵⁷⁹ Giap (1978), p. 63.

⁵⁸⁰ Foch (1920), p. 26-27.

⁵⁸¹ Reid (1987), p. 35.

⁵⁸² See e.g. Adamsky (2010), pp. 2-5. The emergence of precision weapons on the battlefield is often referred to as the "Second Offset" that gave an advantage to the Americans. The first one was the development of nuclear weapons and the third is being desperately sought for to master the 21st century battlespaces. ⁵⁸³ Bernhardi (1914), p. 19.

⁵⁸⁴ Bülow (2013), p. 227.

⁵⁸⁵ Liddell Hart (1932), p. 73.

⁵⁸⁶ Creveld (2011), p. 15.

⁵⁸⁷ Echevarria (2013), pp. 5-6.

Among all the imagined and true revolutions in the evolution of the art of war the French Revolution occupies a spot of its own. As Foch noted, this revolution "*was not only philosophical, social, and political, but also military. Not only did it dare to declare war on kings and tyrants, but also (...) to the minutely and rigidly trained troops of the older Europe.*"⁵⁸⁸ This perhaps is a characteristic feature of a true revolution in the art of war. Either it influences all other aspects of the society or a revolution within some other societal sphere spreads and influences all others, including warfare. There have been many revolutions in societies throughout history but not all of them create military revolutions. In the aftermath of the American Revolution America as a nation was born and violence became bound to its national identity⁵⁸⁹ but warfare as a whole did not change even if for Mahan it was a purely maritime war and this idea laid the basis for his magnum opus.⁵⁹⁰

Industrialization, motorization, aviation, and computerization each brought about a revolution in whole civilizations. Machine guns only influenced the art of war and those falls within the sphere of evolution and normal development. True revolutions, according to Toffler, change the game itself and the relationship of war to the society. Those "have occurred only twice before in history, and there are strong reasons to believe that the third revolution the one now beginning – will be the deepest of all. For only within recent decades have some of the key parameters of warfare hit their final limits. These parameters are range, lethality, and speed."⁵⁹¹ Toffler grasped a profound truth but simultaneously his claim shows an outdated idea of military capability. Air mechanization⁵⁹², space technology, intercontinental ballistic missiles, supersonic long distance weapons and nuclear weapons developed to levels of potential multiple overkill capability have already been part of doctrines for a long time.⁵⁹³ Range, speed, and lethality have reached their maximum levels in terms of practicality. Still, however, warfare and operational art are constantly being developed. Toffler focused too much on the technical means of changing the game and its rules and failed to notice that what Napoleon did to the art of war was just as revolutionary.⁵⁹⁴ It is true that many revolutions are of technical nature. Ever since world advanced beyond the relatively strict confines of the agrarian society, most of the progress has been dictated by technical innovations and the ways in which they altered the society.

Each and every period of evolution and revolution has included a development in technologies of war at the same time. The Soviets were able to perceive the effects of coming weapons technology and precision weapons from the 1970s onwards. Philosophically their "*military-technical revolution*" was strikingly perceptive and able to envision the future but they lacked the technical means of bringing that revolution from a vision to reality. The U.S. had more advanced technology but lacked a vision of what could be accomplished with it and it took them another ten to twenty years to synchronize technology with the doctrine.⁵⁹⁵ A beautiful idea by itself cannot revolutionize warfare and having the technology to change war without a vision how to do it is likewise insufficient. The ideas need to be turned into reality. The Americans have a technocentric and pragmatic view, since for

Corbett whose argument states that "*neither war nor anything else can change in its essentials*." Corbett (1999), p. 176. Napoleon had original and distinct ideas that bewildered his enemies, but did not revolutionize war itself. Corbett was both right and wrong. The fundamentals of war did not change, but operational art did. ⁵⁹⁵ Adamsky (2010), pp. 24-31.

⁵⁸⁸ Foch (1920), p. 26.

⁵⁸⁹ Shy (1976), p. 232.

⁵⁹⁰ Sumida (2006), pp. 90-91.

⁵⁹¹ Toffler (1995), pp. 29-30.

⁵⁹² Interestingly Tukhachevsky was the first to write about this concept that fifty years later came to mean use of helicopters in combat instead of just supporting it. For him *"still extending new system of armaments, embracing aviation, tank forces, radio communications and chemical warfare can be given a generic name - airmechanisation."* Tukha-chevsky, cited in Simpkin (1987), pp. 136-137.

⁵⁹³ Beaufre (1965), p. 73. Even if today the tenets of space warfare are still being developed, the process started in the 1940's and for example ICBMs can be categorized as space weapons, since their flight trajectory goes through suborbital regions often considered to be a part of "space." See Klein (2006), pp. 6-10.
⁵⁹⁴ While many theorists agree on the revolutionary nature of Napoleonic art of war one notable exception is

them a military revolution occurs when a set of technologies and associated operational concepts transform the character of warfare and this set of technologies can be deployed.⁵⁹⁶ Technology may be the driver, but doctrines as ways of thinking about war must follow.

Advancements in science ultimately create technologies that employ them. They are, however, not the goals to scientific development but results of it. New technologies again spur new advances not only in science but in all aspects of civilization. Technology has to be viewed in this context. Heidegger claimed that "modern technology too is a means to an end."⁵⁹⁷ Technology in the context of warfare is an enabler and a supportive tool and not the objective of development of the art of war. As Handel argued, "technological factors alone have never determined the outcome of modern wars."⁵⁹⁸ But technology and especially weapons technology has an important role to play in war. This is in accord with Heidegger's further claim that "the essence of technology is by no means anything technological."⁵⁹⁹ The role of technology in the art of war and the human experience alike is to be employed to free the mind and imagination to roam and to create. After the Cold War ended and the U.S. was left without an enemy, many of the theorists enjoyed this freedom from apparent threats and let their imaginations create fantasies of transformed future warfare.⁶⁰⁰

Revolutionaries are often utopian idealists concerning the future. Even Mao wrote that "*war, this monster of mutual slaughter among men, will be finally eliminated by the progress of human society, and in the not too distant future too. But there is only one way to eliminate it and that is to oppose war with war.*"⁶⁰¹ Fighting a war to end war is like drinking to stop alcoholism⁶⁰². But the vision of perpetual peace in communist thinking is tied to the classless and stateless future after the proletarian revolution. Thence comes the ideal of elimination of war through fighting. As communism became obsolete after the implosion of the Soviet Union time and temporality in warfare have gained completely new meanings in the post-Cold War world. Some, like Mary Kaldor have gone so far as to attempt to prove that war itself has been reconfigured. Concerning the wars of today she writes that

"Time and space are distorted in 'new wars'. We are more aware than ever before of violence taking place in different parts of the world and often we know more about what is happening far away than is taking place in our immediate vicinity. These perceptions of violence shaped by television and the Internet affect our responses as much as the everyday experience of the situation on the ground."⁶⁰³

The wide variety of media involved in many of the Third Wave global conflicts of past decades has almost erased the meaning of time and distance for the spectators of war. We see live feed from battles that occur across the globe and are thus allowed instant access to distant events. It must be noted, however, that this idea applies best to the 'media-wars' fought in the Persian Gulf, Iraq and Afghanistan. From television coverage we can instantaneously attempt to decipher how the war is progressing. As Smith acknowledged, "*we fight in every living room in the world as well as on the streets and fields of a conflict zone.*"⁶⁰⁴

Nevertheless, these new wars fought under close media scrutiny and characterized by the permeation of journalists into the fighting formations are only one aspect of contemporary warfare. These are the wars that we are closely acquainted with and that reach out to us. Simultaneously there are numerous conflicts in many parts of Africa whence we gain no video streams and that subsequently receive little coverage in main-

⁵⁹⁶ Mandeles (2005), p. 33.

⁵⁹⁷ Heidegger (1993), p. 313.

⁵⁹⁸ Handel (2001), p. 9.

⁵⁹⁹ Heidegger (1993), p. 311.

⁶⁰⁰ Kagan (2006), p. 175. This period without a clear enemy can even be called "a strategic pause".

⁶⁰¹ Mao (1963), p. 78.

⁶⁰² But this is what generation after generation of us have done. As Howard (2008), p. 90 wrote about the volunteers in Spanish Civil War, "so these young men went to Spain as their elders had gone to Flanders two decades earlier: to die in a war against war."

⁶⁰³ Kaldor (2007), p. vii.

⁶⁰⁴ Smith (2008), p.

stream media. These are the 'old wars', the wars that continue to smolder unrestricted below the gaze of the Western world in the sense that they use old methods, tactics and weapons. Yet Kaldor doesn't hesitate from labelling them new wars as well. Kaldor describes very accurately the nature of wars between ex-Yugoslavian countries and her typology to some degree suits the localized conflicts of the War on Terror as well. She goes, however, too far when she argues that "the new wars can be contrasted with earlier wars in terms of their goals, the methods of warfare and how they are financed. The goals of the new wars are about identity politics in contrast to the geo-political or ideological goals of earlier wars."⁶⁰⁵ The old and the new coexist, often not in the same battlespace, but one can easily turn to the other in right circumstances. They always have existed side-by side. As Bernhardi wrote prior to World Wars, "so it may happen that even in our days wars may arise which are not at all cause by important interests of the State. But they will then always bear a character different from those which do not spring from arbitrariness, but from political necessity."⁶⁰⁶ Instead of state policy, identity politics of smaller groups of people play a role in many of the new wars, but there are so many causes for war and lesser forms of political violence that such binary division cannot be justifiably made.

One of the more perceptive ideas of Kaldor was her claim of the ontology of the 'new wars' she discussed. According to her "the new wars could be viewed as a form of military waste-disposal - a way of using up unwanted surplus arms generated by the Cold War, the biggest military build-up in history."""."The new wars that so intrigued her were nothing but rubbish on the fringes of the art of war. Concerning the idea of new wars, we must remember a crucial distinction Münkler made. According to him it is not states "but para-state players that confront one another in the new wars."608 War has never been exclusively state activity.609 The technical and operational development of warfare in the advanced militaries continued practically without a pause even if the Cold War had ended in peaceful uncertainty.⁶¹⁰ Just because warfare kept developing, the stockpiles of weapons on both sides had by and large become useless since they were intended for a mass army against a superpower enemy, one of which had capitulated and one that reigned as an unchallengeable hegemon. Weapons and ammunition have their life span and once new technologies are invented to supplant them they become useless for their original owners but less developed armies still can easily find a use for them. Therefore, the new wars fought with old weapons were nothing more than sideshows while the center stage of warfare was reserved for the strong militaries that kept developing their ways and means of fighting while many parts of what was then called the Third World regressed to primitive wars with aged surplus weapons.

As we saw, rapid evolution in tactics and operational art often go hand in hand with societal revolutions and some of the most drastic political changes. As an example of the former we can use, again, the Industrial Revolution that changed along with means of production the entire economies of the civilizations that underwent it. Of a political revolution alongside with the French Revolution we can use the Russian Revolution that spawned communist Soviet Union. The accelerated period of evolution of warfare that deserves to be labelled a revolution is a result of another, social, political, technological, or cultural revolution that acts as a catalyst. In the words of Guderian,

> "such revolutionary economic changes must lead, as always, to military changes of a corresponding order; it is a question of making sure that military developments keep pace with the technical and economic ones. This is only possible if we welcome the developments in question whole-heartedly, and not just pay lip service to them."⁶¹¹

⁶⁰⁵ Kaldor (2007), p. 7.

⁶⁰⁶ Bernhardi (1914), p. 150.

⁶⁰⁷ Kaldor (2007), p. 102.

⁶⁰⁸ Münkler (2005), p. 8.

⁶⁰⁹ Keegan (1998), p. 38.

⁶¹⁰ Kagan (2006) wrote about "*strategic pause*" that lasted from the collapse of the Soviet Union to the beginning of the War of Terror.

⁶¹¹ Guderian (1992), p. 24.

This is an area in which lessons from the communists are useful. Reading the Soviet theorists, Mao, or Giap, we find how their entire art of war on all levels was infused with the political system and ways of thinking derived directly from it. This is not to say that operational art of today should be conducted along a certain political ideology, but that the economic and technical changes influencing the outlook of the society should be reflected in its operational art. Today we are paying the same lip service Guderian mentioned to a networked cyber-society and continue in the grand scheme of things to plan our operations in a manner compatible with indust-reality. In this sense we lose a lot of time if we prepare to fight a war according to outdated interpretations of the principles of war. Time wasted has to be won back during a possible future war and then the price may be too high.

The meaning of 'revolution' has drastically changed in the course of history. In the agrarian ages and, for example, the times of Machiavelli it was seen as a cyclical process in which the old order was usurped but the usurper was not necessarily qualitatively better than the dethroned⁶¹². Old order was replaced with the new order, which would soon start to look just like the old one. Le roi est mort, vive le roi! One tyrant followed the other. After the French revolution and increasingly in the latter phases of indust-reality we seem to hold to a predetermined illusion despite evidence to the contrary that the postrevolutionary status would always be qualitatively better than the status quo ante. In short, we expect linear progress. Yet, as Toffler wrote, "one needs imagination to confront a revolution. For revolution does not move in straight lines alone. It jerks, twists and backtracks. It arrives in the form of quantum jumps and dialectical reversals."613 The essence of revolution even in military affairs is not a scientific and self-correcting process in which the outcome would out of necessity be better, but the forces of change themselves are let loose. For the militaries the milliondollar question is how to control these forces and how to harness their drivers. Beaufre has argued that as military men "we are no longer true revolutionaries, which means that we are no longer able to base our actions upon the forces of change. From the purely strategic point of view this is a grave disadvantage."614

We lack the imagination required to chart the future course after the revolution. This means that we cannot mentally usurp or at least let go of the old order. The structure, the existing doctrines and tactics, and numerous other factors guide our operational art and they remain relatively unchanged. The inability to break away from the current modes of thought and action hinders us and minimizes the chances of creating real changes in warfare. Therefore, we are too established to be truly revolutionary and thus unable to ensure conditions for strategic surprise and often not even for an operational one. It would be wonderful if we could discard all existing dogma concerning operational art and construct a new theory and practice based only on intellect, but this is not a practical vision. Brodie has argued how "*we should not deceive ourselves that we have the ability to start from scratch with completely fresh ideas and, guided merely by logic, to fashion a strategy according to the need of the time. This is too much to expect of human beings.*"⁶¹⁵ All the theorists of the past to some degree influence current military thought and much of what we 'know' of warfare might perhaps require re-evaluation.

Furthermore, the mentality of the modern professional officer does not seem revolutionary but rather reactionary. Only a few "mold-breaking" types enter professional service and a certain systematic or structural conformism often restricts their career and resists their ideas. Simplin illustrated this reactionary tendency by saying that

> "regular officers recruited in peacetime are seldom the most dynamic of revolutionaries, and those that are tend not to attain positions of real power. Thus an army by its very nature possesses an organisational inertia several times greater even than its size would suggest."⁶¹⁶

⁶¹² See Macchiavelli (2003).

⁶¹³ Toffler (1990b), p. 186.

⁶¹⁴ Beaufre (1967), p. 51.

⁶¹⁵ Brodie (1959), p. 20.

⁶¹⁶ Simpkin (1985), pp.4-5.

4.2. BLITZKRIEG AS CASE STUDY OF AN ACCELERATED EVOLU-TION CYCLE

"Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur. In this period of rapid transition from one form to another, those who daringly take to the new road first will enjoy the incalculable advantages of the new means of war over the old. This new character of war, emphasizing the advantages of the offensive, will surely make for swift, crushing decisions on the battlefield. Those nations who are caught unprepared for the coming war will find, when war breaks out, not only that it is too late for them to get ready for it, but that they cannot even get the drift of it."⁶¹⁷

In the course of evolution of military thought here have been instances when officers themselves have had the foresight and intellectual flexibility to break free from the existing dogma and create something new. The gestation period between the two World Wars was one of accelerated development of both technology and doctrines and some countries were able to make the most of this. The citation from Douhet above is a great verbal depiction of the type of thinking that manifested itself in German tactics and operational art of WW II with mechanized and armored forces.

The inefficiency of troops with limited mobility in WW I was eloquently put by Isserson; "*It was senseless to break down a door if there was no one to go through.*"⁶¹⁸ To penetrate the defensive formations a localized force concentration had to be built and due to their mobility tanks were a promising new invention to create conditions for breakthrough. Yet the idea behind the tank was not novel in itself. It was merely an addition of petrol engine and tracks instead of wheels to the old idea of Leonardo da Vinci. He had described one of his building projects as "secure and covered chariots which are invulnerable, and when they advance with their guns into the midst of the foe, even the largest enemy masses must retreat; and behind them the infantry can follow in safety and without opposition."⁶¹⁹ It is remarkable to note the identical method evidenced in the first tank battles of WWI. The first deployment of tanks in Cambrai consisted of only advancing into contact with the frontline defenses so that the infantry could follow in their wake. Tanks were used mainly as protection for the infantry who breached the defenses. This idea can be found in the very first tactical paper written about tank tactics by their inventor, the British Swinton, who claimed that tanks

> "cannot win battles by themselves. They are purely auxiliary to the infantry, and are intended to sweep away the obstructions which have hitherto stopped the advance of our infantry beyond the German first line, and cannot with certainty be disposed of by shell fire. It follows, therefore, that the progress of the attack, which depends on the advance of the infantry, depends on the activity and preservation in action of the tanks."⁶²⁰

The ideas of Swinton were quickly expanded when the full potential of the tanks and mechanized formations were speculated upon. Liddell Hart argued that "*if they got round or through the enemy's front, armoured mobile forces could succeed, where the forces of 1914-1918 had always failed, in getting astride the enemy's rear before his reserves could form a fresh front.*"⁶²¹ Penetrations of the fronts were useless since the breakthrough could not be exploited. The advantage of tanks exemplified in *Blitzkrieg* was that they could use their mobility to turn a tactical victory into operational gains better than Stormtroopers of WW I.

Whenever we discuss the lightning-quick and aptly named *Blitzkrieg* of the German troops it should not be forgotten that the Germans did not call it that. For them it

⁶¹⁷ Douhet (1999), pp. 302-303.

⁶¹⁸ Isserson (2013), p. 66.

⁶¹⁹ Leonardo da Vinci in a letter to Ludovico Sforza, cited in Fuller (1920), p. 5.

⁶²⁰ Swinton (1916) Notes on the Employment of Tanks. Cited in Fuller (1920), p. 52.

⁶²¹ Liddell Hart (1940), p. 24.

was just operational art enacted in accordance to the old principles adapted to the times. It was a motorized and armored version of the Stormtrooper tactics of late WWI. By naming phenomena names people attempt to bind them down for analysis. *Blitzkrieg* was a term coined in the West by those who were overrun by the new German mode of fighting. By emphasizing the speed of lightning *Blitzkrieg* was mythified and turned in retrospect into something the Allies could not have countered. The British and the French had their own high-quality theorists on the possibilities of armor and mechanized formations, but their theories were not implemented. The Germans put these theories to test and succeeded.

Isserson noted that "the offensive leads in the development of technological combat means, while the development of defensive means occurs only in response."⁶²² The Germans seized the initiative in developing mechanized forces and the defensive response to them came only after a time lag during which France already fell. Liddell Hart argued that in the WWII Germany was able to "give fulfillment to ideas from which it was not too proud to learn, whereas our own authorities, distrusting them as unproved 'theories', considered it safer to keep in the familiar rut. There is nothing so unsafe, for a nation, as military conservatism."⁶²³ There is disappointment between the lines of Liddell Hart regretting the slow advances Britain made that were hardly suitable for the inventors of the tank. Military conservatism makes it difficult to counter technological and doctrinal operational level surprises the enemy may wish to affect.⁶²⁴ Meanwhile Rommel rejoiced that,

"Germany can thank the fact that shortly before the war General Guderian crystallised the modern theory of tank tactics into practice, combined with the fact that the will of the Führer resulted in the equipping and organisation of our tank forces, the British remained conservative with regard to armoured warfare. At the beginning of the war, the British emerged with almost no infantry or reconnaissance tanks. The value of mobile warfare was recognised by only a few in England before the war, with the result that little consideration was given to speed, flexibility and the relationship between leaders and their troops."⁶²⁵

On the Western front Guderian's attack literally flooded the defense. Early on May 1940 he crossed the border of Luxembourg, advanced fifty miles in two days, kept fighting the French troops and with the risk of his open south flank pushed westward. After making 40 miles during the 16th his superiors ordered him to wait, but with a threat of resignation he pushed onwards almost without noticing De Gaulle's ineffective attack on his left flank. Within a week he had penetrated into the depth of 150 miles and disregarding growing fuel problems pushed on. On the 20th his troops covered fifty-six miles in one day. After this deep thrust to Calais Guderian got command of a panzer army and received a new task. Behind the Maginot Line his troops drove from near Sedan on the Belgian border to the Swiss border covering 200 miles in a week.⁶²⁶ Numbers such as these provide sufficient explanation why German operational art was nicknamed *Blitzkrieg*.

The main reason why *Blitzkrieg* was so effective in its initial stages is that it was used for invasions in situations where the enemy was not fully prepared for an oncoming assault. As Rommel wrote describing the penetration of his troops into French territory, "the ronte we now used by-passed, as far as possible, all villages. Good results had been achieved in the past few days by attacking away from the roads."⁶²⁷ Rommel chose to use cross-country move-

⁶²² Isserson (2013), p. 52.

⁶²³ Liddell Hart (1940), p. 29. Yet, even Germans learnt their lesson the hard way. As Rommel (2003), p. 96 wrote "Prejudice against novel methods is a phenomenon typical of an officer corps raised in a proven system. The Prussian Army was defeated for this reason by Napoleon. The same phenomenon showed up in this war, in German as well as British officer circles, where complicated theories obstructed the capability to see things in reality. A military dogma had been worked out in every last detail, and this was taken to represent the very peak of military wisdom. In their minds, the only military thought acceptable was that which followed their own doctrine. Everything other than the rule was a game of chance; and it followed that success could only be the result of luck or accident. This attitude leads to fixed ideas, the consequences of which are incalculable." ⁶²⁴ Finkel (2011), p. 45.

⁶²⁵ Rommel (2003), p. 151.

⁶²⁶ Carver (1979), p. 61.

⁶²⁷ Rommel (1953), p. 55.

ment instead of roads in order to avoid enemy strong points and formations often located in villages, major road crossings, and along the main routes in general. But his approach was not so much an attack on the enemy but a hurried intrusion as far into enemy territory as possible without engaging in a battle. Liddell Hart described the German attack by saying that "the most remarkable feature of their offensive was the extent to which it was unmarked by attacks in the proper sense of the term. [...] Their whole strategy was to find the line of least resistance and push along it as fast as they could and as far as they met no serious resistance,"⁶²⁸ In the initial deeppenetration tank maneuver was the decisive blow. As Luttwak wrote, if one studies

> "a deep-penetration armored offensive in a tactical-level picture, or rather a whole series of them, we will see only meaningless and indeed misleading fragments of its totality. We might observe a long column of tanks, infantry carriers, and trucks moving in single file deep within enemy territory, advancing almost unresisted. We must be watching a triumphant victory march if there is war at all, since we see no fighting to speak of."⁵²⁹

Mobility enabled avoiding engagement with the enemy. These were not tactical battles but operational races to the depth of the enemy while the actual fighting was left to the infantry that followed afterwards and cleared the spots of resistance that remained in the by-passed strongpoints. The deep penetration into empty space worked to disorient the defender and cause a feeling of a battle lost which in turn decreased the amount of resistance troops whose lines of communication were severed could put up. Fuller attempted to make sense of the German success by claiming that the overall purpose in this race to the sea was to

> "employ mobility as a psychological weapon: not to kill but to move; not to move to kill but to move to terrify, to benilder, to perplex, to cause consternation, doubt and confusion in the rear of the enemy, which rumour would magnify until panic became monstrous. In short, its aim was to paralyse not only the enemy's command but also his government, and paralysation would be in direct proportion to velocity."⁶³⁰

Of course this analysis is supported by the infallible wisdom of hindsight and the need to search for reasons why the defense collapsed so quickly and so totally. However, the confusion did quickly spread into a panic and the will of the enemy to resist fell victim to overwhelming operational speed and tempo of the attack. By being fast enough in their movements the Germans managed to "freeze" the defenders completely and sheer depth of penetration and the severed lines of supply and communication made the continuation of the fight useless. The infantry following in the wake of the tanks had only a nominal task in getting the defenders to surrender. To get an idea just how fast the German advance was, I will quote here from Rommel who described their attack saying that

"we now drove on past the French column, which stood on the road with its guns and antitank-guns still limbered up. The French captain looked a trifle disconcerted as we passed, but his men seemed to be quite satisfied with this solution. We met more French troops behind this column and beckoned to them with white handkerchiefs, calling out that the war was over for them. The advance went on at a speed of 25 to 30 m.p.h. The Next villages we came to were full of French coloured troops, with their guns and vehicles parked in orchard and farmyards. We drove past at top speed, waving, but not otherwise bothering about them. In this way we got through without fighting."⁶³¹

In one day Rommel had covered more than 150 miles and out of those 100 miles had been carried out after the early evening refueling pause. Nobody had ever before made such an advance in a period of one day.⁶³² This illustrates beautifully that there was a lot of light-ning-quick surprise, or *Blitz*, but only a little of actual *Krieg* in *Blitzkrieg*. With the velocity of their advance the Germans were able to gain vast amounts of distance in a minimal time.

⁶²⁸ Liddell Hart (1940), p. 17.

⁶²⁹ Luttwak (1987), p. 99.

⁶³⁰ Fuller (1961), pp. 256-257.

⁶³¹ Rommel (1953), p. 69.

⁶³² see Rommel (1953), pp. 70-73.
The speed of advance shows that Germany had thoroughly understood the advantages of mobility if one has the audacity to exploit it.

One of the things in which Guderian differed from theories Liddell Hart and Fuller - and to the benefit of German rapid advance - was that unlike the theorists suggested, he did not disperse his forces to split into small parties in the enemy's rear area and starting a search and destroy campaign against the headquarters and supply installations.⁶³³ By ramming onwards like a thrust spear until the Channel or other natural obstacle blocked his advance and allowing for the following slower infantry formations to deal with the panic-stricken and disorganized enemy troops he enabled the attack to penetrate further than anyone predicted. This certainly included the Germans themselves, since we can categorize Guderian's daring thrust not so much as a detailed plan of operation but follow Strachan in his claim that the "German army which invaded France in 1940 was doing little more than following its nose. But after the event its victory was bestowed with the title Blitzkrieg and became enshrined in doctrine."634 By not dispersing but keeping the forces concentrated, the penetration was both deeper and faster than could have been achieved following literally the advice of the British theorists. Liddell Hart was infatuated with the efficiency of the Blitzkrieg method of fighting. According to his description, which practically extrapolated on the ideas evident in Guderian's writings, Blitzkrieg is,

"the tactical combination of tanks and aircraft, partly in the unexpectedness of the stroke in direction and time, but above all in the follow-through – the exploitation of a breakthrough (the tactical penetration of a front) into a deep strategic penetration, carried out by armoured forces racing on ahead of the main army, and operating independently.

The pace of such forces promises a decisively deep penetration so long as it can be kept up by a torrent-like process of advance, either swerving round resistance or piercing it as a weakened spot — in which case the tank-torrent contracts in pouring through a narrow breach, and then expands again to its original breadth.

It is the persistent pace, coupled with the variability of the thrust-point, that paralyses the opponent. For at every stage, after the original break-through, the flexible drive of the armoured forces carries simultaneously several alternative threats, while the threat that actually develops into a thrust takes place too quickly for the enemy's reserves to reach the spot in time to stiffen the resistance there before it collapses. In effect, both tactical and strategical surprise are maintained from start to finish. It is a high-speed 'indirect approach' to the enemy's rear areas – where his vital but vulnerable organs of control and supply are located." 635

All the necessary catchwords can be located from this long quotation. It distorts the ideas of Guderian to some degree and includes elements from Sun-Tzu and other thinkers into a peculiar mesh that has Liddell Hart's own points of emphasis as an addition.⁶³⁶ The idea of torrent-like process, "pouring" through a narrow breach and expanding again to its full width is directly from Chinese thought and the idea of "indirect approach" the original contribution of Liddell Hart that he wanted to constantly underline⁶³⁷. Yet, I am in disagreement with Liddell Hart's claim that the "persistent pace" would paralyze the oppo-

⁶³³ Carver (1979), p.63. On the differences between Fuller, Liddell Hart and Guderian see e.g. Kesseli (2001), pp. 2-4.

⁶³⁴ Strachan (2013), p. 40.

⁶³⁵ Liddell Hart (1950), p. 272.

⁶³⁶ During his lifetime Liddell Hart continuously overplayed his alleged role as influence for the German panzer theorists. On this see for example Reid (1998), Corum (1992), pp. 141-143 or Danchev (1998), pp. 232-237. Before we judge Liddell Hart too harshly for exaggerating his influence and meaning on the German generals we must understand that, as Danchev's book title says, he was an "alchemist of war." As he had no safe tenure in any university nor the comforting military career to support his writings he had to turn war into gold. He had to write as much as possible and get his books to sell as much as possible.

⁶³⁷ As Danchev (2006), pp. 80-81 argues, Liddell Hart was more artistic than practical and just as a good poet steals, ideas from others cannot help combining with one's own and consciously or unconsciously the mental effort of others is combined with one's own.

nent.⁶³⁸ Persistent pace, that is, driving at maximum speed as long as one can, was a part of extending the break-through, but performing all movements at the same pace makes the troops highly predictable and timing of their actions are relatively easy to anticipate.

Even if Liddell Hart's indirect approach came to be linked with German panzer tactics, he created it initially as a formula for defeating a continental armored enemy without the need to engage the army itself and promoted a Douhetian notion of heavy air bombing to do this.⁶³⁹ This is another point where Liddell Hart's interpretation differs from the practice of *Blitzkerieg*. He emphasized striking at the vital and vulnerable organs on command and supply.⁶⁴⁰ It was not so much attacking those vital spots, but the severance of their connections to the front-line troops that was the German objective. The German panzers searched for spots where the penetration could be achieved with ease and proceeding as far along the lines of least resistance as possible. The collapse of the defense often resulted from the fact that the enemy was no longer in front of him, but behind him.

When compared to British, Russian, or American generals, Guderian had the opportunity of being able to 'practice' the theories of armored warfare. He led his panzer troops in the invasion of Austria, Sudetenland of Czechoslovakia, and Poland. None of these was a true test, since some armies, like the Polish, fought with old tactics⁶⁴¹, but they allowed for Guderian to hone the methods he later employed against France. The main lesson was that the panzer troops were able to spearhead the break-through themselves without waiting for the infantry to create a gap for them.⁶⁴² In fact both Poland and France were such easy victories that the original vision of panzer tactics was simplified.

Guderian's initial concept called for tanks in a wedge-formation to penetrate the defense system on a narrow front of a few kilometers. The breach thus created was to be held open by stormtroops who came in the wake of the tanks and then fresh tank forces would push through the gap into the depth of the enemy and simultaneously fan laterally outwards.⁶⁴³ However, the resistance was so weak that the momentum of the wedge could be upheld into the depth and turn the battle into a race. As Manstein wrote, infantry was hard pressed to keep up with the "*tearing open of the enemy's front by tank formations*." Another lesson was the importance of elimination of the enemy air force and "*crippling of his tank communications and transport network by the effective attacks of our Luftwaffe*."⁶⁴⁴ The cooperation of armored units and close air support was a symbiosis that the Germans were the first to exploit thoroughly. We must not be too quick to praise the ingenuity of the Germans, but rather woe the traditionalist and conservative views of the British and French alike. There were different claims to the origin of the ideas underlying mechanized warfare. In the Soviet Union Rokossovsky wrote that the Germans had supposedly copied

> "our fighting in depth tactics in toto. In the offensive armoured and mechanized troops and bomber aircraft had played a leading part; the main forces had been gathered into a mailed fist designed to rout the enemy as quickly as possible; powerful wedges had been driven in

⁶³⁸ Liddell Hart (1950), p. 272.

⁶³⁹ Mearsheimer (2010), p. 5.

⁶⁴⁰ As a matter of fact, Liddel Hart unscrupulously tried to get the honor for having influenced the German theorist behind the concept of Blitzkrieg and unashamedly tried to take much of the credit for the original ideas. On this see e.g. Mearsheimer (2010). Liddell Hart was far from as influential as the reputation he built around himself, and while his theories and claims need to be used cautiously, they nevertheless are justified to be included into the corpus of literature used here, because they indeed managed to influence a lot of people – even if a lot later than in the years prior to WW II. The treatment Liddell Hart gets is more realistic than that of Bond (1977) who for the first time sought to describe the development of his military thought.
⁶⁴¹ Manstein (1982), p. 41 argued that "the mind of the Polish soldier was still coloured, at least subconsciously, by romantic notions from bygone days." In the case of Austria the "test" was not all that successful, since traffic control and supply were deficient and there was a thirty per cent breakdown among the tanks. Hart (2006), p. 45.

⁶⁴³ Fuller (1948), p. 52.

⁶⁴⁴ Manstein (1982), p. 54.

swiftly along converging directions. Special importance had been attached to achieving surprise."⁶⁴⁵

It is no use to argue whether Guderian and Seeckt or Triandafillov and Tukhachevsky were the original proponents of the 'new' tactics⁶⁴⁶. The important thing is that new machines and mechanics of war were researched in all countries but only a few had enough visionary qualities not only to see the possibilities tanks and close air support could theoretically achieve together, but also revise old principles of war and augment them with new principles of command and relegating responsibility. One conceptual difference between German and Soviet operational art was that initially they were developed for different types of armies. Since von Seeckt's army was reduced, it was forced to seek initial success by rapid offensive⁶⁴⁷. The Soviets wished to build a colossal army and use its momentum. Reading Rokossovsky one gets the impression that the Soviet art of war was more infantry-oriented than what Guderian proposed for Germany. Rokossovsky described one attack thus,

"It was planned to precede the attack with a ninety-minute artillery preparation, with a density of 200-240 guns and mortars per kilometer of frontage on the sector of the main effort. The infantry assault was to be accompanied by a rolling barrage and tanks would move in the infantry battle formations."⁶⁴⁸

This is a more traditionalist way of using tanks. Artillery and infantry had a dominant position over the new arm. The role of infantry was perhaps too crucial in this way of fighting because it did not allow the speed of tanks to be fully exploited. Tanks can provide support for the infantrymen but the possibility of a rapid breakthrough into the depth of the defender's formation diminishes since the attacking infantry lacks adequate speed. It is not only mobility and firepower tanks add to the battlefield but speed, and thus the tanks protected the infantry only to the close combat and prepared to continue.

"After their breakthrough, the tanks stepped up the tempo of their advance. Overpowering enemy security units and skirting strong points, which were left for the attached infantry to deal with, they advanced 40 kilometers in one day. [...] The fighting to force the enemy out of strong points left behind by the tanks consumed much time and energy. This doubtlessly told on the rate of advance, but it was not the only reason, and poor leadership was also to blame."⁶⁴⁹

This type of attack aimed to get the best of both worlds; the speed and penetration of the tanks and the ability of infantry to clear up in the wake of the tanks. Mechanized troops were operational elements for the Soviets since the idea in deep operations was to penetrate to the "*operational depth*" of 50 to 60 kilometers to reach the army headquarters and operational reserves.⁶⁵⁰ It required a lot from the leadership in terms on maintaining contact between the tanks and infantry. A certain part of the infantry needs to be mechanized in order to be able to follow the tanks into the depth. Another portion of the infantry force should be allocated to maintaining the breach and extending it by overwhelming the pockets of resistance of the defender. But the Soviets were quick to learn from their enemies.

There was, according to Guderian, an insolvable dichotomy between the ideas of generals from infantry and those adapted to armored warfare. The aforementioned wanted to create the break-through of the enemy defenses with a mass attack of the infan-

⁶⁴⁵ Rokossovsky (1970), p. 10.

⁶⁴⁶ Perhaps the first German who wrote doctrinal statements on mechanized warfare was the inspector of motor transport troops General Oswald Lutz. He also instigated Guderian to write his polemic "*Achtung! Panzer!*" See Hart (2006), pp. 28, 40-41. Another crucial figure was Ernst Vockheim who began writing in 1923 and played a big part in creating an indigenous German literature on armored warfare. See Corum (1992), p. 130 and on Lutz pp. 134-136. As Trythall (1977), p. 71 notes, also in Britain there was a number of men in whom events, brains and motivation created visions about armored warfare at the same time and it is impossible to give credit to each one of them alone.

⁶⁴⁷ Sikorski (1943), p. 84.

⁶⁴⁸ Rokossovsky (1970), p. 275.

⁶⁴⁹ Rokossovsky (1970), pp.298-299.

⁶⁵⁰ Simpkin (1987), p. 40.

try and only when it had penetrated to a certain depth, the armored formations would be called to action. Panzer-generals on the other hand wanted to be at the very spear-point of the attack, since they understood their forces to be the strongest element in the attack. By leading the break-through they could without delay exploit their initial success and fully utilize their speed in the penetration When a break-through was the objective, the panzers should lead and where a fortified position was to be captured, then was the time to employ infantry.⁶⁵¹ Perhaps the German supreme command did not properly understand the value of mobile warfare until it was too late. When Rommel was given a task defending the French coast he lamented that

"at one time they (O.K.W.) looked on mobile warfare as something to keep clear of at all costs, but now that our freedom of manoeuvre in the West is gone, they're all crazy after it. [...] The day of the dashing cut-and-thrust tank attack of the early war years is past and gone – and that goes for the East too, a fact, which may, perhaps, by this time, have gradually sunk in." ⁶⁵²

There is no doubt that his deduction was at least partially correct. After the Allied invasion had occurred, the conduct of the German high command took a new operational perspective. The meaning of time for their conduct of war was practically reversed. Hitler moved the main effort into the West in order to get the chance of performing an immaculately timed attack on the allies before they would reach the Rhine. In order to pull this through, the Eastern Front needed to be stabilized until the end of the planned western offensive when troops could be relocated back to the east. There was a pressing urgency in getting the troops for the offensive ready as soon as possible and until the moment the offensive would have commenced, the Germans needed to win time by getting the Allied troops to squander away the time at their disposal.⁶⁵³ In other words, instead of winning time by maximizing the benefits derived from rapid action, there was the need to slow down the enemy on both fronts and still aim for rapid execution for one's own duties.

The closer the collapse of the Reich became, the more mobile warfare in the Western Front began to look like a seriously distorted mirror image of its true nature. As Guderian wrote, it was only when fortifications were lost that Germans were forced to partake in mobile warfare with troops that had by then lost their mobility due to Allied air superiority. Mobile warfare was attempted in Normandy after the armored troops had been practically devastated. When the troops were still able to function warfare had been positional.⁶⁵⁴ In the initial period of the war the novelty of *Blitzkrieg* had ripped defensive lines to shreds, but the enemies had learnt to counter it through air forces, tanks, and anti-tank weapons of their own. Once again defensive had in the course of the war found ways and means to answer to the needs of the situation. Stagnation and decreased speed had set in again, but the lessons of WWII gave birth to a new development cycle of mobility that resulted in the rise of the helicopter as a means of air-mechanization and creation of methods to synchronize together even better the efforts of different branches of service. Beaufre stated the blatant truism that could be said of each and every period of time as compared to the earlier times, "The world is evolving very rapidly, particularly in this day and age. Everything is subject to a continual process of transformation."⁶⁵⁵

Liddell Hart asked an important question why Germany was the first to employ tanks and the mobility they offered in great numbers instead of the British who initially conceived the idea.⁶⁵⁶ Why were the British slower to appreciate and cultivate the newfound mobility? For him the first and obvious answer is that "*mechanised warfare, combining*

⁶⁵¹ Guderian (1956), p. 132.

⁶⁵² Rommel (1953), p.468. O.K.W. stood for Oberkommando der Wehrmacht, the German supreme headquarters.

⁶⁵³ Guderian (1956), p. 330.

⁶⁵⁴ Guderian (1956), p. 332.

⁶⁵⁵ Beaufre (1965), p. 44.

⁶⁵⁶ When it comes to influential British theorists Fuller and Liddell Hart stand above the rest as military thinker and prolific writers. Fuller published forty-five books and Liddell Hart thirty-six. Reid (1998), p. 3.

tank force and air force to attain a multiple velocity, was naturally suited to the purposes of aggression – since it offered an increased prospect of rapid success in the offensive."⁶⁵⁷ Germany literally had to build its army from a scratch. The peace treaty after WW I had practically stripped it of its army. This turned out to be a blessing in disguise because the military could be completely remodeled to fit the requirements and promises of new technologies. The Germans had to search for an edge. The Allies had won the war and in their eyes their armies had proven their worth and there was no need to restructure the armed forces. Mechanization "seemed a superfluous luxury, a needless addition to the premium they were paying for their national insurance-policy. [...] It was cheaper – on a short view – to preserve the forces in their old-established form."⁶⁵⁸

In terms of developing operational art rapidly, a lost war is a catalyst for change in military affairs. This is evident after every war and led Liddell Hart to claim that "armies learn only from defeat. That explains why an army which has been victorious in one war so often loses the next war. Victory induces complacency – satisfaction with things as they are. It takes a disaster to jolt an army, or a nation, out of the rut of its traditional ways."⁶⁵⁹ This held true in case of his native Britain. In the inter-war period there were calls for modernizing the British armed forces but since the safe middle road was chosen, no big changes were made.⁶⁶⁰ In order to save time in the modernization process of the army some strong impulse has to precede it. A disastrous war augurs more rapid developments than any other outside impulse does because, as Mitchell phrased it, "changes in military systems come about only through the pressure of public opinion or disaster in war."⁶⁶¹ Victorious nations generally are more predisposed to prepare to refight the previous war.⁶⁶²

4.3. JOINT OPERATIONAL ART AS CONCENTRATION OF FORCE IN TIME

"War must be conceived of as a single whole, and that with his first move the general must already have a clear idea of the goal on which all lines are to converge."⁶⁶³

One could raise the question if in this evolution, which is occasionally so rapid that one erroneously perceives it as revolution, there is anything that remains constant. According to Fuller, the answer is yes. There are

"the principles of war; and directly it is realized that these principles form the foundation of mechanized warfare, just as they do of muscular warfare, it will be seen that revolution is really evolution. What we are faced with is not a new type of war, a war totally unrelated to the present type, but a new form of war, a form arising out of the petrol engine."⁶⁶⁴

Fuller joined a long list of military theoreticians who claim that despite the changes in armament the essence of war remains unaltered. Nevertheless, in the modern age there were completely new elements as well. He wrote about petrol engine and radio as the two inventions that had the biggest impact of warfare.

> "The first not only led to a revolution in road transport and consequently in land warfare, but by solving the problem of flight it raised war into the third dimension. Whereas the second virtually raised it into the fourth; for to all intents and purposes the wireless transmission of energy annihilated time as well as space. Thus two new battlefields were gained –

⁶⁵⁷ Liddell Hart (1950), p. 65.

⁶⁵⁸ Ibid.

⁶⁵⁹ Liddell Hart (1950), p. 66.

⁶⁶⁰ See e.g. Martel (1945), pp. 69-70.

⁶⁶¹ Mitchell (1999), p. 429.

⁶⁶² Leonhard (1991), p. 49.

⁶⁶³ Clausewitz (1989), p. 583.

⁶⁶⁴ Fuller (1943), p. 16.

the sky and the ether – the one to be dominated by the airplane and the other by the radio." 665

Prior to the development of flight the battlefield was two-dimensional and while an extra dimension was gained, Fuller's claim of annihilation of "time as well as space" was clearly an exaggeration, a pitfall Fuller too often stumbled into. While I use Fuller a lot, I still partially agree with Field-Marshal Lord Carver who wrote that it was a tragedy that Fuller's "immensely active and penetrating mind soared so high that his feet left the ground."666 What differentiates Fuller from many other early tank theorists was that he was able to look beyond the use of tanks as part of tactics and took up the idea in its entirety and anchored it into a wider philosophy of history and mobility.⁶⁶⁷ However, as Echevarria noted, the tank or the plane or any of the technologies tested in WWI were not ready. Most of them held promise but their use was hindered not only by their imperfection but also by the lack of supporting technologies. Thus they represented the imperfect present and not the ideal future visionaries like Fuller built as castles in the sky.⁶⁶⁸ The plane became an essential element of the tactics of WWII but only petrol engine could provide it with motive power and thus lead warfare into the third dimension. Features of terrain could no longer provide absolute hindrances for movement since through the air mobility could be employed regardless of rivers, hill ranges or forests. Petrol engine saved time in movement and radios made it possible to control and direct this movement. This saved time in the entire operation by shortening the time between the initiation of the planning and the moment when the offensive affects the enemy. Time was not annihilated, but its wastage was drastically reduced.

There were attempts to put the newly found aviation into military use as soon as possible and during WW I certain advances were already made. The history of cooperation between forces on land and forces in the air spans over a century and is generally a success story. First traces of joint efforts can be found in Italo-Turkish war in Libya in 1911-1912 and the bombing of enemy ground troops from the air. More extensive use of aircraft in reconnaissance, bombing the enemy from planes and Zeppelin-type airships, and taking the role of artillery took place in WW I. Simultaneously fighter aircraft were used to protect those doing the bombing.⁶⁶⁹ All in all, aviation was employed in WW I in surprisingly many ways.

Lesson learnt early on even before WW II was the need for co-operation or aircraft and the infantry and it was thoroughly experimented with. Ludendorff among many others understood the benefits that could be gained if the pilots were brought into close co-operation with the artillery units and could thus be used to direct their fire. The possible effects of planes on the ground units were developed and in the battle of Somme pilots and

⁶⁶⁵ Fuller (1946), p. 134.

⁶⁶⁶ Carver (1979), p. 36. Before condemning Fuller we must recognize his writer position. He was a theorist and not a strategist. A theorist is expected to theorize and is allowed certain flights of fancy. In contrast the task of the strategist is of a different nature. As Svechin put it, "*A true strategist not only stands on the ground of reality but also puts down roots in it; this reality feeds his fantasy; and his creativity is only armed with material that actually exists. His desires and hopes are not suspended in a fourth dimension but grow from this reality.*" Svechin (1992), p. 317. A strategist should have his feet on the ground and a theorist is permitted to have visions. Echevarria (2007), p. 98 has written how military writers were not as unimaginative as is often thought, but they tended to stay close to what was possible. Fuller did not allow possibilities to hold him too far back.

⁶⁶⁷ Gat (2001), p. 547.Unfortunately on occasion Fuller's anchor loosened. Even before his flirtations with fascism he for example wrote that "Both magic and war are coercive, propiliatory and dynamic. Their purpose is to influence events, and though the means employed differ the end is identical – namely, transformation. When in his Manuals the soldier states that his object in war is to impose his will on his enemy, he enters into the realm of magic; and when the magician sets out to impose his will on his steps into the kingdom of war." Fuller (1942). Sometimes Fuller's cool intelligence took a little vacation.

⁶⁶⁸ Echevarria (2007), p. 96. But as Tukhachevsky argued, in reading Fuller "one must learn how to discard the crust of fantasizing, which impairs the general merit of his work to a quite extraordinary extent, and somehow to extract the nuggets of avant-garde thinking that lie concealed within these writings." Tukhachevsky, cited in Simpkin (1987), p. 133.
⁶⁶⁹ Vego (2009), p. V-100. See also Sokolovsky (1963), p. 243. For a discussion how Zeppelins could have

been used in the upcoming WW I see Bernhardi (1914), pp. 79-80.

the machine gunfire from their planes had an impact on the infantrymen. Mostly this impact was psychological since it added immediacy of danger to places that were previously considered relatively safe.⁶⁷⁰ Even if cooperation between the air and ground forces was initiated, it still needed to be deepened and further developed.

What made the early theories of air warfare so controversial is the fact that they vastly expanded the prevailing doctrine on the use of the air weapon. Ludendorff described how infantry charges were supported in WW I by special air units. Their task was to sweep down in formation and flying low over the battlefield support the ground attack by making use of machine guns and light bombs on enemy fortifications and if the attack was successful, continue into the depth to target reserves, marching columns and supply units. This, Ludendorff claimed, "elevated" the role of pilots from the tasks of reconnaissance and bombing to participation in the battle on the ground. They became part of the land battle aiming for decision and air combat was just a means of fulfilling this task.⁶⁷¹

Giulio Douhet, Hugh Trenchard, and Billy Mitchell saw the main task of the air forces differently. Their idea was based on the principle of maximum mobility attainable and attack as the best form of aerial warfare.⁶⁷² As Brodie expressed the key element of Douhetism, "*air war is a race against annihilation, in which the only way to escape that end is to be swifter than the enemy in dealing out destruction*."⁶⁷³ If air force were used in the manner Ludendorff proposed, its mobility would be curtailed since it would only support the advance of the slow-moving ground forces. The three-dimensional mobility of the air force and elevated speed allowed winning time by passing over topographic barriers directly into the depth of the enemy territory. Once in the depth, the range of the planes was sufficient to carry out extensive bombings of important targets. As Luttwak put it,

"that large fleets of bombers could circumvent the processes of land and naval warfare by destroying the industry upon which all forms of military power depend; and that victory could be achieved quickly by superior airpower alone, without the enormous casualties of land warfare and the long years of naval blockade."⁶⁷⁴

What this implied was that in the early stages of aerial warfare the air force was a timesaving mechanism on all levels of warfare. At the beginning of the war the first thing to be accomplished with the air force was defensive through offensive, that is, "*there is no practical way to prevent the enemy from attacking us with his air force except to destroy his air power before he has a chance to strike at us*."⁶⁷⁵ After this one's own air force would have command of the air and could operate freely. Using airpower to support the offensive of the ground forces allowed for winning time tactically by hastening the end of a battle. Using it to bomb targets like reserve formations in the depth of the enemy and destroying supplies and march columns turned it into an operational tool, potentially enabling a campaign to end sooner than it would have with the use of ground forces only. We can join Gray in his claim that airpower is not a tool for tactics or operations even if its employment can change their course. Airpower is to be used to secure a strategic effect.⁶⁷⁶

Douhet was so enamored of his concept of command of the air defined as being "*in a position to prevent the enemy from flying while retaining the ability to fly oneself*"⁶⁷⁷, that he disregarded all other means of warfare and partially due to this enthusiasm miscalculated

⁶⁷⁰ Ludendorff (1919), p. 219.

⁶⁷¹ Ludendorff (1919), p. 481.

⁶⁷² See Corum (1992), p. 156. The main early theorists of air war were not unified in their thought. As an example Douhet focused on the massive bombing capability and Mitchell tended to favor fighters in gaining air supremacy. Heuser (2010), pp. 313-350 divides air theorists into four "schools". These schools are strategic or city bombing school, the military targets school, leadership targeting school and political signaling school. Naturally all of these elements were not prominent in the texts of the earliest theorists.

⁶⁷³ Brodie (1959), p. 98.

⁶⁷⁴ Luttwak (1987), p. 165.

⁶⁷⁵ Douhet (1999), p. 293.

⁶⁷⁶ Gray (2012), p. i.

⁶⁷⁷ Douhet (1999), p. 297.

the moral and physical destruction command of the air could bring about.⁶⁷⁸ We often interpret Douhetism only as a doctrine of massive aerial bombing of the enemy population and industrial centers, because it is the simplest and most drastic measure of what one can attain through command of the air⁶⁷⁹. Destroying the industrial base in the mechanized age theoretically could have decimated the fighting power through diminishing supply of weapons, ammunition, petrol and vehicles.⁶⁸⁰ Nevertheless, there is much more to the theoretical concept. In the best-case scenario it would mean making the armies and navies of the enemy unable to operate, but only temporarily since the enemy cannot be coerced to fight a decisive battle in the air. There is no permanent state of command of the air.⁶⁸¹ As Douhet put it, attaining command of the air

> "means to be in a position to wield offensive power so great it defies human imagination. It means to be able to cut out an enemy's army and navy off from their bases of operation and nullify their chances of winning the war. It means complete protection of one's own country, the efficient operation of one's army and navy, and peace of mind to live and work in safety. In short, it means to be in a position to win:"⁶⁸²

However, heavy aerial bombing was to become the most tangible form of employing command of the air and it was not enough to win wars in practice. It turned out not to be the smoking ruins of Dresden that Fuller called "an act of vandalism", "annihilation" and "Mongoloid destructiveness" but instead the unquenchable fighting will of Germany that bore a bloody witness to the faulty mathematics of destruction⁶⁸³. The idea of bombing the very heart of the enemy destroying the industrial support of war attempted to make air force a time saver in the strategic level. But for Douhet most time would have been saved on the political level through direct influence on the primary targets; "The air arm makes it possible to reach the civilian population behind the line of battle, and thus to attack their moral resistance directly."⁶⁸⁴ The theories of strategic bombing aimed at minimizing the length of the entire war and were attempted as a means of ending a war quicker in victory. The purpose of strategic bombings was to cause such disruption among the enemy that his society would cease to function and support the war effort⁶⁸⁵. Douhet described how

"normal life would be impossible in this constant nightmare of imminent death and destruction. And if on the second day another ten, twenty, or fifty cities were bombed, who could keep all those lost, panic-stricken people from fleeing to the open countryside to escape this terror from the air?"⁵⁸⁶

Alas, in practice the capacity proved insufficient to quench the fighting spirit of the enemy even if his resources were severely affected. There were enough attempts during the WW II and later in for example Kosovo to prove that the theories were not practicable⁶⁸⁷. Italy as

⁶⁷⁸ "Command of the air" was an enthusiastic early expression that since has been all but replaced with the concept of "air superiority" defined as "*having sufficient control of the air to make air attacks – manned and unmanned – on the enemy without serious opposition and, on the other hand, to be free from the danger of serious enemy air incursions.*" Warden (2000), p. 10. Naturally there are varying degrees of air superiority.

⁶⁷⁹ This is simultaneously a correct and false interpretation, since Douhet's thought gravitated towards strategic bombing over time but in a lecture in 1915 he still argued that "*naturally the offensive action of aeroplanes must not be directed against cities but should be aimed against the entire enemy army and its rear.*" Douhet, cited in Hippler (2011), p. 171.

⁶⁸⁰ Fuller (1948), p. 35.

⁶⁸¹ Foertsch (1939), pp. 116-117.

⁶⁸² Douhet (1999), p. 297.

⁶⁸³ Fuller (1948), p. 317.

⁶⁸⁴ Douhet (1999), p. 373.

⁶⁸⁵ The first strategic bombings took place already in 1915 with zeppelins. In two years and 220 sorties only 500 Britons were killed but the bombings continued with Gotha bombers for an additional year ending in 1918. See Corum (1992), pp. 16-17.

⁶⁸⁶ Douhet (1999), p. 333.

⁶⁸⁷ Ignatieff (2001), pp. 51, 110 wrote how initially the air bombings only seemed to increase the popular support that Milosevic enjoyed. Later, however, as the targets shifted into affecting the civilian life more directly, such as the graphite bombs that took down the power grid, the effects were felt more directly. How-

the birthplace of Douhet supported the theory even if it did not perform strategic bombings on such an extensive scale as for example Britain whence Trenchard's theories originated. Even Russia had built its air power based on the concept of a bombing armada and due to its long geographical distances focused on building long-range machines.⁶⁸⁸ As Vego wrote, "In the modern era, no war has been won without possessing sufficient control of the air. However, to claim that a war can be won by airpower alone is not only an exaggeration but also unfounded by the empirical evidence."⁶⁸⁹ This idea of air power winning wars all alone is a fetish that seems to prevail even today. As one of the first air theorists Mitchell described air power as the "ability to do something in or through the air, and as the air covers the whole world, aircraft are able to go anywhere on the planet."⁶⁹⁰ His claim was not that air power is the only means of winning wars but that it is a powerful medium to use to attain the victory. Land is the most important locus of warfare but we must discuss war as a whole, comprising all domains and not focus too emphatically on sea or air war.⁶⁹¹ Mitchell acknowledged that

> "of course, everything begins and ends on the ground. A person cannot permanently live out on the sea not can a person live up in the air, so that any decision in war is based on what takes place ultimately on the ground. The role of armies and their way of making war will remain much the same in the future as it has in the past, if air power does not entirely prevent them from operating."⁶⁹²

Yet some old ideas are occasionally revitalized as new technological possibilities emerge. Thus, Douhet was resurrected by the early nuclear theorists due to the exponentially grown destructivity of bombs in this new age.⁶⁹³ The passing of time and weapon development was able to rectify the miscalculations of Douhet. Despite all efforts to disprove him, he still remains the most respected air theorist. His reasoning of seizing the initiative led him to argue that the most important thing is to strike first and strike with all of his might. Once a state makes the decision to go to war, "all available forces must be thrown into the fray at once; every means reserved for some other use will be that much less weight on the scale of density. The principle of mass must be implicitly followed."⁶⁹⁴ Even if he considered air power a true game-changer, Douhet did not reject all old and traditional principles governing warfare. As an example of these is his claim that that in order to use the air force effectively, one must prepare to use it similarly than the navy or army and "inflict he greatest damage in the shortest possible time."⁶⁹⁵ Even if planes were used in WW I for a wide variety of purposes, we can join Slessor in his claim that WW II was the first real air war.⁶⁹⁶ Nevertheless, as Bernard Brodie put it,

"air power had a mighty vindication in World War II. But it was Mitchell's conception of it – 'anything that flies' – rather than Douhet's that was vindicated. It was in tactical employment that success was most spectacular and that the air forces won the unqualified respect and admiration of the older services."⁶⁹⁷

The joint element of warfare through co-operation of services has been a continuous feature of operational art throughout the ages, but on occasion the emphasis erroneously fo-

ever, as Smith (2008), p.7 noted, the bombing campaign that was supposed to last for a week or so stretched into seventy-eight days. For a detailed discussion on the air campaign, see Clark (2001).

⁶⁸⁸ Liddell Hart (1932), p. 54.

⁶⁸⁹ Vego (2009), p. II-86.

⁶⁹⁰ Mitchell (1999), p. 431.

⁶⁹¹ Gray (2012), p. 14.

⁶⁹² Mitchell (1999), p. 442. Mitchell's statement is important, because it belongs to an officer from the air force. While, for example, Giap wrote that "ground forces play a decisive role on the battlefield." Giap (1968), p. 45, this was more or less a forced statement since he had no means of denying the command of the air from the Americans in Vietnam.

⁶⁹³ Brodie (1946), pp. 70-107. In turn Douhet was much indebted to Alfred Thayer Mahan. Strachan (2013), p. 175 claimed that Douhet essentially took Mahan's concept of the command of the sea and applied the thinking behind it to the new domain, air See Hippler (2011), pp. 170-171

⁶⁹⁴ Douhet (1999), p. 396.

⁶⁹⁵ Douhet (1999), p. 325.

⁶⁹⁶ Slessor (1954), p. 11.

⁶⁹⁷ Brodie (1959), p. 107.

cuses on the importance of fighting in only one of the domains. The navy has been used to support and transport troops from the age of Xerxes to Iraq, the modern-day descendant of Persia and written reports on the hindrance to land operations caused by insufficient ships are at least as old as Caesar⁶⁹⁸. On the seas the title of the most influential strategist belongs to Alfred Thayer Mahan. His fault was the overemphasis on the mastery of the seas. By challenging this mastery the status of an island empire such as Britain could be disputed, but in the case of such a tremendous landmass as Eurasia, which the Soviet Union attempted to claim, simple mastery of the seas would not suffice. The formula for victory in operational art or strategy is not to be found in land, air, or sea power but the combination of all three.⁶⁹⁹

Joint operations are thus a result not of a recent revolution, but a long stretch of evolution of the art of war that began long before the dawn of aviation. Greek and Roman warfare saw many instances in which fleets supported troops ashore, but the pace of interconnecting the three services has been constantly accelerating during the past 200 years.⁷⁰⁰ Corbett declared that the overall theory of war governs the use of military power and thus "*army and navy must be used and thought of as instruments no less intimately connected than are the three arms ashore*."⁷⁰¹ At his time there was yet no aviation that was required for joint operations as we conceive them today. Interestingly in terms of scale of troops the largest joint operation of the U.S. army to date was the concentration of American First Army into St. Mihiel in WWI.⁷⁰²

The idea of having to combine the different branches under one command was a necessity Sikorski recognized prior to WW II when he argued that "the army, navy, and air force, operating on one front, will be under the command of one chief."⁷⁰³ At approximately the same time von der Goltz claimed that in the future there is a demand for "more thorough preliminary preparation, a clearer conception of the object to be attained, a more careful arrangement, a more intimate co-operation of all three arms, and the simultaneous employment of all available troops to decide the combat."¹⁰⁴ It is thus not only the use of all three arms, but their synchronization he called for and this has not been easy to achieve.

The same ideology was shared by the Soviet Union. In the words of Sokolovsky, the Soviets "starting from the fundamental position that victory in war can be achieved only by the combined efforts of all the branches of the armed forces, investigated fully the problems of the rational utilization of the strong points of each branch."⁷⁰⁵ The age of motorization and mechanization was the embryo out of which our joint doctrines grew. This was a time when the possibilities of air power were understood and emphatically developed. For Mitchell the proper way of using air power was by concentrating all of its force at a critical point and instead of the orders of the Commander in Chief of the military power of the country."⁷⁰⁶ Mitchell called for joint use of all branches of service even if the word "joint" was not used at the time. For him air force would be used for the common purpose of all services to win the war. Slessor claimed that air force should be used in support with other branches and by no means should anyone believe that a war could be decided in the air only.⁷⁰⁷ In contrast Douhet saw victory in the air as victory in the war and claimed that his favorite brain-child, "the

⁶⁹⁸ Caesar (2010), p. 203.

⁶⁹⁹ Alexander Svechin wrote that air or naval strategy is a misconception. There is only one strategy but all services have their own operational art. Svechin (1992).

⁷⁰⁰ Vego (2009), p. V-128.

⁷⁰¹ Corbett (1999), p. 167.

⁷⁰² Maheny (2012), pp. 34-35.

⁷⁰³ Sikorski (1943), p. 70.

⁷⁰⁴ von der Goltz (1906), p. 193.

⁷⁰⁵ Sokolovsky (1963), p. 155.

⁷⁰⁶ Mitchell (1999), p. 510.

⁷⁰⁷ See Gray (2012), pp. 147-148.

Independent Air Force - should not and cannot depend in any way upon the army and navy."⁷⁰⁸ Experience since then has undeniably illustrated that focusing on the effort of any single service is not enough and one should aim for what Franks propagated decades later; "a focused and lethal unified effort. Think joint,' I told them. Think inter-service reliance."⁷⁰⁹ Today our operational art is out of necessity interplay of all services. This is evident from the early nineties quotation from Leonhard that described campaign, the canvas of operational art, as "a series of related joint actions (air, sea, land) designed to achieve theater goals."⁷¹⁰

This development from the Second to the Third Wave is a logical outcome of the process of concentrating all available force and their potential impact not only spatially but also temporally through the principles of simultaneity or synchronization⁷¹¹. *Blitz-krieg* managed to combine the air and ground forces in synchronized operations on tactical and operational levels. The idea of combining the efforts of the air force and army, striving for deep successes and expanding tactical level penetration into an operative one with a strong follow-through was a part of *Blitzkrieg* but not a German invention. The idea emerged at the same time in many countries. Martel in Britain, for example, prior to WWII saw an attack to consist of three waves. First the air force would bomb the enemy, then the mechanized strike force would penetrate the line to be followed by normal divisions tasked to hold the line and consolidate the gains⁷¹². Guderian viewed the situation as mutually beneficial for both the air force and the tank corps. For him, air power was not enough for victory⁷¹³. Neither were mechanized ground forces effective without air support. Both need to act in unison.

"The air forces still need a partner on the ground that is able to overcome the defensive strength of modern weapons speedily enough to expand the break-in to a full breakthrough, exploiting both the initial success of the offensive and the work of the aircraft. The conventional ground forces too stand in need of a partner of this kind – and in fact in future wars they will have little offensive capability without it."⁷¹⁴

Time was an ever more important element of operations and the demand for one arm to be able to support the other turned land operations to a race for time and the one who could move faster was likely to dominate the battle. Nevertheless, Guderian failed to produce truly joint operational art because he had scant interest for naval operations or the actions of the *Luftwaffe* beyond the tactical level of how his mechanized troops were supported from the air⁷¹⁵. He argued that a ground partner with enhanced mobility has to work in unison with an air component. "*This partner must be speedy, aggressive and strong.*"⁷¹⁶ For Guderian there was only one answer what this partner could be, "*tanks are the most suitable weapon to exploit and make permanent the gains made by the air forces.*"⁷¹⁷ The co-operation of services on all levels had become a part of modern warfare during WW II. Liddell Hart recognized this in his analysis of the campaigns of Montgomery whose

⁷⁰⁸ Douhet (1999), p. 349. Tukhachevsky agreed. For him "*the key role will go to what are known as 'independent' actions by air forces in co-operation with land and sea forces on a wider scale.*" Cited in Simpkin (1987), p. 139.

⁷⁰⁹ Franks (2004), p. 378.

⁷¹⁰ Leonhard (1991), p. 9.

⁷¹¹ It must be noted that in Russian and Soviet operational art "simultaneity" is a principle of its own that refers to simultaneous neutralization of the enemy's tactical depth in turning movement. Simpkin (1987), p. 34. Unless stated otherwise in the text, here is refers to temporally synchronized and simultaneously occurring actions or their effects.

⁷¹² Martel (1945), pp. 117-118.

⁷¹³ Already prior to WW II Guderian wrote operational analysis of WW I and had by then concluded that artillery was not enough to neutralize an enemy in trenches. One needed the ability to maneuver and an effective means of fire support for the mechanized troops. See Hart (2006), pp. 10-12.

⁷¹⁴ Guderian (1992), p. 128.

⁷¹⁵ Indeed, much of his emphasis of air support for the panzers was a consequence of wartime experience rather than his original pre-war theories. Hart (2006), pp. 90, 96.

⁷¹⁶ Guderian (1937), p. 36.

⁷¹⁷ Guderian (1937), p. 33.

"victory in North Africa can best be epitomised by saying that the Army gained it, the Air Force cleared the way for it, and the Navy assured the possibility for it. [...] What is the lesson? That the three spheres have become inextricably intertwined, and the three services inseparable. What is the natural deduction? That, being of bound together, they are bound to develop sooner or later from the stage of co-operation towards that of fusion."⁷¹⁸

Even today the fusion is not completed, while more often than not the leadership of the services is unified. This combined effort continued and deepened in the following decades with airmobile units using helicopters as the medium in between the two types of forces. The forefather of joint operation warfare in the U.S. context was AirLand Battle⁷¹⁹. The seeds of AirLand Battle were sown in WWII, Korea and Vietnam. After Vietnam in ten years the U.S. completely formed its man-power policies, training, doctrine, and equipment⁷²⁰. The development of AirLand Battle started in the U.S. more or less due to the energy of General DePuy who was in charge of the newly established TRADOC attempting to learn new lessons from experiences in Vietnam and the idea of center of gravity emerged as one of the foundational tenets of the new doctrine.⁷²¹ DePuy understood that with the modern tank and helicopter warfare the complexity and size of the battlefield grew so that not only hopes of victory but survival demanded soldiers who could think and consequently flexible units capable of initiative.⁷²² Commanders were expected to define their missions and the entire training of the troops was based on developing the specific skills required in that mission.⁷²³

The problem was that DePuy was present-focused and rejected the idea that the Army should prepare for future combat by predicting what it would be like. He focused on fielding the technology that was feasible at the moment⁷²⁴. AirLand Battle ended up as a "curious combination of revolutionary ideas and staid continuities from our American warfighting traditions (...) But implicit in any institutional effort at reform was the irresistible counterweight of old American biases and traditional perspectives of war."⁷²⁵ Furthermore, it must be noted that AirLand Battle as a doctrine excluded from its name the maritime domain and the services continued to compete for resources and control of operations⁷²⁶.

The AirLand Battle doctrine was intended to defend Europe against a Soviet invasion. Since the invasion would have been carried out with highly mobile forces, following the developmental guidelines spelled out by Sokolovsky as "*increasing the speed an manenverability of the ground forces is of primary significance under modern conditions*"⁷²⁷, AirLand battle was essentially maneuver warfare able to respond to the mobility of the Soviets and the maneuverability it emphasizes was an attempt to counter the presumed inferiority of forces in the face of Soviet massive invasion⁷²⁸. It envisioned a more or less stationary force attempting to kill as many Soviets as possible in the main battle and rested on the premise that the second echelon of Soviet invasion troops would be stopped and destroyed with a combination of stand-off precision fire and ground maneuver⁷²⁹. The operations of the air force

⁷¹⁸ Liddell Hart (1950), p. 263.

⁷¹⁹ AirLand Battle doctrine cannot be discussed here in detail, but for a short summary see Kagan (2006), pp. 60-70 or at length Cardwell (2002), pp. 49-81.

⁷²⁰ Kagan (2006), p. 3.

⁷²¹ Heuser (2002), pp. 74-75. It is not that the center of gravity had not been an old concept, but in the 1920s and 1930s the U.S. military had considered the enemy fighting force to be the center of gravity. There was a need to refocus. See Echevarria (2011), p. 143.

⁷²² However, as Finkel noted, although joint or combined arms warfare theorist stress flexibility, they usually do not elaborate on how flexibility can be attained. Finkel (2011), p. 6.

⁷²³ Schwarzkopf (1993), pp. 231-232.

⁷²⁴ Kagan (2006), p. 51.

⁷²⁵ Leonhard (1991), p. 129.

⁷²⁶ Kagan (2006), p. 67.

⁷²⁷ Sokolovsky (1963), p. 228.

⁷²⁸ Strachan (2013), p. 18.

⁷²⁹ Kagan (2006), p. 57, Adamsky (2010), pp. 25-26. The latter NATO concept of FOFA or 'Follow-On Forces Attack" adhered to the same principles.

were important in winning time and inflicting cumulative casualties before the ground forces would have been used. Even if it was initially developed to counter the Soviet threat in Europe, after the Cold War the AirLand Battle doctrine remained essentially unchanged amongst the defense planners.⁷³⁰ As Leonhard lamented, "*my general impression was and remains that we are an army that knows little about maneuver warfare*."⁷³¹

Perhaps the biggest conceptual change from AirLand Battle to its ideological offspring 'Revolution in Military Affairs', 'military transformation', 'effects-based operations', and suchlike was the relationship of military superiority and inferiority. Ever since the U.S. planning has always started from the presupposition of superior force. For the purpose of this study, the main importance of AirLand Battle doctrine was that it not only laid the foundation for future joint development, but that it actually introduced the operational perspective into American military thought.⁷³² A conceptual shift occurred from battles to combining them mentally into inter-service operations.

'Revolutions in Military Affairs' seem to occur time after time and many military thinkers are eager to jump on the bandwagon.⁷³³ New jargon springs up to highlight how drastic the change and how total the breach from the past are. As Mary Kaldor noted, for the George W. Bush administration the term 'defense transformation' supplanted the old jargon of RMA which in turn suppressed the idea of AirLand Battle.⁷³⁴ Because allegedly RMA referred to fighting majors wars against traditional enemies, defense transformation focused on asymmetric enemies⁷³⁵. Another expression of the same hubris is the idea of 'network-centric warfare' which will be discussed in more detail later. It suffices to say here that all these ideas focused on the unilateral application of U.S. military superiority⁷³⁶. The development pattern from one 'revolution' to another, all of which focused on the operational level, is clear⁷³⁷. But as Smith argued, the idea of 'transformation' encompasses only changes in the tools and not the paradigm of warfare and that it sees change as a single step and not a constant factor.⁷³⁸ One should transform transformation⁷³⁹.

Sometimes lessons learned quickly become lessons forgotten, as this example shows. The idea of fusing the different branches of service together into one single machine on all levels of warfare, is still not yet complete. On the level of doctrine the fusion has been attained by the major powers so that all branches cooperate within the sphere of a joint doctrine even if there seem to be some problems in fitting the cogwheels together in practice. For decades now warfare has been perceived increasingly as a joint effort of all branches and operational art focuses on combining their capabilities into joint operations. We are still developing our doctrines and attempting to strive for unified effort, but the tendency to emphasize the role of air power seems to lead us astray because

> "the ultimate outcome of any war depends on the strategic success obtained on land. While the war on land can be lost if the objectives in the air and/or at sea are not achieved, the war's ultimate objectives are essentially unattainable unless the objectives on land are accomplished."⁷⁴⁰

In his time Julian Corbett wrote with enthusiasm about naval warfare but acknowledged that since humans live on land the question of naval operational art is how to bring sea

⁷³⁰ Leonhard (1991), p. 189-190. Kagan argued that AirLand battle still continues to offer insights into mass maneuver warfare even if the idea of Active Defense against the Soviets is long gone. Kagan (2006), p. 62.

⁷³¹ Leonhard (1991), p. x.

⁷³² Adamsky (2010), p. 60.

⁷³³ See e.g. Leonhard (1998), p. 10. "Many have claimed that we are in the midst of a 'revolution in military affairs.' (I, for one, believe we are.)"

⁷³⁴ Kaldor (2007), p. 153.

⁷³⁵ Freedman (2006), p. 10.

⁷³⁶ Strachan (2013), p. 18.

⁷³⁷ See Strachan (2013), p. 198.

⁷³⁸ Smith (2008), p. 374.

⁷³⁹ Sloan (2008), pp. 9-11. See also Tuck (2014), pp. 235, 241-242.

⁷⁴⁰ Vego (2009), p. II-25.

power to bear on land⁷⁴¹. No matter how crucial the dominance of air and sea domains are, there is always a need to "put boots on the ground" at least to seal the victory. As Kosovo and Bosnia demonstrated at the end of the 20th century, airpower rarely gains success unless it is effectively combined with maneuver warfare on the ground.⁷⁴² Vego argued that

"airpower is rarely successful unless combined with ground maneuver. The mobility and firepower of land forces and air forces are mutually supporting and interchangeable. (...) Ground maneuver and air interdiction should be synchronized so that each complements and reinforces the other."⁷⁴³

As we have seen, the joint actions of air and land troops create increased chances of maneuver and both are mutually supportive even if their rate of mobility still differs greatly. It becomes on question on synchronizing the two movements in regards to both time and space. While its level of speed and mobility made the air forces a timesaving machine since it could create an effect on the enemy faster than the other services, it can be used to win time in another manner as well – robbing the enemy of his time by slowing him down. Especially when the enemy is concentrating his forces for the battle or attempting to put his operational or even strategic reserves into action, "*the air force's actions to delay or stop the movement of the enemy's ground forces allow friendly ground forces to obtain a positional advantage.*"⁷⁴⁴ If it is no longer possible to win time by being faster, the tools at the commander's disposal have to be used to win time from the enemy by slowing him down. Due to its high mobility and the potential to deploy rapidly, air power can be effectively used to bog down the operational mobility of the enemy forces. Time can be 'won' in many ways.

The question how the doctrines of different services and different levels combined permeate the battlespace through operational art is more complex to answer. Jointness means full cooperation and synchronization of the efforts of all services. No matter how successful Schwarzkopf's Desert Storm was, Franks saw it only as "*a patchwork of 'deconflicted' service operations, not a true joint effort.*"⁷⁴⁵ On operational and tactical levels the coordination of joint operations is more demanding than on the strategical level because of all the details that must be synchronized to create an effect that is really combined in time. On the level of strategy joint action is merely an idea how operations could be combined without having to be bothered by questions like how it could be achieved in practice.

As a generalization, on the tactical level the soldiers do not care who creates the impact on the enemy. For an infantryman it does not matter if the enemy is put under fire by naval artillery, traditional artillery or an air strike either through combat aircraft, drones or missiles. The synchronized impact is tactically a question of life or death and just who delivers it is inconsequential. On the level of operations and operational art the issue is, again, slightly different, since one must realize that the nature of the enemy and the objective of the war or operation suggests the type of forces used. Jointness of all services on every occasion would not be a wise method. "On some occasions, one arm will suffice, while at other times all three must be used in any of a wide combination of ways.⁷⁴⁶ On operational level the spatiotemporal concentration of all possible assets that can impact the enemy enables saving time and creating a more economical operational plan in all meanings of the word. But the key is not to automatically use the assets of all services, but only the most suitable ones. Concentration and coordinated use of assets enables the most effective use of available resources so that just the right amount of force and energy are applied to the target.

The possibility to craft major joint operations with synchronization of all services is demanding for the operational artist, since the possible combinations are so numerous that the optimized one may be difficult to estimate or calculate. At the same time

⁷⁴¹ Strachan (2013), p. 142.

⁷⁴² See Clark (2001) for a detailed description how difficult it was to wage a limited air war.

⁷⁴³ Vego (2009), p. V-104.

⁷⁴⁴ Vego (2009), p. V-104.

⁷⁴⁵ Franks (2004), p. 378.

⁷⁴⁶ Warden (2000), p. 7.

these possible options at his disposal create flexible operations. There are huge benefits to be reaped from joint operations once we truly comprehend the options they theoretically can enable. Joint operations are difficult but at the same time, as Vego wrote,

> "With the participation of the combat forces of three services, the operational commander can pose a threat to the enemy in all three dimensions. He has the greatest flexibility in terms of shifting the sector of main effort from one part of the theater to another. The employment of the combat forces of three services allows the operational commander to change the intensity of the forces' actions in terms of space and time. The operational commander also has the largest number of options available."⁷⁴⁷

As Strachan has argued, when warfare it all of its forms became joint, operational art gained more importance in relation to doctrine. With single-service doctrines "operational art had become stove-piped, a process, and even a science."⁷⁴⁸ The joint operational use of assets requires a wider perspective with a dash of creativity and in terms of time introduces variability of art, because it enables the simultaneity of the use of assets when it is beneficial and sequential coordination of their use when that is called for. Not a single moment is wasted in waiting since the quickest method of impact can be chosen and synchronized. But, on occasion, waiting is a valid option as well, as we will see later on. As Schelling argued, "military technology that puts a premium on haste in a crisis puts a premium on war itself. A vulnerable military force is one that cannot wait, especially if it faces an enemy force that is vulnerable if the enemy waits."⁷⁴⁹

4.4. SYSTEMIC APPROACH TO ATTEMPTING TO SAVE TIME AND RESOURCES

"So great is the complexity of those problems, so uncertain are many of their elements, so rapid is their development under modern conditions, that their study and treatment are more than a full-time occupation for the ablest of minds."⁷⁵⁰

Warden wrote that there are basically two ways to address the art of war and to think about its issues; inductively and deductively. Working upwards from small facts is the tactical perspective and starting with general principles to understand details in the strategic way.⁷⁵¹ Since I attempt to look at things primarily from the perspective of operational art, I have to occupy the middle ground between the two. According to Warden, by approaching a campaign from the perspective of large ideas about objectives and nature of the enemy, one has the chance to develop something practicable.⁷⁵² This, however, concerns itself mostly with planning and execution of operational art.

At each end of the spectrum between strategy and tactics the view becomes too broad or too microscopic to be useful for operational artists. At strategic level "war" may be very different in character from what we usually recognize as war. Warden argued that, "the central feature of war is the clash of military forces. In strategic war, a clash may well take place, but it not always necessary, should normally be avoided, and is almost always a means to an end and not an end in itself."⁷⁵³ Therefore the strategic perspective at its highest levels is ill suited for our discussion. If, on the other hand, we get mentally stuck to details and the tactical level the defeat of the enemy's forces is required almost by definition.⁷⁵⁴ Furthermore, often fighting the enemy's army until the decision for the war is reached may be the most time-

⁷⁴⁷ Vego (2009), p. V-128.

⁷⁴⁸ Strachan (2011), p. 129.

⁷⁴⁹ Schelling (2008), pp. 224-225.

⁷⁵⁰ Liddell Hart (1937), p. 223.

⁷⁵¹ Warden (1995), p. 1.

⁷⁵² Warden (1995), p. 2

⁷⁵³ Ibid.

⁷⁵⁴ Warden (1995), p. 3

consuming way to gain victory. As Warden argued, a campaign focusing on impacting just the armed forces "*is likely to be the longest and bloodiest for both sides*."⁷⁵⁵

For Clausewitz, the main protagonist of decisive battles the first thing in planning was to establish the center of gravity and then to concentrate the necessary forces to strike at it⁷⁵⁶. Warden had fundamentally the same approach. He wanted to think about winning the war through a systemic approach. The enemy was conceived of as a system that in turn was composed of different subsystems and the argument was that this approach "gives us a much better chance of forcing or inducing him to make our objectives his objectives and doing so with minimum effort and the maximum chance of success."⁷⁵⁷ Warden's idea of the enemy as a system can be described in terms of concentric circles with the most important functional elements of the system situated closer to the center. There are five such primary concentric rings. From the innermost to the outermost they are; leadership, organic essentials, infrastructure, population and fielded military.⁷⁵⁸ Warden's theory is applicable on all levels of warfare and can be extended to politics as well, only with somewhat different methods of influence. On each level, at the very center, is the commander. On strategic level, it is the highest political authority, on operational level the commander in chief and/or theater commander and on tactical level the commander in charge of area or troop in question.⁷⁵⁹

"The essence of war is applying pressure against the enemy's innermost strategic ring: its command structure. Military forces are a means to an end. It is pointless to deal with enemy military forces if they can be bypassed by strategy or technology either in the defense or offence:"⁷⁶⁰

This is not as radically new as it sounds. It is just creative application of old thoughts in contemporary context. Already Sun Tzu recognized that the highest mastery of the art of war is to be able to subjugate the enemy without having to fight a battle. But his viewpoint was not that of tactics of even operational art but grand-strategic and theoretically oriented.⁷⁶¹ For a long time Clausewitzian thinking about the importance of annihilative battles was dominant in the Western way of warfare leading, for example, von der Goltz to write that "*in war everything depends upon the destruction of the enemy's army, and that the battle is the sole arbiter*."⁷⁶² With the development of weapons, this tendency had its consequences that became all too apparent in WWI. Since the aim of each and every battle was no less than total destruction of the enemy's army war took the aspect of slaughter.⁷⁶³

> "Thus mechanical butchery became the essence of war, and to kill if possible more of the enemy troops than your own side loses was the sum-total of this military creed, which attained its tragicomic climax on the Western Front in the World War."⁷⁶⁴

As irrational and insane as it sounds, this nevertheless was completely logical in the prevailing art of war of the period. The attempts to alter the formulae of victory had elevated the importance of mass as force multiplier and as masses on the battlefields became more and more packed and dense the casualties piled up as well. Clausewitzian ideal of striking a

⁷⁵⁵ Warden (1995), p. 19.

⁷⁵⁶ Heuser (2007), p. 150.

⁷⁵⁷ Warden (1995), p. 2.

⁷⁵⁸ Warden (1995), p. 9.

⁷⁵⁹ On this see Warden (1995), p. 18. Warden does not extend his ideas to be applicable in tactics or in politics but stops at the level of operations when the "*operation-level commander*" is the one to be influenced. There is, however, no reason why it should stop beyond that. The other and outer rings may become harder and harder to locate the further into detail one goes and the same rings in the political level become more and more intangible, but the idea can be used. On the other hand, EBO, which builds on the foundations Warden laid down, argues that the idea of breaking down systems applies on strategic, operational, tactical and engagement level as well. See Davis (2001), pp. 17-18.

⁷⁶⁰ Warden (1995), p. 15.

⁷⁶¹ Yuen (2014), p. 25.

⁷⁶² von der Goltz (1906), p. 5.

⁷⁶³ For example Keegan (1998), p. 43 argued that "Clausevitz was polluting civilized thought about how wars could and should be fought."

⁷⁶⁴ Liddell Hart (1927), p. 104.

strong, swift blow in the enemy ranks was the goal of the battle and as one's own casualties reached critical numbers the only thing to do was to attempt to kill more and more of the enemy soldiers as if war had become a zero-sum game. To counter one's losses, more losses in terms of numbers had to be created for the enemy to bear and soon this escalated out of control due to the relative strength of the defensive over the offensive tactics. There was no creative application of operational art, but only mathematical calculation of attrition rates and the attempt to keep the enemy on the red even more than oneself. Only increased mass in attack was theoretically able to create such a success that the enemy losses could be brought to match one's own. And once an attack invariably faltered, the enemy chose to attempt to take advantage of the situation with his own attack, which reversed the situation again. The sound original idea had been perverted. The abhorrence of cumulative losses suffered in attempts to annihilate armies led theorists to search for new methods to win battles. According to Fuller "the tactical tendency in modern warfare was to strike at the moral rather than at the muscle of an enemy."⁷⁶⁵ Sometimes the most efficient way to attack the moral is through the muscle.⁷⁶⁶ Occasionally one must inflict as much physical damage as possible in order to affect the mental and moral strength of the enemy.

To save and win time and one has to talk about economizing its usage. Everything in battle needs to be carried out in a manner that adheres to the demands of economy. Fuller wrote that "*Economy of movement – that is, doing something in the shortest time, with the least loss of energy, mental, moral, and physical – is the ultimate expression in battle of expenditure of fore*."⁷⁶⁷ Economy of time, on the other hand is to use all available energy to do as much as possible so that the goal of the action can be reached in the minimum amount of time. If time is to be saved and won, the amount used by the enemy had to be increased. Fuller proposed that in order to maximize the efficiency of time management and conserving the strength of one's own troops the ultimate target of the attack needs to be rethought. The target should be

"the enemy's plan, which holds his decision, and, if this decision can be revoked, mentally the enemy is reduced to a state of reflection – that is, of reasoning in place of willing. He has to reason out new moves before his men can execute them, and, consequently, loses time. Conversely, his antagonist gains time, and, gaining time, can make more use of space and all that space includes, namely the conditions of war. The decisive mental attack is, therefore, directed against the enemy's decision as expressed in his plan."⁷⁶⁸

Still, what is attacked in practice are the enemy forces since it often is through the damage inflicted on the troops that the enemy plan is influenced. The penultimate target is different, however. The idea of performing something completely unexpected that the enemy has not prepared for would lead to a situation where a change of plan is unavoidable. If this happens, there is a time lapse when one is able to remain active and fulfill his plan, but the enemy needs to rethink, re-plan, re-issue orders and wait for their execution. During this time his troops do not adhere to a coherent plan that would answer the needs of the situation and an attack on them is likely to cost less lives and cause more casualties. The mental and physical attack go hand in hand, but unbalancing the enemy through attacking his plan wins time to cause physical damage against the enemy.

With mechanized forces the object of attack was already relocated from the physical to the mental sphere. In fast-paced warfare the plan of the commander was more important than ever and thus worthwhile as a target. Mobility of troops required a certain mobility of mind to control it. Freedom of movement in three dimensions required a mind capable of handling and controlling the possibilities of movement. Mechanization, according to Fuller, introduced into the military art

⁷⁶⁵ Fuller (1923), p. 120.

⁷⁶⁶ With his emphasis on battle, the defeat of the fighting force was an operational starting point for Clausewitz. See Howard (1983), p. 39.

⁷⁶⁷ Fuller (1926), p. 219.

⁷⁶⁸ Fuller (1926), p. 233.

"a new meaning, which will demand a higher type of mind than has ever been required in past wars. The more cunning this mind becomes, the more deadly will be the result of its overthrow. Heretofore, war minds were small and war bodies were big; armies were like certain reptiles their brain could, on occasion, be actually removed without influencing the wrigglings of their bodies. War is fast outgrowing the reptilian stage, and, when mind expands, man will realize what the objective of war demands. Then will the desire of the soldier be to avoid rather than meet the army of his adversary, so that in place he may be free to attack the will and nerves of the bostile nation.⁷⁶⁹

Intellectual abilities of the leaders are of utmost importance and while this placed new demands on the commanders, it also offered them new possibilities. It was understood better and better that the plan, will, moral and intellect of the enemy commander was the objective of the attack and killing his soldiers was just the means to an end. Of course there are and there always have been those who argue that the way to defeat the enemy is to defeat his army and thus it is the army that has to be hit at all times. One of these was Foch, who argued that "modern war uses but one means: the destruction of the organised forces of the enemy."⁷⁷⁰ This was the ultimate goal for Foch and this way of thought led Fuller to call him "Clausewitz drunk on violence" and "tactically demented Napoleon."⁷⁷¹ Nevertheless, we must not lay too much blame of Foch, since this was just one example of the prevalent thought in the dawn of the twentieth century. Similarly von der Goltz wrote that "the first object upon which the movements of the armies are directed is, accordingly, the enemy's main army."⁷⁷²

The idea of attacking the enemy army as the primary target has become obsolete in most military theories since then but remains applicable in certain situations. Occasionally the more important targets of the enemy will are outside the operational and tactical reach of the belligerent. We can use Vietnam as an example. For the Viet Cong it would have been impossible to strike at the U.S. policymakers and President Johnson. The military-industrial complex that was supplying the troops was likewise beyond the ocean. Fighting the army was the only available means of influencing the political will. Similarly, with the elusive tactics of the Viet Cong, the U.S. could not find an enemy of suitable size and force concentration to hit and even the leadership was elusive to target. Thus after the war the need to establish a center of gravity for the enemy gained prominence in U.S. theories and led to the revival of this Clausewitzian idea.⁷⁷³ Clausewitz gave three examples of centers of gravity; the opponent's army, his capital, and if he had a protector, the army of his ally.⁷⁷⁴ In the U.S. context center of gravity often is perceived as "the point where the enemy is most vulnerable and the point where an attack will have the best chance of being decisive."⁷⁷⁵

It is easy to state as a maxim that the purpose is to attack the enemy's plan or the nerve system of either his army or society. The desired effect will remain unattained if either the target is not as crucial as estimated or for some reason kinetic or non-kinetic weapons are not able to damage it. Undoubtedly, paralyzing the will of the enemy, killing his leaders, or destroying his battle plan is likely to result in victory. Yet, if there is any doubt concerning one's ability to attack these evasive targets, one must be able to revert

⁷⁶⁹ Fuller (1923), p. 171.

⁷⁷⁰ Foch (1920), p. 282.

⁷⁷¹ Fuller (1961), p. 128.

⁷⁷² von der Goltz (1906), p. 104.

⁷⁷³ Heuser (2002), pp. 74-75.

⁷⁷⁴ Howard (1983), p. 39. Handel (2001), p. 55 argued that typically the enemy's army was the center of gravity for Clausewitz, but Heuser (2007), p. 150 has a wider interpretation since she argued that many different things could be center of gravity for Clausewitz and proposes the enemy's army, his capital or public opinion. ⁷⁷⁵ Warden (2000), p. 7. Naturally other definitions abound but since the "five-ring-system" of Warden became so influential, this one cannot be overlooked. Still, there are critics of Warden and others who have caused the re-emergence and over-emphasis on center of gravity claiming that it has been so subjectively interpreted that it may be impossible to use it again with the original meaning intact. See Echevarria (2013), p. ix. Warden's interpretation does not stem from Clausewitz but rather from Boyd whose theories led to confusion of the concepts in the U.S. Yet Warden managed to interpret it completely anew. See Kagan (2006), p. 109-114.

back to more traditional methods. The brain may be incapacitated if one severs the limbs it wields. George Patton Jr. summarized his views on war with the same brusqueness characteristic to his way of fighting. He argued that there are no universal rules.

"there is only one tactical principle which is not subject to change: to use the means at hand to inflict the maximum amount of wounds, death and destruction on the enemy in the minimum time. Battles are won by frightening the enemy. Fear is induced by inflicting death and wounds on him. Death and wounds are produced by fire. [...] Although the successful soldier wins his battles cheaply so far as his own casualties are concerned, he must remember that violent attacks, although costly at the time, save lives in the end. Battles are simply an agglomeration of numerous small actions and practically never develop according to preconceived notions."⁷⁷⁶

Here Patton essentially echoes the point Moltke had argued earlier. While cautiousness forces the human mind to shrink from the idea of inflicting or suffering massive casualties in one instant, the ability to end the battle quickly still would save lives in the end. Thus, the idea of maximum damage in minimum time, preferably at the beginning of a battle when the element of surprise can be exploited, is a good maxim to carry over from indust-reality to the Third Wave. Besides, since the unpredictable nature of war makes it impossible to foretell the direction the operation will take, it is fitting to inflict the maximum possible damage without wasting time at the beginning when it is possible to plan beforehand so that the all the force can be concentrated for that purpose.

To summarize, operational artists have always wanted to attack the mind of the commander but often in the past the way to the mind of the enemy was through his muscle. Warden wished to create a time-friendly and resource-saving shortcut. He owes a huge intellectual and scarcely acknowledged debt not only to Clausewitz, but to Fuller and many other theorists of the past. He merely added the idea of the enemy as a system on top of the existing idea of attacking the enemy commander and his plan. Warden's circles did not remain theoretical constructions, but were used in the first Gulf War by Schwarzkopf's troops⁷⁷⁷. As he explained the situation, Saddam was the innermost circle.

"because of Iraq's highly centralized system of command and control, Saddam was what military theorists call an enemy center of gravity – an aspect of the opposing force that, if destroyed, will cause the enemy to lose its will to fight. (...) For our purposes, it was sufficient to silence Saddam – to destroy his ability to command the forces arrayed against ours."⁷⁷⁷⁸

When we contrast this with Warden, it is self-evident that Schwarzkopf discusses the application of theory put into practice as an operational artist. Warden claimed that the leaders "*are at the strategic center, and in strategic warfare must be the figurative and sometimes the literal, target of our every action.*"⁷⁷⁹ The same applies to operational art. The teachings of Warden intermingled with the Clausewitzian concept of "center of gravity" were applied in the Gulf to some degree by both sides. For the Iraqi troops the inner cohesion of the coalition was the primary target they nevertheless failed to influence. Similarly Saddam Hussein himself was from the coalition's point of view the center of gravity but ultimately remained unaffected.⁷⁸⁰ Saddam's ability to lead his troops was severely distracted, but due to political considerations for the stability of the entire region he still was not directly targeted.

In contrast the second Gulf War targeted Saddam Hussein's leadership more directly and it was a declared goal to remove him from power through influencing the foundational support for his position.⁷⁸¹ This time the objective was to "*disarm Saddam Hus*-

⁷⁷⁶ Patton. Quoted in Carver (1979), p. 82.

⁷⁷⁷ Warden was one of the planners of the air campaign. For a more details see Kagan (2006), pp. 128-137.

⁷⁷⁸ Schwarzkopf (1993), p. 370.

⁷⁷⁹ Warden (1995), p. 4.

⁷⁸⁰ Vego (2009), p. VII-19.

⁷⁸¹ Franks (2004), p. 338.

*sein's leadership and free Iraq.*¹⁷⁸² In other words, the leadership was the direct object of military action. Judging by the way the war dragged on for years after Saddam was taken out, the center of gravity was not the decisive factor after all. If we think of the Second Gulf War as a showcase of network centric warfare, we can join Echevarria in questioning whether having a center of gravity means anything in the context of self-forming networks.⁷⁸³ Perhaps it does, if we follow Boyd, who also treated the enemy as a system but did not wish to target the centers of gravity, but the connections between them. When these connections were cut, the enemy would be hindered.⁷⁸⁴. The system would still collapse and maybe these types of targets are more crucial in Third Wave societies and armies.

We must understand that while the primary object of attack has seemingly shifted from the army to the will of the leadership, actually the object itself has remained immutable. Even in primitive warfare engagement turned around the leadership. If the king fell, the battle was lost⁷⁸⁵. This paradox stems rather from the change in the location of the commander. As Fuller described ancient warfare, "a general-in-chief led his army into battle and did not direct it from the rear; not only was he the moral dynamo of his army, but also its brain - its general staff."786 Fuller wrote in very modern manner about a concept of "strategical paralysis" during WWI. According to him the primary aim of the attack should be to "paralyse the enemy's command and not his fighting forces ... that is his strategical brain and not his fighting body."787 Attacking the brain and not the brawn of the army was crucial to Fuller, but the location of the brain has changed somewhat. On the tactical level, today it is still in the vicinity of the battlefield, but the operational and strategic brains are far removed. In contemporary battles the political masters of war are elsewhere than the bulk of the army. That is why in both Gulf Wars Saddam Hussein as the supreme political leader was the primary objective to influence and the army was just something to counter and deal with on the way. Again, to quote Fuller, "the organization of his enemy's army automatically created a decisive point, the brain of the oreanization - its command - to strike at."788 For most of military history, the brain and the heart of the army was its supreme commander.

Alexander, Hannibal, Scipio, Caesar, Gustavus Adoplhus, Frederick, even Napoleon were great captains and simultaneously the grand strategical, political and strategical leaders of their armies and nations. Some, like Alexander, participated personally in hand-to-hand fighting among and in the front of their troops, others, like Napoleon merely led them in the field. But the point is that these leaders were situated among their armies and thus the way to strike at their will and determination led through their armies. You had to strike at the army to strike at the leader within in. As soon as operational commanders were removed from the actual battlefields and the ones in charge of the operation and entire war were not among bulk of the state's army, the army became an inconsequential target. As Warden wrote, it should be "*the whole system that is our target, not its military fores:*"⁷⁸⁹

Thinking about the enemy as a system is a somewhat mechanistic paradigm, since simultaneously the enemy is composed of humans and not only the tools they use. But Warden wished through modeling the enemy as a system to give the "*simplest possible big picture*" of a complex phenomenon and, if needed, to "*expand portions of our model so that we can see finer and finer detail*."⁷⁹⁰ Going into detail is necessary once perspectives into the entire system are sought from operational and tactical viewpoints. The big picture can be used to

⁷⁸² Franks (2004), p. 444.

⁷⁸³ Echevarria (2013), p. ix. See also Kagan (2006), pp. 344-345, 353. The Gulf and Afghanistan wars don't conclusively show that network-centric warfare is a feasible option, but they cannot invalidate it either.

⁷⁸⁴ Kagan (2006), p. 109.

⁷⁸⁵ See e.g. Stempel (2012), pp. 65-66.

⁷⁸⁶ Fuller (1960), p. 152.

⁷⁸⁷ Fuller in 'Plan 1919', cited in Trythall (1977), p. 60. Reid (1987), pp. 48-55 describes it in more detail and calls Plan 1919 the most famous unused and the most praised plan in military history.

⁷⁸⁸ Fuller (1960), p. 241.

⁷⁸⁹ Warden (1995), p. 11.

⁷⁹⁰ Warden (1995), p.5.

determine strategic vulnerabilities and focusing on them more limited viewpoints can be chosen to work out in detail how they could be exploited.

The simplified picture is a necessity to comprehend the complexity. As Warden claims, "the more complex a system, the more precarious its maintenance tends to be and the more likely that injections of energy in the wrong places will speed it natural movement toward disorder and perhabs even to chaos."791 This is the ultimate rationale behind systemic thinking. It tries to optimize the use of force instead of adhering to the old principle of economic use of force. As we have seen, economic use of force is concerned with creating the required impact with enough force to make the outcome certain. Seeing the enemy as a system seeks to identify the crucial weaknesses where the insertion the minimum possible amount of force would have cumulative effects and derail the entire system. Therefore, in the type of military thought Warden suggested, one seeks for the precise spot to impact and choose the most appropriate method of impact and deciding when to do it. If the systemic approach works, it saves force and time by attempting to make the system collapse as quickly as possible practically under its own weight. Yet Warden differed from the earlier interpretation of Boyd concerning attacking the connections. He wished to attack the elements of command themselves since there were no good examples on successful operational levels attacks on communications as a part of the command system.⁷⁹²

In the big strategic picture, it also becomes painfully self-evident that there are immense challenges to this approach that U.S. as the main proponent of systemic warfare has not been able to overcome. To locate and identify the weaknesses of any system requires thorough understanding of the system and how it functions. To illustrate the difficulties involved a highly trained engineer in the field of, say, hydro-electrics has only the vaguest idea of how a supercomputer of today works. Strategic bombings of WW II were great examples of employing a systemic approach before anyone had theorized about it and a spectacular failure.⁷⁹³ This illustrates the fact that the system one wishes to influence must be thoroughly comprehended. This would require a comprehensive and scientific analysis of the system with a multidisciplinary approach. Not only strategic studies but also social science, cultural studies, political science and numerous other specialist areas of expertise need to be involved in building a big picture that would adhere to the reality. Even then humans are unpredictable and tend to act by their emotions instead of game theory type of cold and infallible logic. Warden himself acknowledged this problem. For him, "*it is tough to determine what those actions might be because humans are so unpredictable.*"⁷⁹⁴

The need to understand systems, their functions, and weaknesses caused the focus of planning to shift into how to create the necessary effects that could make the systemic enemy dysfunctional. This approach became to be called Effects-Based Operations (EBO). Proponents of EBO agreed that humans making assessments and decisions and taking actions make the system dynamic and unpredictable.⁷⁹⁵ In a perfect world, with a "Theory of Everything' able to explain human behavior through an all-encompassing equation the systemic approach would be infallible. It is the entrance of the human factor into every calculation that complicates things exponentially.

In stark contrast to classical theorists and ultimately in unison with the ideas behind post-heroic warfare Warden argued that "*fighting is not the essence of war, nor even a desirable part of it. The real essence is doing what is necessary to make the enemy accept our objectives as his objectives.*"⁷⁹⁶ He did not see the actual physical and therefore traditionally heroic part of war

⁷⁹¹ Warden (1995), p.9.

⁷⁹² Kagan (2006), p. 117.

⁷⁹³ Having said that, the test of Douhet's theory provided by WWII can be used to either prove or disprove it and many have done either. But, until the advent of nuclear weapon, the bombings did not have as decisive results as predicted. See e.g. Wylie (2014), pp. 40-41.

⁷⁹⁴ Warden (1995), p. 13.

⁷⁹⁵ Davis (2001), p. 26.

⁷⁹⁶ Warden (1995), p.20.

as important and focused only on the outcome that is the effect on the enemy and what will result from it. From this starting point it was easy, again, for the next theorists to continue with the idea of EBO. Since getting the enemy to accept one's objectives was possible through having an impact or an effect on him, one should focus on only creating this effect. And thus Davis defines EBO as "operations conceived and planned in a systems framework that considers the full range of direct, indirect, and cascading effects - effects that may, with different degrees of probability, be achieved by the application of military, diplomatic, psychological, and economic instruments."⁷⁰⁷ EBO is a direct descendant of Warden's system-based approach. It has an emphasis on "taking a systemic view when assessing how best to accomplish objectives (i.e., to achieve the desired effects. Rapid, well-designed parallel operations can sometimes lead to decisive victories."⁷⁹⁸ From now on it was to be all about viewing the enemy as a system and creating with joint operations and fires effect where it could cause the system to dysfunction.

The reader undoubtedly can discover the lack of enthusiasm I show towards EBO. In the 1990s the U.S. army spent much more time than during the actual RMA in talking about transformation but beyond articles and books there was far less result.⁷⁹⁹ As van Creveld put it, Americans "regard the invention of military doctrines as both an industry and a pastime: as a result, so many conflicting doctrines have been put forward by so many people representing so many interests that it is often difficult to take them seriously at all."800 The eagerness surrounding Fuller, Martel and Swinton⁸⁰¹, for example, when they spoke about future mechanized tank war, was relatively subdued when compared to what has been said about EBO. It may be a functioning new doctrine in superpower warfare against a military underdog, but it is not applicable to everyone, not against every enemy and it certainly is not the 'revolution' it supposedly heralded in. Davis claims that "even with the most sophisticated versions of effects-based planning, and even with the advent of precision weapons and cyberwar, some traditional aspects of war will still be necessary. Moreover, independent of the attitudes of Americans, many nations will continue to pursue them ruthlessly."802 EBO was a temporary approach chosen for specific military operations by those states that have enough assets and resources to employ it. Others perform their operations along more traditional lines. Some may choose the approach to resort to agrarian warfare. We can use guerrilla or insurgent warfare as an example of a war in which EBO and system-based approach can be utterly useless. There are conflicts in which there are no vulnerable centers of gravity to attack.⁸⁰³ Furthermore, the centers of gravity are important only for a certain period of time and their importance varies in time and their locations in space shift. One of the dangers of the systemic approach is born out of the necessity to simplify the complex to be manageable and in the same process lose sight of how importance of possible targets changes over time.

What unifies EBO and the idea of network-centric warfare about to be explored next is that they are unimpeachable ideas but in practice they refer only to traditional military best practices made possible by contemporary technological innovations. Operations have always been launched to create certain desired effects in the enemy and thus EBO as a concept is almost banal.⁸⁰⁴ EBO was not approved as official doctrine at any point, but it began to appear in doctrinal publications and was taught in military academies, until the entire concept was shot down by the commander of US Joint Forces Command on the basis that it ran counter to the history of warfare⁸⁰⁵. EBO continued to influence

⁷⁹⁷ Davis (2001), xiii, same definition on p. 7.

⁷⁹⁸ Davis (2001), p. 16.

⁷⁹⁹ Kagan (2006), p. 199.

⁸⁰⁰ Creveld (1991), p. 13.

⁸⁰¹ Swinton could just as well be excluded from the trinity, since he declared Fuller to have been "damned silly." See Reid (1998), p. 15. Nevertheless, his ideas did have some of the progressive attitude of the other two. The three men did not think alike, but shared a visionary outlook.

⁸⁰² Davis (2001), pp. 15-16.

⁸⁰³ Davis (2001), p. 24.

⁸⁰⁴ On this criticism see Gray (2007), p. 64.

⁸⁰⁵ Echevarria (2011), pp. 157-158.

European military development for a while longer since much of the U.S. terminology and the ideas behind them have lagged a few years in crossing the ocean⁸⁰⁶.

4.5. NETWORKING AS TIME-WINNING RESPONSE TO THE NEED FOR SPEED

"We are amazed at our technological capabilities. We rush headlong into an electronic orgy of data, simply because we can do it. We don't want to allow those expensive computers to go to waste. Never let a sleeping megabyte lie. Instead, feed raw information to someone."⁸⁰⁷

In order to comprehend the systemic enemy even in a rudimentary manner and to be able to identify and evaluate possible targets and design the effects that would collapse the aforesaid system more and more information concerning the enemy has to be acquired and analyzed. The demand for increased information was another direct descendant of taking the systemic viewpoint. The emphasis on information led to the drafting new theories of information warfare. Information warfare is definitely a part of the Third Wave. We can see it all around us. As Toffler argued,

> "a new info-sphere is emerging alongside the new techno-sphere. And this will have a farreaching impact on the most important sphere of all, the one inside our skulls. For taken together, these changes revolutionize our images of the world and our ability to make sense of it."⁸⁰⁸

This type of thinking is widely accepted in the military. The techno-sphere to some degree was a product of the indust-reality, but continues to be a part of the Third Wave as well. The different spheres do not replace each other but co-exist and expand. The most sophisticated drone of today belongs to the same category as the machine gun. They are tools, parts of the techno-sphere and they influence the way the societies that have them fight their wars. But societies consist of humans who do the actual fighting. For Toffler

"human intelligence, imagination and intuition will continue in the foreseeable decades to be far more important than the machine. Nevertheless, computers can be expected to deepen the entire culture's view of causality, heightening our understanding of the interrelatedness of things, and helping us to synthetize meaningful "wholes" out of the disconnected data whirling around us."⁸⁰⁹

Even the Luddites among our commanders do not have to despair. No matter how far and in which direction warfare evolves, the man is unlikely to return to serve the machine but ultimately the two co-exist so that the machines serves and assists the man. As we have seen, it was a major project of the industrial age to tie the man to the rhythm, pace, timing and even functions of the machine. Making the men subservient to machines or in the best cases their equal partners was a part of the indust-reality and this tendency is evident in Mitchell's claim that "*men and machines have to be harnessed up and driven as a team to make up air power*."⁸¹⁰ During the Third Wave the relationship of the man and the machine remains crucial but in a different form. The machine augments the man and enhances his abilities. The question of how to connect the numerous machines that assist not only the commander-inchief but also every soldier optimally is answered through the idea of creating more overarching information networks.

One of the most profound statements on the concept of network centric warfare was the foreword of the book Alberts, Garstka and Stein devoted to it. They de-

⁸⁰⁶ Sloan (2008), p. 3.

⁸⁰⁷ Leonhard (1991), p. 120.

⁸⁰⁸ Toffler (1990), p. 165.

⁸⁰⁹ Toffler (1990), p. 174.

⁸¹⁰ Mitchell (1999), p. 498.

clared that "*it will be decades before the real book on Network Centric Warfare will be written*"⁸¹¹ They wished to chart the course for the journey into fielding this concept and to prepare the ground for it. They did not claim to be experts since the full potential of the concept had to be first understood and only then the potential could be realized.⁸¹² These words were written in 2000 and they are still valid. War in the developed countries has progressed toward network centric warfare, but the concept is still not fully operational. We are still, adhering to the development cycles of Simpkin, in the phase before the full realization of the concept so that warfare itself changes into this direction instead of only doctrines of certain troops in certain armies. "NCW is far more a state of mind than a concrete reality."⁸¹³

What exactly is network centric warfare? We can start by saying that it is yet another attempt of revolution in military affairs and one that ultimately boils down to taking a different perspective. The focus is on the capabilities of networks themselves while earlier the platform centric view prevailed. A tank, a submarine or a fighter was a platform from which damage was inflicted on the enemy and communications networks enhanced the performance of individual platforms. With network centric warfare the networks are seen as the most important elements due to developments in communication technology.⁸¹⁴ NCW supposedly utilizes the specifics of war in the Third Wave and takes advantage of information and communication technologies in building networks to connect sensors to weapons platforms and additionally to their operators and their commanders. Alberts et. al. defined NCW as:

> "an information superiority-enabled concept of operations that generates increased combat power by networking sensors, decision makers, and shooters to achieve shared awareness, increased speed of command, higher tempo of operations, greater lethality, increased survivability, and a degree of selfsynchronization. In essence, NCW translates information superiority into combat power by effectively linking knowledgeable entities in the battlespace."⁸¹⁵

This definition is a complex one, but can for our purposes be summarized as creating networks out of physically isolated but interconnected elements in the battlefield to share information about the battlefield in order to gain time in speed of command, accelerate the tempo of operations and shorten the time-lag between identifying a target and creating an impact on it. Essentially NCW is a timesaving approach and a tool for making everything faster and more effective through shared information and selfsynchronization between the networked entities. NCW is more about networking as a principle and basis for action than the structures of the networks themselves.⁸¹⁶ Unfortunately NCW falls into the same pit as earlier U.S. 'revolutions' in military affairs, namely that it focuses on the technical, tactical and only to some degree operational levels and appears ignorant of either strategy or policy considerations. Even if a NCW fighting force would be victorious, the question remains how to translate that victory to the strategic level.⁸¹⁷ One should not take a too narrowminded and technocentric approach to it, since NCW is not "about technology, but broadly about an emerging military response to the Information Age."818 Just because weapons and technologies change in far more rapid cycles than the essence of man, his societies or the wars they wage "the operational-level commander must first master the basic philosophy and principles of warfare. Only then can be make current or new technologies his servant."819 As already Mao wrote, highlight-

⁸¹¹ Alberts et. al. (2000), p. xiii.

⁸¹² Alberts et. al. (2000), pp. 5-6.

⁸¹³ Alberts et. al. (2000), p. 5.

⁸¹⁴ Mandeles (2005), pp. 98-99.

⁸¹⁵ Alberts et. al. (2000), p. 2. In this sense NCW fits a paradigm where "many of the latest military theories and doctrines assume tacitly or explicitly that the wars of the future will be waged with perfect or nearly perfect information and intelligence ('information dominance'). These theories envision a scenario in which the technologically advanced side, with flawless command, control and communications, will always identify and bit targets with precision."

⁸¹⁶ Alberts et. al. (2000), p.6.

⁸¹⁷ Lonsdale (2007), pp. 239-240.

⁸¹⁸ Alberts et. al. (2000), p. 88.

⁸¹⁹ Warden (2000), p. xiv.

ing the role of weapons or technology above the men

"constitutes a mechanical approach to the question of war and a subjective and one-sided view. Our view is opposed to this; we see not only weapons but also people. Weapons are an important factor in war, but not the decisive factor; it is people, not things, that are decisive."⁸²⁰

The more we seek to win time by being more effective and accomplishing more in a shorter time period by using not our minds but technology as means the more we risk falling into a pit Luttwak described. He argued that "politicians are still the captains of the ship of state, and soldiers operate its gundeck, but now there are technicians in charge of the engine room, whose doings propel the ship on uncharted routes toward an unknown destination."⁸²¹ When it comes to operational art the technicians should not be allowed to dictate how war should be fought but expected to produce the tools required by the military planners. Unfortunately there is a long-lasting tradition of sidelining the military minds from development of warfare. As Fuller described it, "just as in the First World War the industrialist became more important than the general, so in the second did the scientist. And following in the wake of the scientist came the technician, the soldier becoming little more than the salesman of his goods."⁸²² It might be time during the Third Wave to let the military thinkers to do some of the thinking on operational art. Developing NCW capabilities should not be about the technological solutions we find for the dilemmas perplexing us but a guide into what type of thinking might be required from us to be able to even identify the dilemmas.

The concept of NCW was written so that it would adhere to the traditional principles of war by reducing tensions between some of them and altering more radically only the meanings of the principles of mass and mobility. The traditional interpretation concerns itself with massing forces and moving the forces rapidly through maneuver. NCW is a continuation of the trend started in the U.S. to attempt to amass the effects created and keep the forces dispersed.⁸²³ This is not as revolutionary as it sounds, because it has always been attempted but when the range of weapons was shorter than today, it could only happen by massing forces into the area where the enemy needed to be affected. Precision weapons of today make it possible to synchronize the effects of different branches of service and their weapon platforms both spatially and temporally while the platforms themselves may be dispersed and far away from the point of impact of their projectiles.

Often discussions and criticism of NCW focus on the role it gives to man and machine and this relationship seems to be confused in the minds of many. The role of technology in NCW should be to free the commanders to practice their operational art. War during the Third Wave should be waged differently since at least a part of the fighting is conducted without physical contact between opposing forces. Liddell Hart wrote that

> "when battle was waged essentially between physical bodies there was a value in turning men into machines. Now that battle is being waged more and more between machines the object of military training should be to produce men who will be masters of the machine – by developing their mental powers."⁸²⁴

The upcoming struggle in the Western societies is to make the commanders on all levels understand that machines need to serve them, and not the other way around. The harnessing of men and machines Mitchell called for needs to be somewhat adjusted and the roles of the two in this symbiotic relationship rethought. The human should be in control, but must first seize it. What Heidegger wrote about life applies just as well to warfare;

"everything depends on out manipulating technology in the proper manner as a means. We will, as we say, 'get' technology 'intelligently in hand.' We will master it. The will to mas-

822 Fuller (1948), p. 409.

⁸²⁰ Mao (1963), p. 217.

⁸²¹ Luttwak (1987), p. 81.

⁸²³ Alberts et. al. (2000), p.7; Kagan (2006), p. 169.

⁸²⁴ Liddell Hart (1937), p. 154.

tery becomes all the more urgent the more technology threatens to slip from human control."⁸²⁵

War has always been to a large degree concerned with information and every great captain has striven for information superiority, since information and the ability to use it to one's best advantage has provided possibilities to peer through the Clausewitzian fog of war. Information superiority can be defined as a state achieved when one side gains an advantage over the other by its ability to collect, process, and disseminate an uninterrupted information flow and simultaneously compromise the enemy's ability to do the same.⁸²⁶ As our societies have evolved from one age to another the amount of information at the disposal of the commanders has increased exponentially and information technologies

"are greatly improving our ability to collect and store data, process and analyze it to create information, and distribute it widely. Information is being transformed from a relatively rare product into a plentiful one; being turned from an expensive commodity into an inexpensive one; and being freed from the control of a few to make it almost universally accessible:"⁸²⁷

This is one of the main characteristics of the Third Wave warfare. Information is plentiful, cheap, and accessible and it can be collected, stored, and processed immensely faster than ever before. The question is less about how to obtain sufficient amounts of information to back decision-making but rather how to be able to analyze the vast amount of information so, that it can be timely utilized to produce the best-informed decision possible. If the time gap used to be in collection of information and sending it to the commander, now the time of decision-making is compressed by the amount of information and need to process raw data. The pressure of time burdens the analysts and operational artists alike.

Since the Third Wave is characterized by increased speed and efficiency of information gathering, analysis and decision-making advances in concepts and technologies are "compressing process cycle time. The intensity of these effects is more pronounced in the many processes where information is playing an increasingly important role."⁸²⁸ The decision-making cycle may be the temporally most critical of all military process cycles. The decision may refer just as well to that of an individual soldier or it may be the decision cycle of any unit up to and including the supreme command. As Alberts et. al. argued, "changes in the dimensions of time and space are increasing the pace of events, or operating tempo, in many different environments."⁸²⁹ We only need to take a look at the society around us to see how impossibly fast the tempo of events is. A stock market can crash globally within seconds, news reach us faster than ever and follow the same pace in becoming old news.

NCW proponents seem to look into the corporate culture for answers to military dilemmas because they argue that since the business organizations have already been forced to adopt this new tempo and if multinational corporations can act in concert, why could not the relatively small armies of today?⁸³⁰ If, indeed, "*responsiveness and agility are fast becoming the critical attributes for organizations hoping to survive and prosper in the Information Age*"⁸³¹ the armed forces need to acquire a new approach to time management. The purpose perhaps should not be to adhere to the principles of indust-reality to control time but to let go and develop flexibility within the command structures so that their response times to inevitably occurring changes is shorter and that the decision-making cycles on all levels acquire more flexibility. The cycle has too much momentum if the load is not lightened and this can be achieved by scrutinizing the headquarters' organizational hierarchies and shortening chains of command. Massive bureaucracies are a leftover of the industry-reality and by their

⁸²⁵ Heidegger (1993), p. 313.

⁸²⁶ Alberts et. al. (2000), pp. 34, 54.

⁸²⁷ Alberts et. al. (2000), p. 19.

⁸²⁸ Alberts et. al. (2000), p. 20.

⁸²⁹ Ibid.

⁸³⁰ Cerebowski - Garstka (1998), p. 2. On critique of this tendency see Kagan (2006), pp. 254-258.

⁸³¹ Alberts et. al. (2000), p. 21.

very nature incompetent to increase their flexibility without external pressure. The biggest pressure exerted on our organizations is that of compressed time and accelerated change. Today turns into the past faster than ever before and tomorrow manages to catch us by surprise just because it is upon us so suddenly. Toffler claimed that

> "in a world of accelerant change, next year is nearer to us that next month was in a more leisurely era. This radically altered fact of life must be internalized by decision-makers in industry, government and elsewhere. Their time horizons must be extended.

> To plan for a more distant future does not mean to tie oneself to dogmatic programs. Plans can be tentative, fluid, subject to continual revision. Yet flexibility need not mean short-sightedness. To transcend technocracy, our social time horizons must reach decades, even generations, into the future."⁸³²

Systems-based approach, EBO, and NCW are part of the Third Wave and clearly products of the American strategic culture, characterized by Echevarria by three traits; fighting wars as battles, fascination with technology, and casualty aversion.⁸³³ Yet they represent the Third Wave that is the dominant paradigm in the U.S. and that collides with the waters of Second Wave in many other parts of the globe. The Wave will carry us for perhaps a decade. We can only make more or less informed guesses and estimations beyond that, but as Liddell Hart wrote, "*Confident prophecy is best left to generals, who as a class have a traditional fondness for it, and as prophets have no reputation to lose*."⁸³⁴

Prophecy in military development is risky since in the vision is not sufficiently grounded in reality, the result may be having to fight against an enemy whose vulnerabilities do not match with one's strengths. For a rational and dispassionate approach to developing operational art one has to use scientific methodology. This means, in effect, that scientific study of their profession has to be commendable among the officers. Already Jomini recognized that "the study of the military sciences should be encouraged and rewarded, as well as courage and zeal. The scientific military corps should be esteemed and honored; this is the only way of securing for the army men of merit and genius."835 However, there is still long way to go. We are not so far removed from the times when Liddell Hart wrote that in addition to the technique of how to best utilize weapons and other technical tools of warfare, "what passes for "military science" is hardly more than the interpretation of conventions nurtured by tradition and warped by sentiment, patriotic and professional. Sentiment and science are incompatible, but this truth has yet to be accepted in the military world."836 All too much of the science of war is founded either on tradition and emotion and the romanticized view they create or the technology-centered approach revering gadgets and trinkets. Already for Fuller war in its most elemental forms was a matter of science because its theory was founded on scientific method and its actual practice was shaped by the technology at the disposal of the belligerents. For him its application, warfare, required art on operational level⁸³⁷. Fuller saw artistry as something enriched by an understanding of scientific methodology since artistic standards were improved by scientific advances⁸³⁸. Initially the views of war as an art and a science were harmonious, but the widening gap between the technicians and operational artists is a manifestation of what happens when scientific principles and technology are divorced from the doctrines and practices of war. Again, following Heidegger's idea of the essence of technology being nontechnological

> "reflection upon technology and decisive confrontation with it must happen in a realm that is, on the one hand, akin to the essence of technology and, on the other, fundamentally dif-

⁸³² Toffler (1990b), p. 459.

⁸³³ Echevarria (2011b), p. 433.

⁸³⁴ Liddell Hart (1937), p. 270.

⁸³⁵ Jomini (2007), p. 36.

⁸³⁶ Liddell Hart (1937), p. 277.

⁸³⁷ See Strachan (2011), p. 112.

⁸³⁸ Reid (1987), p. 92.

ferent from it. Such a realm is art. But certainly only if reflection upon art, for its part, does not shut its eyes to the constellation of truth, concerning which we are questioning.⁸³⁹

Art and technology must be combined and a scientific approach is the only one that can bridge the gap and cause the two to merge. Humans should not adapt themselves to technology but make technology adapt to their specific requirements or else the relationship is dysfunctional. Coker compressed the relationship thus; "We are the technology we use, and this will probably not change in the near future. The information that computers process is the information we want to obtain."⁸⁴⁰ The commander has always been and will always be the fulcrum around which the entire military machinery should be built. Computerized and automated processes es perform the tasks given to them and their correct role is to act as tools. A computer cannot be a strategist or an operational artist. As Moltke wrote

"Strategy is the application of sound human sense to the conduct of war; its teachings (Lehren) go little beyond the first requirements of common sense. Its value lies entirely in concrete application.[...] Thus war becomes an art – an art, of course, which is served by many sciences. In war, as in art, we find no universal forms; in neither can a rule (Regel) take the place of talent."⁸⁴¹

Just because technology develops so staggeringly rapidly in our world of continuous and accelerated change the technology enthusiasts should not be in charge of charting the development of armed forces. Otherwise we keep falling time after time into the pit of developing a "*Super-Weapon*." According to Leonhard, each and every one of them

"has two components: a technologically advanced weapon system, and an overly zealous proponent. They are found in every age and, although endlessly discredited in practice, they reemerge from year to year, turning out doctrines and budget wars.

Super-Weapon status is earned by any weapon system that is purported to be impossible to defend against. Some of the most famous Super Weapons of late are explosives and precision-guided munitions. The combination of these two capabilities has created a whole new school of thought: the precision-strike concept - the Super Weapon of Tomorrow (...) Rather than hammering cities into the dirt with tons of dumb bombs, we will put one Super Weapon through the bathroom window and collapse a society while it's on the potty. Let the revolution in warfare begin."⁸⁴²

Quickened pace of technological development means that new technologies become obsolete sooner than ever before and it is impossible to predict far into the future how technology will develop. It is a constant misperception embedded into the human condition itself to think that the age one lives in has been able to perfect the existing technologies. Already Jomini argued that "*the means of destruction are approaching perfection with frightful rapidity*."⁸⁴³ The times of Napoleon are long gone and the capacities for destruction we have today would have mind-boggled Jomini. Therefore, instead of viewing NCW as the any kind of penultimate stage in the evolution of the art of war and perfection of the existing model one should view it rather as an approach to further develop the art of war regardless of the technologies used in creating simultaneous and synchronized effects on the enemy. It is a continuation of the U.S. enthusiasm for technological innovation and resulting trend to vigorously explore that dimension. Technology as a tool is an essential dimension of war.⁸⁴⁴ It cannot be allowed to become the heart and soul of the art of war. Thus military theorists should not take existing technologies as a starting point for their theories but rather extrapolate from what is necessary to accomplish and how this could be done.

While there is no doubt that we are living in the Third Wave or information age, the technology required for truly network centric warfare is not widespread among

⁸³⁹ Heidegger (1993), p. 340.

⁸⁴⁰ Coker (2010), p. 218.

⁸⁴¹ Moltke (1993), p. 124.

⁸⁴² Leonhard (1998), p. 73.

⁸⁴³ Jomini (2007), p. 35.

⁸⁴⁴ Echevarria (2011b), p. 435.

states. To envision how such a war could be fought it would be useful to assume the same perspective as Douhet had in his time concerning the future of air war. He wrote that one should not think of "*what aviation is today, but what it could be today. Certainly if we said that the actual air powers of the various nations could decide the outcome of a war, we would be uttering not only a paradox, but downright absurdity.*"⁸⁴⁵ However, focusing on utopias is dangerous unless free flight of imagination is down to the realities of the world to some degree. As Liddell Hart warned, we all too often in the light of the past have come to "*assume that the vision of to-day will be the facts of to-morrom*."⁸⁴⁶ Very seldom visions of future weapons have been as decisive in combat as their proponents argued they would be.

The proponents of NCW understood this. They did not restrict themselves to describing how this or that technological device will enable certain activity, since the development cycle of technology is so quick. They think of how things could or should be done and leave the designation of correct tools to be employed to the technicians. Cerebowski and Garstka argued that "a process of co-evolution of technology, organization and doctrine is required."847 A balanced concept based on all three would be necessary to create a new entire "marfighting ecosystem" suitable for the Third Wave.⁸⁴⁸ As Leonhard wrote, "if our doctrinal writings continue to be led around by the nose by eloquent technicians, we stand to lose any sense of direction we might still possess in the military art."849 We cannot change the technology of our armies overnight and therefore we need to change methods of employing them and focus on altering art of today to fit the battlefield of tomorrow. As Mitchell wrote, "nations nearly always go into an armed contest with the equipment and methods of a former war. Victory always comes to that country which has made a proper estimate of the equipment and methods that can be used in modern ways."⁸⁵⁰ Even if a nation is forced to fight with outdated equipment, it has to be ingenious enough to invent new methods of employing them to best counter the technology the enemy has access to and in a manner that best support its cultural characteristics.

There is a huge risk in prioritizing technology over operational art, since as Kagan noted, "*the nature of revolutions in military affairs is that they spread over time to all of the major powers of the world.* (...) *if the technology really does lead to a fundamental change in the nature of warfare other major powers will inevitably, usually fairly rapidly, copy it.*"⁸⁵¹ In such a case the technology will no longer give an edge for either side and the conflict will be resolved by which belligerent used the tools at his disposal best to support his operations. Heidegger claimed that "*the more questioningly we ponder the essence of technology, the more mysterious the essence of art becomes.*"⁸⁵² Therefore, the operational artists should focus their intellectual effort on how to develop the art itself and allow the technicians to ponder how they could best support the artists. Even in the heyday of mechanization almost universal agreement existed among the practitioners in contrast to the theorists about the prevalence of the art over the technology. As Zhukov claimed, humans are the masters of battlefields in the future as well.⁸⁵³ No matter how rapid the evolution is, we might do worse than follow the guidance of Thucydides who wrote that

"There will be other ways and means which no one can foresee at present, since war is certainly not one of those things which follow a fixed pattern; instead it usually makes its own conditions in which one has to adapt oneself to changing situations."⁸⁵⁴

⁸⁵² Heidegger (1993), p. 341.

⁸⁴⁵ Douhet (1999), p. 373.

⁸⁴⁶ Liddell Hart (1932), p. 103.

⁸⁴⁷ Cerebowski - Garstka (1998), p. 12.

⁸⁴⁸ Cerebowski - Garstka (1998), p. 7.

⁸⁴⁹ Leonhard (1991), p. 240.

⁸⁵⁰ Mitchell (1999), p. 490.

⁸⁵¹ Kagan (2006), p. 201.

⁸⁵³ Zukov (1969), p. 639. He made a spectacular rise in the Red Army since he was one of the corps commanders to survive Stalin's purges, but his post-war fall was just as rapid. See e.g. Forczyk (2012), pp. 5-11.
⁸⁵⁴ Thucydides (1971), p. 79.

One of the key points this chapter has tried to get across is the impact of Toffler and other theorists on U.S. military. The senior leaders were so taken by the theory that the world was moving from industrial age to the information age that they began to transform their militaries so as not to be left behind.⁸⁵⁵ Such a focus on new technologies directed so much resources into the transformation process, that the Third Wave or information age became a reality within the military culture even if one doubts its effect on the U.S. or any Western society in general. The Third Wave swept the U.S. military along and turned the theoretical concept into reality. Revolutions come and go, but they are able to influence the character of war and and only for a given period of time. Technological revolutions are limited to these types of effects but a revolution in thinking may have more long-lasting effects that carry from one wave to another. Even if the face and character of war change constantly, their nature or essence is more stable. To summarize we can quote Kagan who argued that

"The U.S. strategy community in the 1990s was is general so caught up with the minutiae of technology that it lost sight of the larger purpose of war, and therefore missed the emergence of a challenge even more important than that of technology - the challenge of designing military operations to achieve particular political objectives."⁸⁵⁶

The challenge of developing operational art is just as pressing as ever and evolution will not stop. In this chapter we saw that even if theorists often claim that warfare is revolutionized and something completely different from what is ever had been before, true revolutions are few and far between. We followed an accelerated cyclical evolution pattern as a response to stasis in operational art and how with each addition of new ideas, or, rather, ideas of the past, phrased anew and enabled by new technologies, the cycle only gained momentum. The occasional speed of evolution forces ways of thinking to develop so rapidly that it seems revolutionary. However, revolutionary development is not linear and teleological. Revolutions inspire counter-revolutions following the idea of cyclical development and in the long run the art of war and operational art have become more and more complicated. Nevertheless, the essence of war has remained unchanged. As Strachan put it,

"War shows both change and continuity, reflected in the distinction between its character and its nature. The forms of individual wars are of course profoundly affected by the circumstances of their own times, but the dynamic generated by the decisions of two sides to use armed force against each other generates recurrent features."⁸⁵⁷

We discussed how even old ideas are applicable in new contexts with necessary contextual alterations and saw that neither technology nor techniques of war can be considered to have been the primary driving force of evolution but rather that the two have gone hand in hand feeding each other in an accelerating cycle. There have been times when technology overshadowed the artists and the relationship of men and their machines were distorted. It should always be the operational artist and not his tools in charge. The main argument is that war evolves constantly but cyclically and thus the past is a treasure trove of learning – for the artist who does not imitate but produces something original.

In the next chapter we will look at the different factors crucial to the art. The old trinity of time, place, and force has had different meanings in each of the Waves and their ratios have varied, but they will still continue to be valid in the future. The argument is that each one of these factors is inconsequential alone, but only in relation to others can they have any meaning in practice of operational art. Time is therefore worthless unless it is discussed in terms of being time to do something. The right force having an impact at the right place at the right time is the crux of operational art. While war can and should be waged according to scientific principles it is first and foremost a form of art and thus time, place and force cannot be calculated. It is the human intellect of the operational artist that balances them against each other in the manner most favorable in each situation.

⁸⁵⁵ See e.g. Kagan (2006), pp. 200-201.

⁸⁵⁶ Kagan (2006), p. 253.

⁸⁵⁷ Strachan (2011b), p. 511.

MANIPULATION OF THE TRINITY OF TIME, SPACE, AND FORCE

"If I look upon the universe as space of three dimensions, then this space manifests to my mind in terms of time and force; time indicating the subjective relationships of mind and space, and force – the objective relationships. Time may be divided into past, present, and future; and force into energy, motion, and mass. We only know the past through the present, and can only speculate as regards the future from the present; and all our subjective knowledge in time is ultimately based on objective motion, or the relationship at any given moment between energy and mass."⁸⁵⁸

5.1. CALCULATING FORMULAE OF VICTORY

"No calculation of space and time guarantees victory in this realm of chance, mistakes, and disappointments. Uncertainty and the danger of failure accompany every step toward the goal, which will not be attained if fate is completely unfavourable. In war everything is uncertain:"⁸⁵⁹

There have been many suggestions how the art of war should be addressed scientifically and which particular sciences should be used. As an example Simpkin suggested a tripartite multidisciplinary approach of physics, to understand the physical forces at play, statistics, since risk, chance, and surprise rely on it, and psychology, since the clash of two wills of the commanders is the most important factor in war.⁸⁶⁰ Long before him Maizeroy had argued that while one part of war is mechanical and can be reduced from principles and taught by rules, the other is "quite sublime and residing solely in the head of the general, as depending on time, place and other circumstances, which are eternally varying, so as never to be twice the same in all respects."⁸⁶¹

Adhering to the Newtonian principles the science of war of the indust-reality attempted to create rules for itself but this tendency was occasionally evidenced in the agrarian age as well. Already Montecuccoli attempted to reduce war-experience to universal and fundamental rules that could then be applied to particular times and circumstances.⁸⁶² There have been attempts throughout the ages to analyze the art of war through calculations of forces and mostly they have been failures. Dupuy, in his attempt to provide a theory for war argued that since chance affects both sides equally, "*military combat is as close to being deterministic as it is possible for any human activity to be.*"⁸⁶³ This idea borders on ludicrous unless one assumes the idea that no human activity can be deterministic. Then, and only then, his claim is acceptable. None, however, have failed as spectacularly as Foch in his calculations, or, in his words "*mathematical demonstration of the truth*" that with the level of sophistication rifles had reached before WW I the advantage of their increased firepower

⁸⁵⁸ Fuller (1926), p. 49.

⁸⁵⁹ Moltke (1993), p. 175.

⁸⁶⁰ Simpkin (1985), p. xx.

⁸⁶¹ Maizeroy, cited in Gat (2001), p. 42.

⁸⁶² Gat (2001), p. 22; Creveld (2005), pp. 75-78.

⁸⁶³ Dupuy (1987), p. xxv.

would benefit the assailant much more than the defender.⁸⁶⁴ His calculations 'proved' that an attacker would be able to fire twice the number of rounds the defender could.

"As you see, the material superiority of fire quickly increases in favour of the attack as a result of improved firearms. How much more quickly will grow at the same time the ascendancy, the moral superiority of the assailant over the defender, of the crusher over the crushed."⁸⁶⁵

Fuller claimed that while Foch was right to stress the importance of the offensive to his student, he erred in his willingness to "exalt it into a fetish."⁸⁶⁶ Yet, many of the high-ranking officers in all armies have been enthralled by the idea of providing their readers with the formula of victory. Some have even created formulae and equations where originally there were none. A saddening example is Dupuy who analyzed all of Clausewitz' philosophy on the art or war and summarized it into a simple equation " $P = N \times V \times Q$ "⁸⁶⁷ His purpose was to create a calculable theory of combat. Many attempt to emphasize their deep understanding of the mechanics of warfare by presenting themselves as masters of war to instruct younger officers. Wavell has written that

"all tactics since the earliest days have been based on evaluating an equation in which x=mobility, y=armour, and z=hitting power. Once a satisfactory solution has been found and a formula evolved, it tends to remain static until some thinking soldier (or possibly civilian) recognizes that the values of x, y, z have been changed by the progress of inventions since the last formula was accepted and that a new formula and new system of tactics are required."⁸⁶⁸

This is a feeble attempt to quantify war and reduce it into three factors and not even begin to illustrate how their interrelations could affect the mechanics of war. Mobility, armor – or protection - and hitting power are indeed essentials of warfare, but they have to be combined in a unique manner specific to each occasion and Wavell does not in any manner instruct his readers how this could be accomplished. He provides no examples, but nevertheless, there is a sense in his message on an abstract level. Once someone discovers a suitable 'formula', it becomes a common sense method until the development cycle of war turns and some external factor forces to re-evaluate the formula. Then someone rewrites it and revises the method to better fit the changed requirements of the situation. This leads to new tactics and operational art and allows one to surprise his enemy. As Fuller wrote, the task of a military genius is

"producing original combinations from the forces of war, genius must consequently be the mainspring of strategy, which is largely the science of forces. Inwardly its work is founded on originality; outwardly it manifests in surprise. The great genius surges through difficulties immune, because he sees – foresees – the end, and understands the means."⁸⁶⁹

We can use Napoleon or Alexander the Great as examples of great captains who had an innate understanding of the science of war. Yet, Napoleon, for all his foresight, chose to attack Russia with inadequate means to do so. The immunity of Alexander ended in a prosaic death. Yet, in both cases "though thousands have watched and followed him, to them his genius remains a mystery. The man is venerated, but his method vanishes, not because it is forgotten, but because it

⁸⁶⁴ Foch (1920), p. 32. Practically every other theorist argues that increased efficiency of weapons always favors the defender. As an example we can use Douhet who wrote that "*the truth is that every development or improvement in fireamrs favors the defensive. Defensive action not only permits the conservation of one's weapons for a longer time, but also puts them in the best position to increase their efficacy.*" Douhet (1999), p. 284.

⁸⁶⁵ Foch (1920), p. 32. Similarly General Bazaine-Hayter wrote in 1906 that "firepower does not weaken the offensive." Cited in Gat (2001), p. 407.

⁸⁶⁶ Fuller (1961), p. 124. Gat has also labeled the French military doctrine between 1871-1914 "*the cult of the offensive*." Gat (2001), p. 382 and 402. Foch was among the most vociferous of its preachers.

⁸⁶⁷ Dupuy (1987), p. 30. In his version of Clausewitz "theory of combat" Combat Power, P, for each of the opposing sides can be found by multiplying the numbers of troops, N, by variable circumstances affecting a force in battle, V, by quality of force, Q.

⁸⁶⁸ Wavell (1953), pp. 48-49.

⁸⁶⁹ Fuller (1926), p. 99.

*was never understood.*²⁸⁷⁰ All too often we attempt to recreate the deeds of the past and only occasionally manage to find the pearl of wisdom, that is, what was unique and exceptional and led to the favorable outcome. Once this has been found, the task of the operational artist is to adapt it to meet the requirements of the new context.

Since the indust-reality was infatuated with technology, mass armies, and the use of factory-produced force in terms of weapons and mobility, I propose looking at elementary physics and mechanics in search for understanding some of the formulae of war pertaining to that period. One suitable and simple equation is that of speed as distance divided by time. Another noteworthy one is that of force as mass multiplied by acceleration. Speed of the attack, the distance it lasts, and the time consumed - their interrelations give answers to many questions of an operational artist. Likewise, the force of the attack is the mass of troops times their acceleration. Thus, to penetrate further into the opponent's defenses, the attacker needs more force. If he cannot increase the mass of troops at his disposal, he has to accelerate their movement. As Fuller wrote,

"the advantage of motorization and mechanization are that they reduce space by economizing time. In other words, the more rapidly we move, the smaller becomes the bulk of the area we are called upon to defend. Strategically, time and space are relative, and as the history of war has shown again and again, a handful of men at a certain spot at a certain hour is frequently a far more powerful instrument of war than ten times the number on the same spot twenty-four hours later. If you can move five times as fast as your enemy, then, whilst the military hour will remain sixty minutes for him, it will be reduced to 12 minutes for you and every mile will become less than two furlongs."⁸⁷¹

Fuller provides us with a lot to think about. The main point is that time and space indeed are relative. It would be tempting to compare this to Einstein relativity, but that deals with the absolute speed of light and its influence on mass. Fuller's relativity is of less scientific and earthlier nature, but the idea of interconnectedness of time and space is something an operational artist must assess. Economization of time reduces not only space as an area the military force fights on, but also the distance it can travel. By increasing speed, time 'slows down' and in the same unit of time more distance can be gained. Likewise, great areas and distances can slow down the speed of the enemy and cause loss of time. This happened to both Napoleon and Hitler in their attempts to conquer the vast emptiness of Russia. Time and space, speed and distance, force and acceleration were the fundamentals of theorizing operational art of the Second Wave. This was recognized by Liddell Hart who wrote that

"the strength of an army, like the quantity of motion in mechanics, is estimated by the mass multiplied by the velocity.' Armies to-day have become mass minus velocity – there is urgent need of research for the causes of this stagnant condition and for the speedy application of a remedy. Otherwise the outbreak of another war will doom us to a repetition, but more complete, of the paralysis of the last war, ruinous alike to the human and economic strength of the nation."⁸⁷²

Liddell Hart was right to decry the lack of velocity. Speed and mass need to be set in balance and more effort was required, after the WW I with its static lines of trenches, to liberate warfare from paralysis. Unfortunately, things are not so simple that any formula could be universal because a war is not fought between two armies as mechanical systems. They consist of humans, and the human condition brings unpredictability into the equation. If wars abided to rules of mechanics, the side superior in numbers would always win. Ingenuity and lack of intellect, willpowers and weaknesses, passions and fears turn the simple formulae into ones too complex to be solved.

When one plans his operations he must take into account the fact that war is an interaction between opposing forces and during indust-realty they were million-man forces. One's own operations are in a dialectic relationship with those of the enemy and

⁸⁷⁰ Fuller (1926), pp. 98-99.

⁸⁷¹ Fuller (1943), p. 35.

⁸⁷² Liddell Hart (1927), p. v.

both influence each other. While one attempts to increase his speed and slow down the enemy, the enemy acts in the same manner, unless fighting is asymmetric. As Triandafillov wrote, "*the speed of an offensive, its pace, depends wholly on the frequency of the combat the attacker must conduct en route to the assigned target.*"⁸⁷³ The enemy will do his utmost to reduce the speed and halt the movement. This factor must be understood when making estimations of future progress. And this is not the same as fighting one's way through the defensive lines of the enemy, but merely operating in surroundings where the enemy has a constant influence on one's movement. In WWI, the Red Army had considerable pace and

"armies moved at a speed of 20-22 kilometers during the intervals between operations, but the pace fell to 7-10 kilometers per day when they had to move in contact. Naturally, it is difficult, it is simply impossible, to perform any kind of specific calculations on the pace of a particular front in a future war."⁸⁷⁴

Thus, a calculation of pace even when there is no heavy fighting is impossible to predict. All depends on the enemy even when a unit advances without fighting any major battles. Should the defense be effective enough, the attack may halt completely for an unforeseeable time until a break-through is created somewhere along the front. Very often, after the days of the great Suvorov who was hostile to stereotyped methods⁸⁷⁵, Russian tactics have seemed very mechanistic and based on mathematical calculations of ratio of forces and weapons. Nevertheless, in 1931 Triandafillov claimed that,

"it would also be erroneous to look upon operational art as some sort of bookkeeping effort; it would be incorrect to convert operational decisions into simple arithmetic multiplication. [...] The art of the leader is to calculate the operational significance of these changing situational elements correctly and to determine the correct material and personnel resources required to accomplish a given specific mission."⁸⁷⁶

Operational art is simultaneously a science - but one in which there are only a limited number of set rules and values. All aspects of the science of war reflect the human factor and changing situations. This idea is strongly underlined by Triandafillov. It truly is the "situational elements" that need to be calculated to reach the "specific mission." In war, every operation, every battle, every moment is unique and could not be recreated again in laboratory conditions. However, just as an empirical scientist, the operational artist has to be able to specify all the external and internal factors that influence the experiment – the battle. He has to minimize the possibility of unpredicted occurrences. War is a humanistic empirical science and the multiple factors it consists of cannot be derived solely from mathematics. Operational art has the artistic element as well and for Clausewitz all art was creative and not imitative or derivative activity. For him war was not an activity governed by scientific laws but moral forces manifested in the clash of wills of the commanders.⁸⁷⁷

For anyone still in search of the formula of victory it is easy to follow Foch. "'Everyone is to attack (Belgians, British, French and American) as long as they can, as strong as they can, for as long as they can.' That was the simple message in which Foch defined his intentions. But in detail his grand offensive showed more design."⁸⁷⁸ It is easy to write down such a demand, but to fulfill it requires talent. One needs to include a calculation or an estimation of each factor to be able to plan anything. The intrusion of the human element into calculations leads to

⁸⁷³ Triandafillov (1994), p. 132.

⁸⁷⁴ Triandafillov (1994), p. 135.

⁸⁷⁵ Bazilevich (1945), p. 24 uses Kutuzov and Suvorov as original strategists not attempting to exact application of earlier methods.

⁸⁷⁶ Triandafillov (1994), p. 165. Triandafillov developed the doctrine of deep battle and deep operation theory and set the theoretical basis for Soviet operations on the Western front. See Lalu (2014), p. 87.

⁸⁷⁷ Howard (1983), pp. 14, 30. Creveld (2008), p. 307 agrees, claiming that the longer warfare continues, the more similar the enemies become since both sides as compelled to study one another and adapt.

⁸⁷⁸ Liddell Hart (1936), p. 238. On occasion it seems that Foch's orders were backed by optimism and entailed things such as emphasis on the need to act with the "greatest activity and energy" to overcome the exhaustion of his troops. Foch was interesting since, "many of his instructions were pious hopes rather than practical orders." For this reason "Foch's orders did not always inspire his subordinates." Greenhalgh (2011), pp. 31, 42, 51.

unexpected results since not only the actions of the enemy attempt to halt movement, but also one's own actions may slow the pace of advance.

"In an army endurance is intimately connected with numbers, and, paradoxical as it may seem, the greater the size of an army the more difficult it is to maintain its moral solidarity; for, as size reduces speed of movement, so does size reduce speed of thought and increases the area and speed of fear."⁸⁷⁹

The logic partially abides to mechanics. Speed of movement is curtailed by mass, but mass acts as a multiplier of force. The bigger the army, the harder it is to keep it unified in purpose and the more difficult it becomes to get it to perform in a rational manner. The human factor enters the equation as the means of setting the mass in motion, which requires energy from the commander. The mass is a slow thinker but quick to panic and the commander must be just the opposite. According to Ludendorff war is a struggle between unknown physical and mental forces and the weaker one personally is, the harder the command in war becomes. The will of the commander is the only constant in war and everything revolves around it.⁸⁸⁰ In order to manipulate time I propose turning our backs to calculations of war and rather taking the view of the commander and his mental abilities in conducting the symphony of war. It is his task to bind together mechanics and operational art. He uses numbers and calculations but has to evaluate their validity in the light of human interaction. We will return to this later when we discuss the mental aspects of winning time. For now, it suffices to say that there always has been and for the shallow minds there always will be a search for the "theory of everything" of war that could produce a universally valid formula of victory. However, as Beaufre has argued, "war is a social phenomenon too complex to be governed by a single formula – unless it be so simple as to be a statement of the obvious."⁸⁸¹

5.2. INTERRELATIONS OF TIME, PLACE AND FORCE

"In the art of war, as in mechanics, time is the grand element between weight and force."882

"Every military action comes off in a clearly defined space, and demands for its execution a minimum of time, with which we have to reckon."⁸⁸³

There have been several periods in history where the art of war was curtailed by societal conditions which led to negligence of time, space, and force as essential building blocks of any military masterpiece. As an example we can use the Gothic War in which progress was erratic to say the least. During this period Rome was conquered five times by Belisarius, Totila, and Narses respectively. The tactics and strategy used were dictated by the fact that on both sides the available forces were too small in relation to the vast area being fought for.⁸⁸⁴ The interrelation of space, time, and force was crooked. There was a period in which the Goths succumbed to the Byzantians after a four-year struggle but no actual battles took place. Simply the space both in terms of distances and temporality through the prolonged duration created a situation in which the insufficient mass of troops could not be used operationally or strategically to bring about a victory. In a smaller area under dispute troops could have brought about a decisive battle through denser troop concentration. This would have shortened the war. Neither side was properly committed to the objective of ending the war rapidly. Thus, it was only when Justinian for the second time sent over a large army

⁸⁷⁹ Fuller (1926), p. 313.

⁸⁸⁰ Ludendorff (1919), p. 41.

⁸⁸¹ Beaufre (1965), p. 49.

⁸⁸² Napoleon, cited in Fuller (1961), p. 50.

⁸⁸³ Bernhardi (1914), p. 171.

⁸⁸⁴ Delbrück (1990b), p. 377. For an interesting account of the relatively confusing progress of the Gothic Wars that fueled Delbrück see Procopius (1968).

and the Goths simultaneously believed they had enough force to commit themselves that a decisive battle was initiated and with it the outcome of the war decided.⁸⁸⁵ Seeking and victoriously fighting a decisive battle traditionally was considered to be the acme of the art of war,⁸⁸⁶ but operational art enabled even with a smaller army to effectively challenge stronger opponents not only through a battle but also by effective maneuver.

Napoleon had superb mastery of creating favorable combinations of time, space, and force for his battles to attain his objectives and this same ability is a characteristic trait of all successful commanders of history. The need to understand and alter the balance of these three factors is as old as war itself and this can be illustrated with the Indian scholar Kautilya and his book "Arthashastra."887 While many early writers concerned themselves with only finding the moment of action that held most promise for success, Kautilya attempted to point out to the reader how to recognize them. He gave specific directions when to prefer peace, when to remain neutral and when to declare war. Even after the declaration of war, he specified the conditions and times suitable for the actual commencement of hostilities.⁸⁸⁸ Perhaps the most revolutionizing aspect of Kautilya's thought was the fact that he saw time as one of the crucial components of ultimate success in battle and as a factor to be reckoned with. "Strength, place, and time, each is helpful to the other." Bespite his agrarian origins, treating time, place and force as interrelated makes Kautilya resemble Second Wave thought. He considered the trinity to be a combination in which all should be optimized. If one is less suitable than the others, it should be analyzed how this affects the balance of all three and how the battle was likely to end. One must choose with care the amount of troops he needs to amass, where to march them and when to engage the enemy. As Clausewitz in turn put it,

> "The whole of military activity must therefore relate directly or indirectly to the engagement. The end for which a soldier is recruited, clothed, armed, and trained, the whole object of his sleeping, eating, drinking, and marching is simply that he should fight at the right place and the right time."⁸⁹⁰

Engagement should take place only when and where desired by the general. Right place and the right time are guidelines to winning a battle. We find in Jomini the first occidental example of a strategist discussing the practical problems in the interrelation of space in time. He wrote that, "considering the difficulty of finding ground and time necessary to bring a very large force into action on the day of battle, an army of one hundred and thirty or one hundred and forty thousand men may easily resist a much larger force."⁸⁹¹ In Jomini's time logistics faced an enormous task of concentrating all the troops to the battlefield at the predetermined day of battle. Thus smaller armies could have a chance because the enemy failed to transport all the soldiers in time to the specific place.

This remained a problem until the American Civil War. The use of railroads made Fuller call it the first great conflict of the steam age and its origins belonged to the Industrial Revolution.⁸⁹² It became possible to concentrate even too much force on the battlefield to have them play a role in a battle. The armies at the end of railway lines got swollen out of proportion and operability and they remained increasingly dependent on the railway. In this sense congestion was created and, as Liddell Hart argues, "*the sum effect was to decrease the mobility of operations*."⁸⁹³ Even if American Civil War was due to railroads a fore-runner of operational level mobility, it simultaneously hindered tactical movement. Because

⁸⁸⁵ Delbrück (1990b), pp. 378-379.

⁸⁸⁶ See for example Beaufre (1965), p. 55. "A military decision in the strict sense of the word is the result of a victorious battle."

⁸⁸⁷ Vego (2009), p. III-3.

⁸⁸⁸ Kautilya Book VII.

⁸⁸⁹ Kautilya Book IX, Chapter 1, p. 2.

⁸⁹⁰ Clausewitz (1989), p. 95.

⁸⁹¹ Jomini (1992), p. 126.

⁸⁹² Fuller (1961), p. 95.

⁸⁹³ Liddell Hart (1946), p. 12.
of the imbalance of firepower and tactics, after a few massacres such as the Second Bull Run the troops started to dig themselves into the ground for protection. If operational mobility was increased, tactical mobility was diminished into trench warfare.⁸⁹⁴

This effect of congestion and entrenchment could be multiplied if the defender managed to choose a battlefield with very confined space for maneuver. Time and space limit each other and manipulating one can enable benefitting from the other. The idea of superior force striking at a decisive spot was the clue to Clausewitz's teachings. "*To achieve strength at the decisive point depends on the strength of the army and on the skill with which this strength is employed. The first rule, therefore, should be: put the largest possible army into the field.*"⁸⁹⁵As Strachan noted, "*Space, terrain, and geography therefore contain the three elements of war - tactics, strategy, and policy - and they are at odds with time.*"⁸⁹⁶ For Clausewitz the army should not be used piecemeal but always employed with its maximum strength. However, two armies on the battlefield are seldom if ever equal in terms of forces and thus even if numerical superiority does not exist, one has to concentrate his forces to gain relative superiority for a given time at the decisive spot.

> "to achieve this, the calculation of space and time appears as the most essential factor, and this has given rise to the belief that in strategy space and time cover practically everything concerning the use of the forces. [...] But although the equation of time and space does underlie everything else, and is, so to speak, the daily bread of strategy, it is neither the most difficult nor the decisive factor."⁸⁹⁷

This is where I disagree with Clausewitz, because he argues that victory has nothing to do "*with the ability to calculate the relationships of two such simple elements as time and space.*"⁸⁹⁸ According to him the reasons for victories lie in "*energy for rapid movement, boldness for quick attacks, and the increased activity which danger generates in great men.*"⁸⁹⁹ Clausewitz did not pursue his line of thought to the inevitable end.⁹⁰⁰ I argue that time is a crucial factor in all of these three things Clausewitz deemed important. *Rapid* movement, *quick* attacks and *increased* activity; all of them refer to the operational artist's ability to make time his ally. Instead of the simple calculation of *this* time and *this* place, he has to be able to perform more complicated equations with time and space. Moving more rapidly, attacking quickly, and enhancing his activity may allow him to steal time from his enemy who is not so adept in using time for his own purposes. The 'kindness' Moltke discussed in ending the war rapidly resonates with Clausewitz, who wrote that,

"Battle is the bloodiest solution. While it should not simply be considered as mutual murder [...] it is always true that the character of battle, like its name, is slaughter [Schlacht], and its price is blood. As a human being the commander will recoil from it. But the human spirit recoils even more from the idea of a decision brought about by a single blow. Here all action is compressed into a single point in time and space. Under these conditions a man may dimly feel that his powers cannot be developed and brought to bear in so short a period, that much would be gained if he could have more time even if there is no reason to suppose that this would work in his favor. All this is sheer illusion, yet not to be dismissed on that

⁸⁹⁴ See e.g. Stempel (2012), p. 119.

⁸⁹⁵ Clausewitz (1989), p. 195. Clausewitz also sardonically observed that the best strategy is to be strong first in general and then at the decisive point because superior forces provide the best chance for winning a battle. Howard (1983), p. 40.

⁸⁹⁶ Strachan (2007), p. 42.

⁸⁹⁷ Clausewitz (1989), p. 197.

⁸⁹⁸ Ibid.

⁸⁹⁹ Ibid.

⁹⁰⁰ Perhaps this is due to the fact that *On War* lacks the final editing and re-writing due to his death. Some theorists, however, disagree with the common understanding that death left *On War* incomplete. See for example Echevarria (2013), p. ix. On the other hand Sumida (2008), p. 181 argues that at least the general form and major arguments were all complete. Even if the major arguments are seen as complete, it must be acknowledged that the terminology is confusing and overlapping, the ideas and sentences are not refined and a further round of editing at the very least would have clarified many issues. See Heuser (2002), p. xi.

account. The very weakness that assails anyone who has to make an important decision may affect even more strongly a military commander who is called upon to decide a matter of such far-reaching consequences by a single blow."⁹⁰¹

When reading Clausewitz one must always understand that in his writings he followed two parallel paths of inquiry and trains of thought. He distinguished between the ideal war as more abstract thinking and real war or war as it is usually fought.⁹⁰² Both Moltke and Clausewitz argued that war should be concluded in victory as soon as possible. Compressing all action and lethal energy into the "single point in time and space" would be a guarantee of that. Such an operation is carried out to subdue and vanquish the enemy at a single, decisive strike performed where and when it would have most effect on the enemy. It may result in excessive bloodshed and slaughter at that time, but it would save lives by not enabling the war to continue after that point. This is an ideal of absolute war and often at odds with reality⁹⁰³.

The idea of concentrating all possible force into one spatio-temporal point is something that abhors the mind of any man and humanitarian reasons in the cloak of common sense may dispel the operational artist from making the decision to perform that strike. "*The great exception was the two atomic bombs on Japanese cities. These were weapons of terror and shock. They burt, and promised more burt, and that was their purpose.*"⁹⁰⁴ The threat of more bombs ended the war almost instantaneously but the price paid by both sides was enormous. But if the shock value of compressed violence is not created in some manner, the war is likely to be drawn out longer and it is impossible to determine if lives on both sides would have been spared or wasted. For the soldier the ultimate goal in war is victory and attaining it as quickly as possible. As Brodie wrote, "whatever contributes to his quick victory usually diminishes overall casualties, especially his own. It is therefore self-evident to him that any device or tactic that hastens victory represents the highest morality."⁹⁰⁵

Oriental thought expresses the same idea of rapid victory. The metaphor of water is common in the writings of Sun-Tzu. Usually it refers to the army moving in accordance with the terrain of filling the gaps left by the enemy⁹⁰⁶, but in this case the meaning is different. To shorten the war and to maximize the effect of the battle, "the combat of the victorious is like the sudden release of a pent-up torrent down a thousand-fathom gorge. This is the strategic disposition of force [hsing]"" Force for the decisive attack has to be collected over a time deemed sufficient and once the time to act comes, the force must be unleashed like a torrent of water. Wei Liao-Tzu agrees with this idea. For him, "water is the softest and weakest of things, but whatever it collides with – such as hills and mounds – will be collapsed by it for no other reason than its nature is concentrated and its attack totally committed."908 This sudden rush of overwhelming force is the axle ancient Chinese art of war spins around but some in the occident have adhered to it as well. For example Clausewitz wrote how "the great event of battle would be like a mighty river sweeping away such a weak dike."909 We can follow Clausewitz and treat the period of defensive waiting and rest as a state of equilibrium covering both physical and psychological forces along with the circumstances. The period when either or both armies prepare to mount an offensive is a period when the tension increases until movement in either direction commences. One gains something and the other loses. The movement either will wear itself out or else is opposed by fresh troops on the defender's behalf and thus inactivity returns until a new cycle of tension and movement follows at some

⁹⁰¹ Clausewitz (1989), p. 259.

⁹⁰² See for example Echevarria (2013).

⁹⁰³ According to Bellamy (2007), p. 19 the World War II on the Eastern Front was as close to absolute war as possible.

⁹⁰⁴ Schelling (2008), p. 17.

⁹⁰⁵ Brodie (1973), p. 46.

⁹⁰⁶ See Yuen (2014) for an in-depth discussion on Sun-Tzu's treatment of the water metaphor.

⁹⁰⁷ Sun-tzu (1993), p. 164.

⁹⁰⁸ Wei Liao-Tzu (1993), pp. 256-257.

⁹⁰⁹ Clausewitz, cited in Bassford et al (2010), p. 82.

point in time and this movement may as well be contrary to the previous one.⁹¹⁰ This distinction made by Clausewitz is, of course, highly theoretical, but enables us to glimpse at the dynamics of warfare in his time.

A lot of different activities may be carried out during the relaxation or equilibrium, but they are characterized as of minor importance: no great decision is sought after, while minor battles may occur. The state of tension is of greater importance, since its effects are likely to be more decisive and great will-power and pressure is involved. Violence is about to be unleashed in an explosion-like burst of activity that will continue until the energy wanes.⁹¹¹ Energy, force and time alike are squeezed and pressurized to be released in a sudden spasm. War should not proceed in a mild and progressive manner but for maximum effect the tension has to be built so that it can be triggered in an instant. "*War, in its higher forms, is not an infinite mass of minor events* [...] *War consists rather of single, great decisive actions, each of which needs to be handled individually.*"⁹¹²

Once the most advantageous time comes, the rapid and surprising attack occurs. The Chinese art of war is focused on waiting for the moment to undertake action and not being too quick to commence it. The time, place and force need to find a beneficial equilibrium. In a truly oriental manner there is a time for everything. The troops, their energy and force and even time itself are accumulated to be released at once like a tsunami.

> "One who excels at warfare will await events in the situation without making any movement. When he sees he can be victorious, he will arise; if he sees he cannot be victorious, he does not vacillate. Of the many harms that can beset an army, vacillation is the greatest. Of disasters that can befall an army, none surpasses doubt.

> One who excels in warfare will not lose an advantage when he perceives it or be doubtful when he meets the moment. One who loses an advantage or lags behind the time for action will, on the contrary, suffer from disaster. Thus the wise follow the time and do not lose an advantage; the skillful are decisive and have no doubts. For this reason when there is a sudden clap of lightning, there is not time to close the eyes. Advance as if suddenly startled; employ your troops as if deranged. Those who oppose you will be destroyed; those who come near will perish. Who can defend against such an attack?²⁹¹³

It is something explicitly alien to our contemporary operational art to take an unhurried approach to time, awaiting the proper moment of action with a certainty that it will present itself. Such passivity goes against the deep-set idea that we must seize the initiative at all costs. In the Chinese tradition, however, the general should "after deploying observe their actions. Watch the enemy and then initiate movement. If they are waiting [for our attack], then act accordingly. Do not drum the advance, but await the moment when their masses arise. If they attack, entrench your forces and observe them."⁹¹⁴ The timing of the release of force was considered to be an intricate issue. It had to be carried out in the very instant an advantage is perceived and this sets great demands upon the general. How is one to identify the moment to release the pent-up force of his army with the most devastating effect on the enemy? In Chinese strategic thought there are no fixed principles⁹¹⁵, but T'ai Kung listed situations when the enemy is at his most vulnerable to an attack;

"When the enemy has begun to assemble they can be attacked. When the men and horses have not yet been fed they can be attacked. When the seasonal or weather conditions are not advantageous to them they can be attacked. When they have not secured good terrain they can be attacked. When they are fleeing they can be attacked.

⁹¹⁰ Clausewitz (1989), p. 221.

⁹¹¹ Ibid.

⁹¹² Clausewitz (1989), p. 153.

⁹¹³ T'ai Kung (1993), p. 69.

⁹¹⁴ Ssu-ma (1993), p. 142.

⁹¹⁵ Yuen (2014), p. 39.

When they are not vigilant they can be attacked. When they are tired and exchausted they can be attacked. When the general is absent from the officers and troops they can be attacked. When they are traversing long roads they can be attacked. When they are fording rivers they can be attacked. When the troops have not had any leisure time they can be attacked. When they encounter the difficulty of precipitous ravines or are on narrow roads they can be attacked. When their battle array is in disorder they can be attacked.

When they are afraid they can be attacked."916

Against an enemy already settled in his defensive positions, one needs not hurry. "But when the enemy is not yet deployed, taking the initiative is of the utmost value. In that case one must not hesitate to commence the battle, but one should always keep the battle objective consistent with available forces."⁹¹⁷ The idea of available forces being suited to the objective of battle is a crucial factor. If the enemy is not prepared to defend against an attack, one can use less than the maximum force that could be obtained instead of waiting for the troops to amass. If the enemy is prepared to withstand an attack "everything available must be thrown into battle at all circumstances, for one can never have too much strength or too many chances for victory. The very last remaining battalion should therefore be brought to the battlefield."⁹¹⁸ Rapid action has to be contemplated only in relation to the other factors; the preparedness of the enemy, and the number of one's own troops. Action can commence when the interrelations show positive signs. In choosing to seize the initiative, what Moltke deemed important is "to find the correct moment for commencing a serious engagement."⁹¹⁹ In this he echoed Kautilya, who much earlier wrote how,

"The conqueror should know the comparative strength and weakness of himself and of his enemy; and having ascertained the power, place, time, the time of marching and of recruiting the army, the consequences, the loss of men and money, and profits and danger, he should march with his full force; otherwise, he should keep quiet."⁹²⁰

As a general guideline to Kautilya's offensive tactics will suffice to say that "striking in all places and at all times, and striking by surprise are varieties of waging war with infantry."⁹²¹ All places, all times, and with the aid of surprises functions as a guideline over two millennia later as well but only if there are enough resources available for the commander to choose such a method. If not, the principle of the economy of force has to be applied. Brodie noted that all too often when the military minds discuss the principle of "economy of force" they fail to note that the meaning of economy has changed from its 19th century connotations of judicious management but not limited use. It is a violation of the principle when one decides to withhold from the battle forces that could have been used.⁹²² If we look at the battles of Frederick the Great, he often out of necessity had to fight with smaller forces than would have been preferable and even when he was tactically successful he sometimes suffered higher casualties than his enemy.⁹²³

We still attempt to use as much force as it required at the right place at the right time, but the meaning of the time and place have drastically changed in during the Third Wave. The classics of the agrarian age have attempted to provide us with taxonomies

⁹¹⁶ T'ai Kung (1993), pp. 96-97.

⁹¹⁷ Moltke (1993), p. 131.

⁹¹⁸ Moltke (1993), pp. 128-129.

⁹¹⁹ Moltke (1993), p. 131.

⁹²⁰ Kautilya Book IX, Chapter 1, p. 1.

⁹²¹ Kautilya Book X, Chapter 5, p. 9.

⁹²² Brodie (1959), p. 26. Even if he discusses primarily air forces, Warden (2000), p. 61 is right when he argues that when balance between the opposing forces is altered, the change in the resulting losses is not linear but exponential and the there are no diminishing returns for the larger force if it can be employed *in toto*. Fuller wanted calculated use of force but not stinginess. *"what is wanted is just the right amount of strength - any fool can throw in all be has.*" Fuller, cited in Reid (1987), p. 96.

⁹²³ Bond (2006), p. 16.

of such suitable places and times.⁹²⁴ Later theorists omit such guidance since operational art and the entire art of war have become more complicated since the dimensions of time and place have become less important in all other aspects than the concentration of force or effects. Distance between the operational artist and his theater, tactical commander and battlefield or the soldier and the point where his weapon will have impact have become less relevant. This is because

"information, and the decisions that result, can travel almost instantaneously to the place(s) where they are needed, making the location of those who gather, analyze, make decisions, and possibly those who act on these decisions, largely irrelevant. The Information Age is also compressing the time dimension. First, by making location less important, it reduces the need for time-consuming travel, whether local or long distance."⁹²⁵

This is a very delicate issue and it must be understood that the mobility of the troops, their headquarters, and, to a smaller degree, the weapon platforms are losing importance. The troops and the soldiers do not have to have as high mobility as in *Blitzkrieg* or in AirLand Battle. Yet, what it all comes down to, is a new adaptation of the idea not to send a man if you can send a projectile. Even if physical movement of troops in battlespace was reduced, the increased range and precision coupled with the ability to remote control weapons has increased their mobility. Forces themselves do not have to be concentrated in the right time and the right place, but their effects have to be. Information travels without human messengers and so do projectiles with increased range and precision. Yet only a few armies of the world have reached a stage of technological sophistication required for the kind of warfare network-centric age theoretically would enable. Thus the demand for traditional mobility of troops is not going to vanish any time soon.

5.3. CONQUERING SPACE TO WIN TIME

"The higher the level of war, the larger the factors of space, time, and force, and hence the more critical for the commanders and their staff to properly balance these factors with the respective military objective."⁹²⁶

Fuller spent a lot of time considering the interrelations of space, time and force and he saw them as highly specialized concepts during a time of war. In other words he saw their meaning and essence to differ completely during the time of peace and during war.

"In war these three conditions surround us as completely as they do in peace, but as our minds are concentrated on a single and highly specialized problem, namely the waging of a war, they assume a relatively military aspect, and, in order to distinguish them from their more general forms, I will call them military space, military force, and military time."⁹²⁷

This division is too strict, but space, time and force do mean something different in war that their general description entails. This is due to the fact that physically these things are inflexible constants and in war they are dependent on human actions and the interaction between the enemies. What one side does affects the other. Time, space and force are thus relative concepts and the way participants experience them shapes them and gives them their meaning. Time is not to be measured only in terms of seconds and minutes but also by what the fighting parties can perform during those seconds and minutes and how the time management of one influences that of the other. In addition, time, force and space have direct influence on each other. They are interrelated and this led Fuller to claim that the "*practical application of time is the utilization of space*."⁹²⁸

⁹²⁴ See for example T'ai Kung (1993), pp. 96-97, 102-103 or Kautilya, Book X, Chapter 3, pp. 3-4.

⁹²⁵ Alberts et. al. (2000), p. 20.

⁹²⁶ Vego (2009), p. III-3.

⁹²⁷ Fuller (1926), p. 175.

⁹²⁸ Fuller (1926), p. 180.

Different theorists use different explanations for the successes of certain armies and commanders over the failures of others. For Delbrück the key to being victorious was found in development of tactics and strategy. The Greeks and then the Romans dominated warfare in their times because their formations were superior.⁹²⁹ Liddell Hart in turn was fascinated with the concept of mobility and even when there were no mechanical aides to mobility, he sought for reasons for success in how fast the troops moved. According to his interpretation, "the success of the legion in maintaining the Roman dominion so long against many-sided pressure owed much to the development of a network of strategic roads. Science did not enable the Romans to produce mechanical legs, but they gave their soldiers roads on which they could use their legs to the best advantage."⁹³⁰ Delbrück claimed that the success of the Romans was explained by their ability to organize the chaos of war, starting from the battle formations. In this sense both men are correct, since organization allowed the troops to march faster and having roads made it possible to estimate better how far they could proceed in a day. This made temporization of the battle and its preparations easier.

The Roman road network was a true miracle of the Ancient world from the perspective of strategy and operational art. The roads played a huge part in organization of the vast empire and provided visible means of how all the outlying regions were connected to the heart of the empire. All roads lead to Rome, as the saying goes. Similarly all roads led to their destinations from Rome and they could be used to send out the legions to carry out their duties of pacification and protection of the vast empire's frontiers. Rome was a hub and the roads connected it to even the remotest peripheries enabling not only commerce but also quick concentrations of military force. The legions used roads as march-routes to cross longer distances faster than ever before.

Even if civilization eroded the fighting spirit of the Romans, the order brought about with it enhanced Rome's military capacity. In a hand-to-hand melee, with equal weaponry, a legionnaire might have succumbed to a barbarian enemy. Superior tactics and a network of roads organizing the strategical or operational level movements of the legions made the Roman battle system more efficient and allowed them to save time both in preparations and execution of the battle. The network of roads enhanced lines of communications and allowed not only troops but also information travelling from distant corners of the empire to the hub or those in need of orders.

In the early days of industrial warfare from Moltke to WWI extensive study of railroad map provided means to understanding the possibilities of warring factions to transport troops and where battles were likely to occur. Railways were of immense importance during indust-reality. In 1870 Moltke "*predicted exactly where the French army would concentrate.* [...] In order to fathom this state secret he limited himself to the cost of a simple railway map."⁹³¹ It was not only defensive measures that he undertook with the railway map, but he also developed a method to put the railways into extensive use for offensive purposes. Railways enabled transporting vaster armies to the battlefield and accomplishing this task quicker than ever before. As Matheny noted, the key element for Moltke was the rapid mobilization of forces and the concentration of troops and he made the most of new technologies as enablers.⁹³² For the first time in history the entire mobilization plan for the war including timings and sequences was laid out and the needs of the military surpassed all other travel on railroads.⁹³³

Nevertheless, even if railways had a profound impact on time in operational art, they were no miracle cure and failed to eradicate the meaning of time. The theoretical calculation of rail-speeds and possible loads on trains does not yet spell out the time consumed in transportation of the troops. Preparations must be made, orders issued, troops

⁹²⁹ Delbrück (1990).

⁹³⁰ Liddell Hart (1932), p. 65.

⁹³¹ von Schileffen (1936), p. 64.

⁹³² Matheny (2012), p. 12. See also Smith (2008), pp. 103-104.

⁹³³ Bucholz (1991), p. 51.

marched to the railway stations. On some railroads trains could be sent only at given intervals due to other traffic. And transportation itself with necessary pauses consumes time. This led Ludendorff to estimate that a division would require approximately thirty trains to be transported and it took two or three days to move it to the Western front.⁹³⁴

By the end of the nineteenth century railways had become a prerequisite of mobilization and maneuver. But they were inflexible instruments and did not allow for improvisation but adherence to timetables and control. Precise calculations of timings and capacities instead of imagination were a must to get the full benefits of railways.⁹³⁵ Moltke

"exploited the railway in order to give greater tactical and strategical mobility. Napoleon, because of a lack of roads and poor intelligence, had been forced to bring masses of men to the decisive point for a concentrated blow – interior lines, in fact. Moltke, with the new means of transportation and communication (the railway), developed a new method – a scattered deployment on exterior lines. This method had further advance. Because of railways, troops could be rapidly from west to east, or vice versa, thus giving strategical flexibility in case of a war on two fronts."³⁵⁶

It was not a question of finding a railway line leading to the front but rather a question of maximizing the possibilities of the entire railway network to minimize the transport time of the troops. When both sides began to relocate their troops in the vicinity of the border in the beginning of the war, "*in this race the timing is no longer by day, but by hours. It is therefore, of the highest importance for strategical concentration to use as many railways as possible, if possible all leading in the direction of the theater of war.*"⁹³⁷ Yet on distances shorter than hundred kilometers for division-sized and bigger troops it was faster to march on foot even if the excessive planning of timetables for rail transport succeeded. Furthermore, once rail-deployment of an army had started, it was too inflexible to be altered.⁹³⁸

"Armies came to depend on the railway for their maintenance without fully realizing how dependent they had become. Increased ease of supply encouraged them to swell their numbers – at the end of the railway line – without asking themselves what effect those numbers would have on their power of action."³³⁹

Swelling of the numbers of combatants at the points where the railways ended was characteristic to both American Civil War and WW I. The ends of railway lines became points of congestion. In the mid-17th century there had been a system of five-day marches that effectively meant that armies could go no further than 125 miles from their base of operations.⁹⁴⁰ In the age of the railway wars the same system was resurrected with the railway depot taking the place of a base. Troops were tied to their railroad junction.⁹⁴¹ Even during WW I it was held to be an established fact that in order to provide logistic support an army could not in normal conditions advance further than 150 kilometers from its railhead.⁹⁴² As von Schlieffen put it, "*in the age of railways, the advance of each army is dependent upon and determined by the railway net. It may be laid a little forward or a little backward. But in the main it is fixed. Even today this is true although a dense network of railway lines covers the country*."⁹⁴³ Rail transportation was the most economical means of transport when distances to cover and the quantities of material and manpower to be moved were extensive.

Rail transport meant that battles were often fought near railway junctions where troops could be brought in from several directions with ease and rapidity. The pileup of supplies at the end of railway lines was beneficial to the troops, but the transport of

⁹³⁴ Ludendorff (1919), p. 410.

⁹³⁵ Vego (2009), p. I-17.

⁹³⁶ Montgomery (1961), p. 32.

⁹³⁷ von der Goltz (1906), pp. 97-98.

⁹³⁸ Creveld (1991), p. 107.

⁹³⁹ Liddell Hart (1932), p. 62.

⁹⁴⁰ See Bülow (2013) for a discussion of bases and distances between them and from them to the front.

⁹⁴¹ On this see Svechin (1992), pp. 258-259.

⁹⁴² Manstein (1982), p. 411.

⁹⁴³ von Schileffen (1936), p. 64.

both the units and their supplies to the actual battlefields was problematic. All of them did not get to the battlefields in a controlled manner nor could they be efficiently operated with. Thus railways created physical congestion in space and in time because these points of congestion took time to unravel and on occasion the time spent in clearing the situation was taken from the time at the disposal of the commanders to operate with the troops. The congestion was evident in the level of operational art since by its very existence it proved a discrepancy in both the planning and execution of operations.

As van Creveld noted, even it railways became the preferred method of strategic locomotion during the second half of the nineteenth century, railway is by definition an inflexible instrument. Troops could only go where the rails went⁹⁴⁴. As the number of automobiles increased troops were not so tied down to railroads, but could use other roads as well. In the mechanized and motorized era with the widespread use of petrol as motive power the importance of roads was resurrected. During WW I trucks began to infiltrate the battlefield as means of troop transport. They did not offer the troops tactical mobility but enabled moving troops and weapons from one sector of the battlefield to another in what Luttwak calls "tactical time", that is, during the course of a single battle.945 Tanks and lorries benefited from the road network and to a large degree remained dependent on it for operational movement. This was in a way return to First Wave warfare when roads were just as important in the ages of widespread empires. Only by turning caravan routes into roads suitable for movement of the armies was Darius able to create the Persian Empire and assure speedy transport of necessary troops to quell unrest.⁹⁴⁶ George Patton Jr. jotted down in his diary, "surely the greatest study of war is the road net."947 Road maps gained a prominent position in planning the operations and larger scale tactics of motorized warfare during the indust-reality. Patton further argued their use saying that

> "in the High Command, small-scale maps are the best because from that level one has to decide on general policies and determine the places, usually road centers or river lines, the capture of which will hurt the enemy most. How these places are captured is a matter for the lower echelons to determine from the study of large-scale maps or, better still, from the ground."⁹⁴⁸

The higher up the military echelon one is situated, the bigger is the picture one must deal with and thus the more one concentrates on sea, rail and road routes as well as harbors and airfields. On the level of tactics, it is important to handle even minuscule details of terrain. In the level of strategy one concerns oneself with abstractions and deals with more dimensions. It is in operational art where the abstract principles and hard facts of infrastructure and geography intermingle. As Fuller argued,

"formerly space, from its military aspect, was two dimensional as regards tactics and one dimensional as regards supply. The addition of a second dimension to supply, by means of the cross-country tractor, and of a third dimension to tactics, by means of the aeroplane, both petrol driven machines, has ushered in a new military epoch."⁹⁴⁹

But this new epoch has rather only shown the way to proceed further. One example of how strategical troop movements have increasingly gotten quicker and quicker was the fact that at the beginning of Operation Desert Storm in the first Gulf War there were as many troops in the region as there were at the height of the Vietnam War. The troop build-up in Vietnam took four years, in the Gulf it was accomplished in six months. And at the end every airfield in the region was so packed with aircraft that offers for more were declined because there was no room to park any additional aircraft.⁹⁵⁰

⁹⁴⁴ Creveld (1991), p. 107. Besides strategic, they provided operative locomotion as well, but diminished in importance of the tactical level.

⁹⁴⁵ Luttwak (1987), pp. 158-159.

⁹⁴⁶ Fuller (1960), p. 76.

⁹⁴⁷ Patton (1947), p. 92.

⁹⁴⁸ Patton (1947), p. 92.

⁹⁴⁹ Fuller (1926), pp. 180-181.

⁹⁵⁰ Schwarzkopf (1993), pp. 403, 456.

The key to operational and tactical movement in time is to ensure a common speed of movement for all troops. Before WW II Guderian demanded added mobility since "the main striking force of an offensive resides in tanks, and it is a question of developing the other arms in such a way that they can keep up with them."⁹⁵¹ Even today supply still mostly runs in lines. There are tractors and other cross-country vehicles and increased capability to airlift or sealift supplies, but the quantities of material a contemporary force needs are so immense, that at least on intra-theater level roads and railways still bear the burden of its transportation. Linearity of tactical and operational supply-system causes armies to lose valuable time. In military thought time and space should not be considered as constants and discussed as only something the forces occupy or that separates them. They should be viewed as potentialities. Fuller claimed that in the past

"armies had frontages of attack with a tactical space between them, which was contended for, and the importance of which could be calculated by appreciating the value of the tactical features in relation to the enemy's intentions and communications. To-day all this is changing, since armies are rapidly becoming three-dimensional organizations. Spaces have grown to include, not merely battlefields of theatres of war, but whole countries [...] Spaces are now no longer definitely restricted by rivers, deserts, or mountain ranges, for to a great extent these space walls have been surmounted by the aeroplane, which renders impotent so many natural and artificial obstacles, and so frees military time of its greatest spendthrifts."⁹⁵²

With the three-dimensionality of tactical movement space is no longer absolute and geographical features such as Fuller referred to are no longer able to prevent movement. In WWII the warring factions were able to carry out air raids to the very heart of the enemy of the enemy country. Thus the importance lies in determining the place and time where the effects of the attack are to be felt. With accelerated three-dimensional mobility the same amount of time could be used to inflict much more far-reaching damages. Time was no longer such a hindrance but a potential enabler on all levels of warfare. As Fuller wrote,

"time, strategically, is the measurement of military movement; tactically, of muscular and mechanical endurance. Time is, therefore, intimately related to the means of movement, protection, and weapons. [...] Time, also, frequently means concentration and economy of force. Thus, if time can be economized, numbers can either be multiplied or reduced, especially if an operation is carried out so rapidly that the enemy is unable to meet it. Superiority of time is so important a factor in war that frequently becomes the governing condition."⁹⁵³

We can interpret from Fuller's words that time is entwined with force on a fundamental level and this relationship needs to be understood by the commanders. Economization of time can create and dissolve force concentrations. Manipulation of time one consumes in his actions can act as a force multiplier. Carrying out everything faster than the enemy can also give the benefit of dissolution of force. An attacking force, if it works quickly enough, is able to strike and withdraw with minimal casualties if it performs faster than the defender. On the other hand, one of the great economizers of force, Montgomery actually reduced the speed of his troops. This shows that in the long run economy of force and velocity in warfare are not compatible⁹⁵⁴. A choice has to be made what to economize. Time can be saved or squandered depending upon the requirements of the situation, but to attain superiority over the enemy the skill to manipulate time may be the key to victory.

⁹⁵¹ Guderian (1992), p. 67. This same idea was proposed in Britain during the inter-war years as Martel (1945), pp. 114-115 argues. The idea of mechanized striking force with sufficiently motorized other formations to follow them was developed by 1935, but the policy of the time did not allow creating them. Budgetary issues have and will always hamper grand schemes and visions of development.

⁹⁵² Fuller (1926), p. 181.

⁹⁵³ Fuller (1926), p. 180.

⁹⁵⁴ Reid (1987), p. 100.

"Time is the controlling factor in war, it is the urge of armies. The more rapid the assembly, the quicker the battle; the quicker the battle, the more speedy the victory, and victory is the postern of peace. Petrol economizes time in war, caterpillar tracks or aircraft propellers economize space. Economy in time and space are the sire and dam of surprise, and surprise is the true sword of victory."⁹⁵⁵

Operationally and tactically time and space are tightly connected to the action and will of both belligerents and the interplay of their forces. The indirect approach, the German *Blitzkrieg* or Russian deep operations rested on the idea of locating the point where the enemy was weak and to break through and proceed there as far and as fast as possible. MacArthur described it as "*tactic of breaking through and then by-passing strong points to exploit the lightly held rear areas.*"⁹⁵⁶ Yet only the speed of mechanized forces allowed for truly deep penetrations. There are many definitions and descriptions of the mechanized tactics and operational art but surely one of the shortest and simplest comes from Rommel, who wrote that, "*it is vital that the leading elements penetrate a maximum distance in a minimum time and that there be no diversification of effort in smashing into the first positions.*"⁹⁵⁷ All the important elements are included. With speed time is converted to distance. As far as possible, as soon as possible was the recipe of mechanized attack. According to Fuller,

"military space, though measured in miles, kilometers, etc., should generally be considered with reference to resistance; just as time should be considered with reference to the probable intentions of the enemy. Thus, in an entrenched battle our line of trenches may be separated from the enemy's by a hundred yards, yet the intervening space be well wired it may take longer to cross it successfully than one hundred miles of open country. Space, like time, in its military aspect, must always be equated with force, and the conditions which assist, resist, and transform force."⁹⁵⁸

Time and distance are not as important as the enemy influence on one's ability to traverse the distance and lengthen the time one has to spend in it. Locating the weak spots in the enemy front led to rapid advances. If one failed in this, the battle dragged on for considerable time, exhausting resources in the process. Most often, however, the enemy inflicts his opposing will on movement and economization of time and this completely upset all calculations. To economize time and maximize distance, the weaknesses of the enemy have to be exploited, because where the enemy is weak, the greatest benefits can be found.

Indust-reality brought with it a profound change in the meaning of distances. Industrialization, petrol engine, the tank, radio communication, and military aviation were changes in the ways and means of war that increased speed at the same time as distances could be grown and yet controlled. The dawn of the information society has had the same effect and perhaps even more drastic. "All these changes further accelerate the pace of operation and transaction. Economies of speed replace economies of scale. Competition is so intense and the speeds required so high, that the "old time is money" rule is increasingly updated to 'every interval of time is worth more than the one before it.""⁹⁵⁹ This argument by Toffler illustrates the switch from distances to times spent in crossing them. Speed conquers scale. Time rules over distance and with each technical innovation speed keeps still accelerating. Several limits have been broken. Supersonic weapons and planes are nothing special today. Movement in information warfare and cyber warfare is limited practically only by the speed of light as the final barrier. Time is still money, like during indust-reality, but today nanoseconds are worth Bitcoins. The old adages are true, but their meaning changes somewhat. Even space has changed in the course of the evolution of war.

⁹⁵⁵ Fuller (1923), p. 171.

⁹⁵⁶ MacArthur (1964), p. 57.

⁹⁵⁷ Rommel (2006), p. 165.

⁹⁵⁸ Fuller (1926), p. 181.

⁹⁵⁹ Toffler (1995), p. 63.

5.4. GROWTH OF BATTLESPACE

"But, apart from future improvements in arms, it is easy to see with existing improvements the following consequences: (1) The opening of battles from much greater distances than formerly; (2) the necessity of loose formation in attack; (3) the strengthening of the defence; (4) the increase in the area-of the battlefield; and (5) the increase in casualties." ⁹⁶⁰

It is an interesting development that the more warfare has developed the further have warriors retreated from the actual frontline and the distances between the combatants have intentionally been grown. In the old days, armies amassed for battle so that infantry, cavalry and artillery alike were pushed to the very front in order to maximize their effect. Von der Goltz has noted that "before the introduction of long-range weapons, battlefields were of about the size of the present manoeuvring ground for a brigade. Even those who visit the battlefields of 1864 are astonished to find how short all the distances are."⁹⁶¹ There were two preconditions to the growth of the size of the battlefield and simultaneously a dispersion of forces within it; mobility of troops and the range of weapons. The more troops one could transport into the battle in time for its commencement, the larger the area these troops occupy. But it would be no use to concentrate excessive force unless the weapons permit every soldier to do his part. That demands enough range for effect on the enemy.

Once, when swords, morning-stars, halberds, and lances were the primary weapons, the troops could and should be in relatively compact formations since they would engage the enemy in hand to hand combat. At that time there was no need for extended battlefronts. As Isserson depicted it, even in the Napoleonic era battle "possessed no spatial dimension because its scale consisted of a single point, and it had no temporal dimension because it was simply a moment in time. Moreover, it had no depth because it took place in a locale."⁹⁶² In classical warfare battles seldom lasted for more than a single day.⁹⁶³ Since troops met with no distance between them a relatively minor area was sufficient for battle. To some extent even a 19th century battle was composed of

"a series of clashes taking place over a short period of time in a small area with the enemies in close proximity; the total duration of a battle was not too much greater than the duration on an individual clash (...) but conditions began to change once the Russo-Japanese War began. The battle front began to get larger, and the sites of battles became fragmented and were great distances apart from one another."⁹⁶⁴

Battlefields have grown bigger and bigger and this process started gradually already during the seventeenth and eighteenth centuries with the introduction of advanced guns and rifles and conscription in the Napoleonic times.⁹⁶⁵ Firearms enabled fighting at a greater distance and the development in means of transport made it possible to assemble enormous forces to the battlefield.⁹⁶⁶ At the same time the intensity of fire enforced a loosening of infantry fighting formations and thus with the same amount of troops, the battlefields increased "*in extent out of proportion with the troops engaged*."⁹⁶⁷ Du Picq argued that leadership of war was easier in ancient combats. He explained this using the terminology of space, but in movements and all operations of an army space is directly related to time. Growth in the physical dimensions of the battlefield grew its temporal dimension as a by-product. "In the old days

⁹⁶⁰ Bloch (1914), p. 5.

⁹⁶¹ von der Goltz (1906), p. 34.

⁹⁶² Isserson (2013), p. 16.

⁹⁶³ Bond (1998), p. 1.

⁹⁶⁴ Svechin (1992), p. 271.

⁹⁶⁵ Vego (2009), pp. IV-3, 9. Firepower had begun to make a difference on the battlefields even before Napoleon. From the 1600 as flint locks began to replace muskets the growth of firepower has continued and had a huge impact, for example, of Marlborough's campaigns. See Colby (1943), pp. 17-20.

⁹⁶⁶ du Picq (1987), p. 126.

⁹⁶⁷ Bernhardi (1914), p. 62.

the time scale was small (a nineteenth century campaign might last a month, a battle a few hours); in the great wars of the twentieth century the time scale was longer:"⁹⁶⁸

Freytag-Loringhoven concedes that while the Frederickian and Napoleonic battles were bloodier than those fought before the World Wars there was a nevertheless a profound difference between these types of battles. Namely that "*lack of effective long-range weapons in those days made the moments of maximum danger shorter. In our time the fire may last for hours at long range. This makes great demands upon the nerves.*"⁹⁶⁹ Longer range of weapons enlarged the battlefields but the most important factor was that damage could be inflicted on the enemy from further and further away. Slingshots, catapults, and bows were rudimentary means to start inflicting damage on the enemy from afar. Technology stepped in and overcame distance to some degree and compressed the time available for each tactical and operational activity while the war itself lengthened from battles into campaigns. As mobility and enhanced command and communications opened new possibilities, there were also downsides since they diminished the time available to the general to make his decisions. As Du Picq put it,

"ancient combat was fought in groups close together, within a small space, in open ground, in full view of one another, without the deafening noise of present day arms. Men in formation marched into action that took place on the spot and did not carry them thousands of feet away from the starting point. [...]To-day fighting is done over immense spaces, along thinly drawn out lines broken every instant by the accidents and the obstacles of the terrain. From the time the action begins, as soon as there are rifle shots, the men spread out as skirmishers or, lost in the inevitable disorder of the rapid march escape the supervision of their commanding officers³⁹⁷⁰

The general was no longer able to see the entire battlefield and control it, and this created new demands⁹⁷¹. By every means possible it had to be ensured that information from all corners of the battlefield reached the commander as quickly as possible and that his orders could be implemented with no time wasted. At the time of confined battlefields and strict formations orders could be delegated with drums or trumpets without delay. As the battlefield grew, the means to issue commands had to develop to attain the same simultaneity. In addition, the expanding battlefield demanded rapid movement. Frederick was both surprisingly modern and completely outdated from today's perspective. In his maxims it was important to engage the enemy as quickly as possible in close combat. For this reason, he wanted his troops to march with a rapid step and rifle on the shoulder until the melee.

"It is not the greater or lesser number of dead that decides an action but the ground you gain. It is not fire but bearing which defeats the enemy. And because the decision is gained more quickly by always marching against the enemy than by amusing yourself firing, the sooner a battle is decided, the fewer men are lost in it:"⁹⁷²

This type of tactical thinking became obsolete as soon as rifles became quicker to reload. Clausewitz lamented the fact that "our generals are too taken with the idea that it is better to advance than to stand and fire. Each of these actions has its proper place."⁹⁷³Already during the latter half of the 19th century it had become evident to most military thinkers that rifled and breech-loaded firearms necessitated a revision of infantry tactics. These preliminary thoughts were justified by the experiences of the Boer and Russo-Japanese Wars, but it was during WWI places like Somme and Passchendaele were to become testimonies to the fact that infan-

⁹⁶⁸ Beaufre (1965), pp. 100-101.

⁹⁶⁹ Freytag-Loringhoven (1991), p. 211.

⁹⁷⁰ du Picq (1987), p. 124.

⁹⁷¹ For example Caesar (2010), p. 131 describes a battle in the Gallic Wars thus "*Caesar, having selected a commanding situation, sees distinctly whatever is going on in every quarter, and sends assistance to his troops when hard pressed.*"
⁹⁷² Frederick (1985), p. 396. On the other hand, Frederick clearly understood the effect of fire. His maxim just states his preference for engaging the enemy in close combat and doing it as quickly as possible. His thoroughly drilled troops were able to fire at the rate of five rounds per minute when the rate common to other armies of the time was just two or three rounds a minute. On this see Colby (1943), pp. 88-89.
⁹⁷³ Clausewitz, cited in Bassford et al (2010), p. 123.

trymen can indeed do more than "amuse themselves" firing.⁹⁷⁴ It would be too easy to take the viewpoint that modern firearms only altered the existing tactics. Since they had a direct influence on combat and therefore conduct of operations, "*we have had to acknowledge that, indirectly, strategy is affected as well by the altered nature of battle*."⁹⁷⁵

Before efficient rifles two armies were able to closely observe themselves from a relatively close distance. When the decision to commence attack was made, the terrain was crossed relatively quickly by even foot soldiers. Delbrück noted that neither a Greek phalanx nor any other close-order battle line was able to run a mile in any case.⁹⁷⁶ In other words, ancient armies could move with relatively sedate place towards the enemy until they reached the range of arrows.

Long-distance weapons changed all of that. First the rifle prolonged the time that the attacker had to spend under fire when closing in and with increased artillery range even the enemy supply units, other auxiliary troops and ultimately the reserves as well could be kept constantly involved in the battle. Increased accuracy, range, and rate of fire pushed the infantry soldiers to their psychological breaking points and infantry tactics had to be revised to make the attack on the enemy possible at all.⁹⁷⁷ The fascination of the idea of inflicting casualties from a distance soon lost its meaning due to lack of protection of one's own troops, because the enemy had the same capabilities at his disposal. Since the gap between the troops grew and casualties would still occur constantly on both sides, there was a need to reclose the gap to inflict more damage and gain victory. The problem here is the length of time one had to spend in the open, unprotected from the effects of the enemy fire. In his discussion of mechanized warfare Simpkin called it "movement exposure time is the time for which all or part of the machine is exposed when crossing gaps between cover.⁷⁹⁷⁸ During this closing-in movement, however, one is at his most vulnerable. Thus the distance that had been increased now had to be bridged as quickly as possible to minimize the effect of the enemy fire in this one-sided situation. According to Patton,

"every soldier should realize that casualties in battle are the result of two factors: first, effective enemy fire, and, second, the time during which the soldier is exposed to that fire. The enemy's effectiveness in fire is reduced by your fire or night attacks. The time you are exposed is reduced by the rapidity of your advance."⁹⁷⁹

Foot soldiers remained exposed to the enemy fire for too long and faster means of crossing the distance were needed. The tank was a relatively slow way of transportation in the beginning but ultimately proved to be the answer. In the initial stages the tank benefited from being impregnable by the rifle fire and it could crawl across the distance. As anti-tank weapons developed, the tank had to become faster. Movement is protection, since the target remains under fire for a shorter period of time. The longer the distance, the more crucial becomes the need to utilize less time.

Man or machine, the principle is the same and in order to reduce casualties, the length of this time had to be shortened and it could be done by accelerating the pace in crossing, shortening the span of no-man's land, or seeking some form of protection. Foch was one of the few to actually identify this as problematic and discuss what could be done. *"The art, then, is to reduce this zone of advance, in launching the attack from as short a distance as possible. Ground provides the means for it."*⁶⁹⁸⁰ The idea would be to attempt to get as close to the enemy protected from enemy fire.

⁹⁷⁴ See Echevarria (2000), pp. 13-14. Bond (2006), p. 99 argued that the Russo-Japanese war, with both sides equipped with the most modern weapons, was precisely the kind of war Bloch had deemed impossible or, at the least, suicidal.

⁹⁷⁵ Bernhardi (1914), p. 71.

⁹⁷⁶ Delbrück (1990), p. 76.

⁹⁷⁷ Echevarria (2000), pp. 213-214. He uses a suitable term "infantry crisis" to describe the dilemma.

⁹⁷⁸ Simpkin (1985), p. 124.

⁹⁷⁹ Patton (1947), p. 340.

⁹⁸⁰ Foch (1920), p. 350.

"Moreover, an attack, once started, must advance rapidly. It must have, therefore, a ground free from obstacles, which does not mean free from shelter. The ideal ground is one that should be at once open (not blind) and broken- affording cover. What is important is speed."⁹⁸¹

The idea of advancing rapidly is solid but the consideration about the ground is dubious. If the ground is open, it allows defensive fire to rain on the attacking troops and vice versa. Foch did not grasp the destructiveness of this. He sincerely believed that increased firepower would strengthen the offensive instead of the defender.

Another problematic factor is the combination of the requirements of speed and the broken terrain. Indeed, broken terrain offers the troops protection, but tends to reduce the rate of movement. This is why barbed wire and other hindrances were built in front of the defensive formations; to slow down the attack and lengthen the time the assailant would have to spend under fire. The destructive potential of machine-guns made crossing open swathes of ground extremely hazardous and even if the time spent crossing the no-man's land remained relatively short, the losses suffered were extensive. There was a constant need to negate the effect of enemy fire on advancing troops, or, if it was not feasible, to still shorten the time spent under fire. This led Liddell Hart between the World Wars to inquire,

"why expose 150-200 cloth-clad infantry for half an hour in slowly crossing a bullet-swept stretch of ground in order to seize some tactical point when a dozen "armoured" infantry could rush across in a few minutes – and have more chance of seizing it without a fight?"⁹⁸²

Time is the most important commodity in warfare. The right moment and the right speed of action will save lives and perhaps even enable a victory in a hopeless situation. There is no other moment when rapid action is as necessary as when one's own forces are under fire. The classic example is a frontal attack against an entrenched enemy that can cover the no-man's land with a hail of bullets. During the attack one attempts to close the distance between oneself and the enemy to engage him in close combat, "*minutes are momentous, and the history of war has countless proofs that a handful of men can often gain a position which half an hour later a thousand cannot gain, while half a day later 10, 000 are too few.*"⁹⁸³

As the Tofflers argued, it is an important process in war to "*take range*. *Throughout history war makers have tried to extend their reach.*"⁹⁸⁴ Developments in propulsion of artillery projectiles kept increasing the distances and thus growing the battlefield. The bigger the battlefield grew and the more extended the fronts were on both sides, the more important became mobility. Fuller wrote that "as reach of range is the dominant characteristic of an offensive weapon, speed and mobility in attack are the dominant characteristics of the offensive itself."⁹⁸⁵ This has been a constant development pattern throughout history. As weapons have become more lethal, their targets have been spread out along the battlefield to minimize the casualties⁹⁸⁶. For protection troops needed to be pulled further back, at least beyond the effects of direct fire and line-of-sight weapons and optimally outside the maximum range of enemy artillery. If they were so far away, there had to be a mechanism that would allow them to be rapidly transported to a location of choice where troop dispersion was to become troop concentration and thus a means of achieving local material and manpower superiority over the enemy. For Liddell Hart the difference between the World Wars was not in weapons or any increase in their destructive power but

"differences of space and speed rather than of weapons. The weapon development favourable to the offensive has been counter-balanced by the weapon development favourable to the defensive. But other conditions have made the present war less static. While defence is strong-

⁹⁸¹ Ibid.

⁹⁸² Liddell Hart (1932), p. 193.

⁹⁸³ Liddell Hart (1932), pp. 193-194.

⁹⁸⁴ Toffler (1995), p. 30.

⁹⁸⁵ Fuller (1946), p. 23.

⁹⁸⁶ See Dupuy (1987), pp. 170-172.

er, space has been wider and forces faster. These offsets have given the offensive a better chance strategically than in the last war – by providing the attacker with more room for manoeuvre, and more speed of manoeuvre, thus making it easier for him to achieve penetration, so long as he avoids pushing into bottlenecks:"⁹⁸⁷

Newfound mobility allowed spreading the battlefield wider than ever and simultaneously dispersed troops. Even if defensive formations could be constructed stronger than ever before, the mobility of the attacker weakened the defensive by forcing it out of its concentrated nature and to cover a wider area. Defense was dispersed to counter the agile and mobile attackers. From the WW I static trenches extending across the entire continent warfare progressed to wide maneuvers and forces being dispersed prior to the battle to be concentrated locally and temporally for the attack itself. Still it remained true that the

"enemy must be found, held and hit, whereas the finder must strive his utmost not to be found, not to be held and not to be hit. Yet every weapon is influenced not only by ground, time and space, but by every other weapon – the enemy's and our own. No new weapon can be introduced without changing conditions, and every change in conditions will demand a modification in the application of the principles of war. Once the enemy is discovered, the whole theory of the attack must be based on a careful study of ground with reference to offensive action and protective power, as well as the time it will take both sides to move over the ground. Consequently, correct timing of movements becomes the decisive factor:"⁹⁹⁸

Again, the application of principles of war requires modification as a response to time, space and weapons particular to the situation. Time is a foundational factor in these calculations; time required to cross the distance, time when the offensive needs to hit the target, time as the factor controlling and synchronizing movement, and time as a resource needed to understand and execute orders. To find, hold and hit the enemy presupposes the ability to spatio-temporally locate, immobilize, and influence it. Air power was an important asset.

Highlighting its mobility and speed, Liddell Hart eloquently wrote that the "aircraft came endowed with a knight's move to supplement the military bishops and rooks on the chessboard of war."⁹⁸⁹ Almost as if on a chessboard, the primitive battles focused on one point and after taking down the king the fight was over. Clash or armies was localized and the battlefield could be pinpointed on a map. As armies improved their organization and created formations the battles were fought in lines and mechanized troops brought about area tactics making wars two-dimensional. As Douhet depicted the situation before the opening up of the air and the addition of a third dimension to battlespace "war had to be fought on the surface of the earth, it could be waged only in movements and clashes of forces along lines drawn on its surface. Hence, to win, to gain control of the coveted area, one side had to break through the fortified defensive lines of the other and occupy the area."

Air power enabled going over the rigid lines and inflicting whole areas in the depth of the enemy. It added a new dimension but simultaneously extended the twodimensional area in the depth of the front. Air power added a vast amount of new possibilities and forced the conventional thinkers to address anew the applicability of old theories. War now took place in the third dimension as well, in effect turning the battlefield into a battlespace⁹⁹¹. The huge increase of potential speed forces can achieve grew the battlespace out of all proportion. In WW II bombers from England could drop their payloads of German cities. Whereas earlier the battlefield had consisted of the areas where the troops were deployed to prior and during the battle, with the birth of the air force all of Europe effectively became battlespace in WWII. To cite Douhet again,

⁹⁸⁷ Liddell Hart (1946), p. 22-23. Italics in the original. While in so many ways Liddell Hart criticizes Clausewitz, he readily adopts his idea of the defense being the stronger form of battle. On Clausewitz concerning the defensive and the offensive see Heuser (2002), pp. 90-97.

⁹⁸⁸ Fuller (1943), p. 85.

⁹⁸⁹ Liddell Hart (1932), p. 99.

⁹⁹⁰ Douhet (1999), p. 282.

⁹⁹¹ Freedman (2006), p. 14.

"By virtue of this new weapon, the repercussions of war are no longer limited by the farthest artillery range of surface guns, but can be directly felt for hundreds and hundreds of miles over all the lands and seas of nations at war. No longer can areas exist in which life can be lived in safety and tranquility, nor can the battlefield any longer be limited to actual combatants. On the contrary, the battlefield will be limited only by the boundaries of the nations at war, and all of their citizens will become combatants, since all of them will be exposed to the aerial offensives of the enemy."⁹⁹²

Another unquestionable turning point in mobile warfare and the use of the aerial dimension was reached in Vietnam War and more specifically the Ia Drang Valley Campaign in which helicopters were used for the first time to maneuver large U.S. unit in battle. As such, Schwarzkopf claimed, "*it was a landmark in modern warfare*."⁹⁹³ Helicopters added greatly to tactical and even operational movements. In the post-World War II era increased mobility seeped into the strategical level and the movements became inter-theater and performed in operational time, that is, at least for the small and light troops like Special Forces that can be rapidly airlifted. Rotary-wing aircraft vastly supplemented the development of the use of air space. In WW II the battles were no longer fought over area and with the troops in lines, but

> "in cubic spaces. Consequently the battlefield of to-day may be compared to a box in which the armies contained in it, whether stationary or moving, are, or at least should be constantly prepared to defend themselves on all sides - top, front, rear and flanks - or assume the offensive in one or more of these directions."⁹⁹⁴

Motorized and mechanized units, their operations closely coordinated with those of the air force and increased rotary-wing air mechanization of units, allowed moving troops around entire theaters in all directions faster than ever. Thus, on the operational level the meaning of distance in relation to time consumed crossing it became, again, almost inconsequential. In a given theater of war air and naval forces interact spatially just as ground forces do and since their dispositions can be changed so swiftly, the spatial aspect of war on strategic has shrunk in importance. Yet, still, on operational and tactical levels momentary location of troops can be decisive.⁹⁹⁵ Everything depends on moments since the meaning of space is reduced. Space has in operational sense been overcome by time.

There are several means of making distances even on the strategic level diminished in importance. Force can be projected globally faster than ever before due to aircraft carriers, extensive network of military bases and especially airfields, possibilities of refueling planes in flight, satellites, and extended ranges of drones not to mention intercontinental ballistic missiles. It still takes time to transport infantry to remote places, but they can be affected quickly through aerial attacks or the use of missiles. Not matter how influential air power is, it has been succeeded though not superseded by space power and cyber power.⁹⁹⁶ As we move towards operations in space, information domain and the cyber domain we are closing in on a time when time and space truly do not have any correlation and one is unable to affect the other. It is difficult to predict all the consequences this can have, but this theoretically has potential to turn warfare on its head since damage can be inflicted on the enemy instantaneously from any place in the world and, furthermore, so that the origin of the attack cannot be deciphered even in retrospect.

Looking at the lessons of military history, there likely is not going to occur such a revolution as theoretically would be possible. We tend to overestimate the meaning and impact of new innovations and technologies. When the military plans its operations

⁹⁹² Douhet (1999), p. 283.

⁹⁹³ Schwazkopf 1993, p. 140. Nevertheless, only the use of rotary wing aircraft was the true novelty since Crete in World War II was the first use of air as the medium of transporting troops and a true air assault. Fuller (1948), p. 113.

⁹⁹⁴ Fuller (1948), p. 46.

⁹⁹⁵ Luttwak (1987), p. 157.

⁹⁹⁶ Gray (2012), p. 57.

and synchronizes them in space and time, the methods and weapons of cyber warfare add into their palettes new shades. If a weapon is practically instantaneous to use so that there is no time lag between launching it and the moment its effect is felt, it is relatively easy to utilize to multiply the effect of other means and weapons that are harder to synchronize.

However, in our times the battlespace has stretched to cover new dimensions and it is today more of a mental construct than a physical realm. As an example we can return to the latest updates of the AirLand Battle doctrine. It was a conceptual offspring of the *Blitzkrieg* but included elements made possible by new technologies. The interpretation of Franks of tenets of AirLand battle described how "*American forces would abandon fixed defensive positions and strike the enemy's flanks, and then, supported by attack helicopters and air power, penetrate to the rear and attack enemy command and control centers and supply lines.*"⁹⁹⁷ The resulting effect of AirLand battle was described by the Toffler's as erasure of the rigid frontline.

> "The front was no longer where the main battle occurred. Precisely as called for in Air-Land Battle doctrine, the allies were deepening the battle in all dimensions – distance, altitude, time. The front was now in the rear, at the sides, and up above. Actions were planned twelve, twenty-four, seventy-two hours ahead, choreographed in time, as it were."⁹⁹⁸

The range in distance and altitude grew considerably. In Iraq the U.S.-led forces had absolute air superiority and dominated the sky in the battlespace. The 'front' in the aerial dimension could also be established at such a high altitude that the Iraqi troops could not contest it. The most important thing, however, was extension of the battlespace into the fourth, the temporal, dimension. Actions were choreographed ahead for pre-set periods. This meant that the battlespace was no longer here and *now*, but included elements of the future as well. Time became one of the dimensions into which it stretched. The term battlefield had thus grown from referring only to the physical dimensions to so much more.⁹⁹⁹

But what does this actually mean and imply? Napoleon envisioned the future circumstances after each action in order to win time from the enemy by being one step ahead. Yet, there is a world of difference. Napoleon thought of things that could happen, the planners of the Third Wave what would happen. Actions were determined in advance. They would happen in the near future at pre-set times and all activities were synchronized together. Thus the battlespace stretched from the present moment into the future and was no longer bound by the concept of here and now. This required new ways of thinking and planning and increased the demand for mental flexibility called for by mechanization. Temporalities blurred, since the actions synchronized in time were just as concrete as those that happen in the present, but remained intangible for the untrained mind. The idea of synchronizing future actions does not violate the concept that through the fog of war it is impossible to see far ahead, or, in the words of von der Goltz, that "*no plan of operations can with any safety include more than the first collision with the enemy's main force.*"¹⁰⁰⁰

Today this still remains true but with a slightly altered meaning. No one attempts to assign synchronized tasks to the ground forces beyond the battle they are currently fighting. Nevertheless, the use of auxiliary branches of service or use of special operations capabilities can be planned ahead. An air strike enabled by an uncontested command of the air could be ordered to impact a certain place at a certain time and as soon as the order was processed, one could conceive of the attack as 'reality' even if had not yet occurred. This can be used to set the rhythm the rest of the instruments of war could be synchronized with. The concept of battlespace increasingly began to be temporally bounded.

This conceptual spread into new dimensions meant that wars are no longer as simple as they used to be in terms of geography either because time and space are so closely related. When traditionally one state went to war against the other the border be-

⁹⁹⁷ Franks (2004), p.135.

⁹⁹⁸ Toffler (1995), p. 68.

⁹⁹⁹ Alberts et. al. (2000), p. 60. Dillon - Reid (2009), p. 111 argue that in the information societies of the Third Wave "*information itself became battlespace, and not simply a prize in the burgeoning battlespaces of the liberal way of war.*" ¹⁰⁰⁰ von der Goltz (1906), p. 105.

tween two was the primary locus of dispute. The front was moved through attacks and defensive maneuvers if either side made progress or remained fixed in place for long periods of time like in WW I. As Kaldor writes, "*it is no longer possible to contain war geographically. Zones of peace and zones of war exist side by side in the same territorial space.*"¹⁰⁰¹ War is simultaneously everywhere or nowhere. The relatively stable and conceivable battlefield of the agrarian age and to some degree the indust-reality as well has been replaced by the concept of multi-dimensional battlespace which is much more ambiguous. Even if in military jargon battlefield and battlespace are often used indiscriminately the latter is qualitatively more suitable to describe the character of the concept in the Third Wave civilizations. In effect the changed nature of operations a great power can conduct makes the battlespace 'fluid.' As Vego describes the locus where operations of today are conducted,

"For lack of a better term, battlefield and battlespace are "fluid" or "transitory" parts of a theater. Their physical extent can vary greatly, depending on the scale and number of the objectives to be accomplished, the size and force mix on both sides, and the characteristics of the physical environment in which combat takes place. The battlefield and battlespace are not part of the permanent or semipermanent theater structure. Their size in all dimensions varies greatly and is not constant; it can be expanded or contracted depending on the dynamics of combat. They are also not fixed in space, but movable. Once either side's objectives are accomplished, the battlefield and battlespace disappear, only to reappear at some other part of the theater. (...) The term battlespace, adopted in the early 1990s in the U.S. military, is increasingly replacing the term battlefield. The term for a conventional three-dimensional battlefield was inadequate because it did not imply the existence of the fourth dimension, cyberspace. In generic terms, "battlespace" pertains to a three-dimensional physical space, plus a corresponding part of cyberspace, in which a tactical commander sets the terms of a battle or engagement. Normally, a battlespace is larger than an area of operations, and it can overlap the battlespace of other friendly commanders. It expands and contracts depending on the dynamics of the battle or engagement and the capabilities of forces on both sides."¹⁰⁰²

I partially disagree with Vego. While battlespace is today commonly used to refer to the aforementioned three dimensions and cyberspace, since the expression itself was used in connection to the fourth dimension, it is more descriptive to use the term 'battlespace' to consist of a spatio-temporally limited but fluid area in which combat occurs at a given time and that this space contains three of more dimensions. Even before the cyber hubris caught on with the militaries there was a similar hype about the information domain or the electromagnetic spectrum as the fourth dimension and, indeed, Waterloo, Cannae or any site of past battles is not a battlespace any more. They were battlespaces for the duration of the battlespace temporally is a constant demand for the operational artist. As Smith wrote about Waterloo, "*if the battle had taken place a month later it is possible all these factors (and the outcome) would have been different - this dependence on the circumstances of the day and understanding their significance is the true framework of military activity."¹⁰⁰⁴*

Nevertheless, Vego provides us with an important definition. Since the battlespace has extended in all three physical and more than a few metaphysical dimensions beyond the belief of Scipios or Hannibals of the past, the concept has to be approached

¹⁰⁰⁴ Smith (2008), p. 21.

¹⁰⁰¹ Kaldor (2007), pp. 178-179.

¹⁰⁰² Vego (2009), p. IV-9.

¹⁰⁰³ Based on his memoirs Franks seems to argue that battlespace is created only through digitalization of the battlefield. He wrote that "*The concept of digital, three-dimensional "battlespace" became a reality. Plasma screen replaced paper maps in computerized command posts and higher-echelon headquarters. Bandwidth to receive and deliver data was becoming an asset as vital as ammunition and fuel.*" Franks (2004), p. 175. While information and communication technology are important elements of the battlespace, the concept still it built on the four physical dimensions and only augmented by the digital world.

through a flexible and fluid perspective. Battlespace exists only for the duration of the fighting therein and its size can vastly vary depending on the operations conducted at any given time. Just as many other things in today's warfare are not stable and fixed; the idea of battlespace is fluid as well.

5.5. TRADING SPACE TO TIME

"On land, large space provides the defender sufficient room for maneuver, both laterally and in the depth of one's rear. Large space allows the defender to trade space for time, if necessary. It facilitates the regrouping, reinforcement, and redeployment of one's forces for an offensive action."¹⁰⁰⁵

The importance of time and the secondary nature of terrain were recognized in the very beginning of mechanized warfare. Q. Martel wrote that "*in all economies the most important factor is the economy of time. The tank was pre-eminently a time-saving machine in France.*"¹⁰⁰⁶ Martel was a relatively young officer at the time of his infatuation with the promise of the tank¹⁰⁰⁷. A true child of the industrial age, Martel viewed time as money and with the tank, more space could be exchanged into shorter periods of time. This was written long before the sweeping maneuvers of the WW II in a time when the tanks still crawled onward at merely a few miles per hour. Once speeds accelerate, more and more time could be saved with mechanized forces by gaining or giving up space for other purposes and further operations. When it comes to the relationship between time and space in warfare Gneisenau earlier summarized the essence of managing and balancing these two in a few weighty words. "*Strategy is the art of utilising time and space. I am more economic of the first than of the second. I can always regain space; time lost, never.*"¹⁰⁰⁸

"we regard a voluntary withdrawal to the interior of the country as a special form of indirect resistance – a form that destroys the enemy not so much by the sword as by his own exertions. Either no major battle is planned, or else it will be assumed to take place so late that the enemy's strength has already been sapped considerably."¹⁰⁰⁹

The lines of communication and supply may become so elongated that the force of the enemy offensive diminishes on its own accord. In the period of First Wave agrarian warfare, with the most important cities of Europe strongly fortified, the countryside was available for such exchanges of space to the exertion of the enemy. During indust-reality, in the period of mechanized warfare the deserts of North Africa offered the same option to Rommel. Even if one has to cede ground to the enemy, it can be won back later if the campaign proceeds as planned. Space will be there for re-gaining, should this be necessary, but whatever time one loses to the enemy, is lost forever. The enemy spends this time immediately in executing his plans and despite all its quirks; time only flows in one direction. The more important the battle or operation, the less consequential becomes the space in comparison to time.

A retreat, however, should not be made without sufficient cause such as to save time and forces and reallocate the time saved into planning a new defensive formation or even prepare to seize the initiative and counter-attack. Mao wrote that on the strategic level, the object of retreating is to "conserve military strength and prepare for the counter-offensive. Retreat is necessary because not to retreat a step before the onset of a strong enemy inevitable means to jeop-

¹⁰⁰⁵ Vego (2009), p. III-8.

¹⁰⁰⁶ Martel (1931), p. 57.

¹⁰⁰⁷ Martel was one of the 'young Turks' who attempted to shake the British army out of its ruts at the time, but according to his own words even in the more advanced stages of his career sought to obtain the views of these "officers of medium seniority." See Martel (1945), p. 6.

¹⁰⁰⁸ Gneisenau. cited in Foch (1920), p. 81. See also Foertsch (1939), p. 66.

¹⁰⁰⁹ Clausewitz (1989), p. 469.

*ardize the preservation of one's own forces.*¹⁰¹⁰ Mao's idea of strategic defense did not mean surrendering the initiative nor remaining passive, but included offensive operations and seizing the initiative as circumstances and time permitted¹⁰¹¹.

"Even though we are in a more or less passive position strategically in the first stage of the war, we should have the initiative in every campaign; and of course we should have the initiative throughout the later stages. We are for protracted war and final victory, we are not gamblers who risk everything on a single throw."¹⁰¹²

In this he echoed Clausewitz who saw strategic defense as a means of protecting national territory and tactical defense as awaiting the enemy attack.¹⁰¹³ Defensive is a stance that can employ different means on different levels of warfare. There is a possibility to use offensive tactics or operational art for essentially strategic defense or vice versa.

One can exchange space for time both in offensive and defensive warfare. This happens by pacing operations so that territory is won or ceded according to the velocity of movement and decision-making. Mobility thus has the potential to enhance the strength of defense through the utilization of space and trading of terrain to time. At the same time the increased mobility of the attacker erodes the strength of defense. Even in this sense war of the mechanized age became a competition which side can best use mobility to his advantage. This was not initially clear to the soldiers who operated at the dawn of indust-reality. As an example suffice defensive orders of General von Falkenhayn who "*advocated that no position that had just been captured should be abandoned. Keep what you have, and do not give up an inch of what you won,' he wrote on the 16^{th} of November 1914, to General von der Goltz. Such an operative process was bound to lead necessarily to a war of position, which is a particularly strong form of defensive."¹⁰¹⁴ While such stubborn defensive formation to the very end is a strong position, it is by no means unbreakable.*

While WWI often degraded to fighting for every inch of the ground and passionately holding on to territory that had been seized from the enemy the motorized warfare of WWII gave a new meaning to terrain. It was no longer the most important goal of war to push back the enemy front, but to penetrate it and continue to the depth. This led to a situation where optimally the territory gained could just as well be given away again since the progress of war was no longer measured by frontlines moving on a map. Hindenburg had earlier claimed that in war one does not just point at a map and state that he would give up this area. In traditional per-mechanized war one had to think not only as a soldier, but also economically.¹⁰¹⁵ On the other hand, his experiences during the WWI and especially Verdun made him understand that occasionally giving up territory was the most economical solution.¹⁰¹⁶ While in static warfare retreat was a disaster since the enemy gained occupied formations and trenches, in mobile warfare retreat actually opened new options for the commander. In Rommel's words,

> "in mechanized warfare, retreat offers a commander, even with numerically inferior forces, considerable tactical opportunities, [...] The farther the enemy advances, and the longer his supply route becomes, the more troops he must leave behind, if he is to be able to maintain himself. During an advance, the supply route is lengthened; during a retreat it is shortened. The retreating army always has its strength concentrated. Hence the moment must eventually come when the retreating is locally superior to its enemy. If at that moment it has access to an adequate supply of petrol and ammunition, it has a wonderful opportunity. It can

¹⁰¹⁰ Mao (1963), p. 111.

¹⁰¹¹ Scobell (2011), p. 209.

¹⁰¹² Mao (1963), p. 257.

¹⁰¹³ Sumida (2007), p. 189.

¹⁰¹⁴ Von Leeb, (1991), p. 85.

¹⁰¹⁵ Hindenburg (1920), p. 122.

¹⁰¹⁶ Hindenburg (1920), p. 211.

turn and strike at the advancing enemy and give battle. Such an operation must be executed at great speed to ensure that the enemy is given no chance to bring up reinforcements.²¹⁰¹⁷

Mobile warfare has a certain element of bargaining inbuilt to its logic. One must be able to trade terrain to time or strength since growth of distance increases time and energy that need to be consumed to traverse it. If one retreats in a controlled manner, his lines of communication are shortened while the enemy's lines stretch and energy is wasted by every inch of ground he gains. Likewise the time he needs to transport materiel, troops and even orders to his frontline becomes longer. More and more time and energy is required to keep the attack in motion. There comes a moment when the superiority the advancing enemy has enjoyed becomes inferiority and acting on that the moment and turning the retreat into a counter-attack one is able to turn the tables.

Fuller argued that in mechanized warfare there should be "no linear or even reliable static defence. Two operations alone are practical – namely, in the offensive to advance, and in the defensive to retire, in order to compel the enemy so to exhaust himself in the follow-up that the initiative is regained."¹⁰¹⁸ Liddell Hart expressed the same idea even more graphically. He argued that the defending side, when the front is too wide to concentrate forces properly, "has to rely on its own capacity to use space to spin out time, in the hope of exhausting the attacker or of drawing him on to a point where he will be ripe for a counterstroke."¹⁰¹⁹ The expression "to use space to spin out time" is descriptive. Space can be given up to gain time and this equation should be understood by officers of all ranks and weighed against the moral and other repercussions connected with the loss of territory.

Svechin noted that trading space to time was often a necessity. "Defensive operations ordinarily involve certain territorial losses. (...) Consequently, for a defense to be successful we must have expendable territory and time must operate to our advantage."¹⁰²⁰ When forces engaged in a battle are mobile, a retreat must be made in relatively long bounds. By this I mean that if one wants to gain sufficient amounts of time to prepare thoroughly a defensive position, one has to cede quite a lot of territory in the exchange. Nevertheless, the equation is not as simple as it initially sounds. Mobility allows troops on both sides to perform geographically large-scale maneuvers in a very short time and extensive distances are required before the enemy's momentum peters out sufficiently.

The principle of prioritizing time above space is sound in most cases, but it requires sufficient amounts of space that can be traded without endangering any strategical objectives. This means, grossly simplified, that a country such as Russia with vast territory and the capital being located far from its borders is able to perform the exchange. As Isserson claimed, "*the less territory a country has, the fewer possibilities there are to yield it.*"¹⁰²¹ Thus, the option is not open for every nation. It did not take Guderian's troops long to advance through Belgium and northern part of France to the coast of the channel. "*Small countries are ill-suited for positional warfare.*"¹⁰²² Only countries with vast territory can trade space into time and even they must be operationally and tactically skilled in defensive to use retreat to their advantage.

What worked for Guderian in France failed to work in Russia, partially because of Russian skill in trading territory for time, but mainly because of Hitler's timidity in allowing Guderian free rein for the offensive to rapidly drive as deep as possible in order to conquer the emptiness of Russian countryside. In Russia Hitler pursued two objectives; strategically to concentrate on the Russian industrial areas and forego Moscow and operationally to adhere to traditional means of encircling the enemy and creating conditions for

¹⁰¹⁷ Rommel (1953), pp. 394-395.

¹⁰¹⁸ Fuller (1946), p. 149.

¹⁰¹⁹ Liddell Hart (1946), pp. 22-23.

¹⁰²⁰ Svechin (1992), p. 251.

¹⁰²¹ Isserson (2013), p. 47.

¹⁰²² Svechin (1992), p. 254.

annihilation of the Russian troops piecemeal¹⁰²³. Instead of the encirclements, new corps of tank experts, spearheaded by Guderian, wished to use an alternative plan;

"to drive deep, as fast as possible, and leave the encircling of the enemy to be completed by the infantry forces that were following up. Guderian urged the importance of keeping the Russians on the run, and allowing them no time to rally. He wanted to drive straight on to Moscow, and was convinced he could get there if no time was wasted. Guderian's plan was a very bold one – and meant big risks in maintaining reinforcements and supplies. But it might have been lesser of the two risks. By making the armoured forces turn in each time, and forge a ring round the enemy forces they had by-passed, and a lot of time was lost."¹⁰²⁴

There were, in accordance with the best principles of maneuver warfare, big risks involved, but simultaneously huge possibilities. Had Hitler not curbed the movement of the armored spearheads and forced them to encircle enemies time after time, the deep thrust into Moscow could have brought Stalin to his knees. The problem with Hitler's method was that time and the momentum of the armored forces was lost. The principles of surprise, doing the unexpected and full utilization of mobility were discarded for the sake of the orthodox and what had always worked before. Encirclement seldom works on mechanized troops due to their ability to concentrate force rapidly in any given point. As Rommel wrote,

"the encirclement of the enemy and his subsequent destruction in the pocket can, however, seldom be the primary aim of an operation [...] for a fully motorised force whose organisational structure is intact will normally and in suitable country be able to break out at any time through an improvised defensive ring. Thanks to motorisation, the commander of the encircled force will be in a position to concentrate his main effort unexpectedly against a favourable point and force his way through."¹⁰²⁵

Maximum speed and force have to be used and the offensive should be continued with the highest pace manageable. To slow the advance is to reduce the momentum and ultimately prevent the break-through from being as deep as it could have been. With restrictions to the pace of advance momentum will peter out needlessly. This happened in the extensive territory of Russia and it could not be regained. Guderian complained that Hitler was still mentally on the level of a WW I trench-soldier and never truly grasped the essential qualities of mobile warfare.¹⁰²⁶ Once German tide had reached its high-water mark, Russia seized the initiative and proceeded slowly and gradually but with unstoppable force. Hitler did not seem to fully comprehend the interrelation of time and space since he ordered Manstein to hold on to the positions on the Eastern front against the Soviet troops and forbade him to yield an inch¹⁰²⁷.

In this case it is evident that Hitler made the wrong decision. Attempting to stabilize a front and to recreate a defensive position with sufficient strength and resilience requires winning some time to do it. As Simpkin writes, "a strategic aim of restabilisation and gaining time must logically make the defender pay some price. And his only currency is space."¹⁰²⁸ Manstein wished to exchange territory for time to build a stronger defensive line further west, but these orders deprived him from freedom of operations. Manstein was unhappy about having to attempt to goad Hitler into giving up territory and wrote that "I should have much preferred to be able to submit plans for successful offensives instead of for now inevitable withdrawals. But it

¹⁰²³ See e.g. Stempel (2012), p. 156; Klein (2002), p. 27 who argued that the need to secure oil supplies directed German offensives.

¹⁰²⁴ Blumentritt, cited in Liddell Hart (1948), p. 188.

¹⁰²⁵ Rommel (2003), p. 176.

¹⁰²⁶ Guderian (1956), p. 287.

¹⁰²⁷ Manstein's memoirs are not a very reliable historical source because many statements are erroneous and everything even potentially damaging to his reputation has been omitted. However, as Stein (2007), p. 13 argues, the main interest in the book is how Manstein viewed operations and planned them. ¹⁰²⁸ Simpkin (1985), p. 280.

is a well-known maxim of war that whoever tries to hold on to everything at once, finishes up by holding nothing at all.¹¹⁰²⁹

The Eastern Front ultimately collapsed and while perhaps this collapse was imminent, it nevertheless occurred sooner because Manstein had to attempt to stem the Russian tide without loss of territory. Manstein, had he been allowed to execute his own plans, would have had enormous amounts of empty Russian soil to use in the tradeoff. Hitler opted not to accept this exchange. Every man German troops lost in each battle of attrition fought with insufficient forces had an accumulating effect. As Vego claims, Hitler's stubborn policy to hold the ground at any cost, "*resulted in devastating German defeats at the operational and, ultimately, strategic levels.*"¹⁰³⁰ As Liddell Hart described the situation,

"Manstein showed great skill, against heavy odds, in conducting the step-by-step retreat to the Polish frontier. But Hitler would not listen to his arguments for shaking off the Russian pressure by a long step-back. The vigour with which he argued became an increasing annoyance to Hitler who finally shelved him in March, 1944 - saying that stubborn resistance yard by yard was more needed than skill in manoeuvre."¹⁰³¹

One is tempted to agree with Liddell Hart's estimation that the shelving of Manstein erased the biggest threat to the Allies. Manstein "combined modern ideas of mobility with a classical sense of manoeuvre, a mastery of technical detail, and great driving power."¹⁰³² The mobility of mechanized forces requires boldness in advance as well as in retreat. Hitler was timid and forced Manstein to waste his combat power by making him fight practically continuously during the retreat without proper preparation of a defensive formation on the Polish frontier. Occasionally the lack of boldness costs dearly since time is lost. Mechanized armies fight for time to perform the task required of them and the control of territory is inconsequential. While Manstein was not able to bargain land for time, he used all possible means at his disposal to curtail the velocity of the Russian advance. As his enemy, Rokossovsky, wrote,

"the enemy, retreating under our armies' powerful blows, destroyed bridges, railways and roads, and it took time to restore them. Our supply lines were stretched out over hundreds of kilometres and could not provide all that was needed to maintain our successful advance. It was time to give our troops an opportunity to regroup and prepare for the coming decisive operations."¹⁰³³

For a short period of time then, with heavy losses because of having to fight every step of the way, Germans were able to achieve what one long strategic retreat would have given; the over-stretching of the Russian lines of communication and supplies. Rokossovsky was not a master of maneuver warfare, but excelled in defensive battle before making a counterattack at a suitable time.¹⁰³⁴ When the Russian advance faltered, Germans could have attacked, had their forces not been severely decimated by then. In his quite biased and apologetic memoirs Keitel sought for means to justify Hitler's decisions. Keitel found fault in Manstein's plans and viewed Hitler's plan of action as the correct one in the circumstances. He argued that,

"confronted with this situation, Hitler's first order to the eastern front was: 'Stand fast, not one step back!' This was because he had correctly realized that to withdraw even by a few miles, was synonymous with writing off all our heavy armaments; in which case the troops themselves could be considered lost, because without heavy armament they were absolutely

¹⁰²⁹ Manstein (1982), p. 410. It must be noted that Manstein's memoirs read as an attempt to whitewash his own shield and lay as much of the blame for failures in the Eastern Front on Hitler, but underneath all the self-justification is buried a valid claim that he could have done better with freer hands to exercise his operational art. While it is almost an impossible task to read a book on WW II and not encounter the name of Manstein, it is mostly in the past ten years that actual biographies of him have been published. See Stein (2007), p. 6.

¹⁰³⁰ Vego (2009), p. III-59.

¹⁰³¹ Liddell Hart (1948), p. 73.

¹⁰³² Ibid.

¹⁰³³ Rokossovsky (1970), p. 252.

¹⁰³⁴ Sokolov (2015), p. 10.

defenceless, quite apart from the fact that the artillery, anti-tank guns and vehicles were irreplaceable.¹⁰³⁵

Keitel's feeble justification provides us with another lesson. While such a skilled commander as Manstein could have been able to devise means how to take the heavy armament along in the retreat, there is no question that it would have been difficult. Germans were beaten both by the Russian troops and the prevailing conditions of Russia. We might make a comparison with history. Guderian wrote of Napoleon's Russian campaign that,

> "in that pure land war the Russian delaying and waiting tactics were completely successful. Napoleon's army was overtaken by the winter for which it was not prepared and the severity of which it did not imagine, despite many warnings. The nature of the country, its climate, and its inhabitants combined and completed the defeat of the enemy."¹⁰³⁶

For both Hitler and Napoleon, the severity of Russian winter inflicted a mortal surprise, but the unsurpassable enemy was the vast emptiness of Russia. Russians were able to use the terrain to their advantage. They delayed, waited, retreated and fought along the way and the momentum of the invader was exhausted. In both cases the drive continued deep into the heart of Russia, all the way to Moscow, but by that time the energy was spent, the tide broke and started to withdraw. These tactics of delaying and ceding territory require certain ruthlessness towards the civilian population of the area "given" to the enemy. But despite the devastation the ceded areas had to withstand, finally the end justified the means.

Liddell Hart wrote descriptively that "the advantage which the German offensive derived from the breadth of space in Russia was outweighed by the disadvantage of the depth of space through which the Russians could withdraw in evading annihilation."¹⁰³⁷ The wide frontage and empty space allowed plenty of room for operational movement and the Germans were able to enjoy the rewards of their mobility. But, in the end, space conquered mobility since the forces simply stretched too thin over seemingly endless Russian terrain as lines of supply and communication became too elongated to function. Nevertheless, as Svechin stated, the vast land area of Russia or of any other country is not automatically a guarantee of defensive success, since the army has to be able to fight in a manner that utilizes the existing conditions in its operational art and the state must be strong to "to survive the material losses associated with an enemy offensive and make time work in its favor rather than the enemy's."¹⁰³⁸ Even if time is more important than space since spatial distances can be overcome with speed, extensive space requires sufficient mass in order to be able to concentrate one's forces where deemed necessary.

5.6. INCREASING THE MASS - FROM QUANTITY TO QUALITY AND BACK

"It is hardly true that there is such a thing as too many troops or troops who are too good. There is no such thing as too many crack troops."¹⁰³⁹

One of the biggest follies in the on-going debate about the benefits of professional armies versus the mass armies of reservists and the dilemma about the preference of quality over quantity is the use of small Greek citizen armies against the million-man armies of Xerxes. This is something Hans Delbruck effectively proved false. Indeed he contends that probably there were more Greek soldiers than Persian ones.¹⁰⁴⁰ Yet similar stories of a victory of a small minority over a gigantic majority exist in most nations. From this military *urmyth*

- ¹⁰³⁷ Liddell Hart (1948), p. 48.
- ¹⁰³⁸ Svechin (1992), p. 251.

¹⁰³⁵ Keitel (1966), p. 166.

¹⁰³⁶ Guderian (1956b), p. 128.

¹⁰³⁹ Svechin (1992), p. 179.

¹⁰⁴⁰ Delbrück (1990), pp. 69-80.

springs the idea that the criterion of quality does not apply to the mass which itself transforms it into that of quantity. The victory of the Greeks is still a praiseworthy military feat if we strip the story of its mythical elements.¹⁰⁴¹ The danger involved in viewing the legend as a true story is apparent in any discussion of highly trained small armies being used as a defense against much bigger armies. Naturally the level of training and professionalism has a large role in defining the result of any battle, but the idea of thousands having a possibility of emerging victorious from a confrontation with millions, or otherwise significant majority, is likely to lead to a military disaster brought about by self-deception.

In the agrarian age the quality or warriors tended to have a priority over their number. As Sun Pin wrote, "*enlightened rulers and knowledgeable generals do not rely on masses of troops to seek success.*"¹⁰⁴² Skill was considered to be the most important characteristic of a soldier and this idea prevailed throughout the centuries and perhaps peaked in the era of chivalric warfare where the quality of the small number of knights was far more important than the mass of peasants opposing them.¹⁰⁴³ Similarly the 18th century focused on marching and maneuvers as the high acme of art of war and everyone preferred quality over quantity to ensure the mobility of their troops.¹⁰⁴⁴ On the other hand, while large armies are difficult to move and to feed, the smaller armies are more easily defeated and especially in the Middle Ages small armies were a necessity dictated by economic reasons.¹⁰⁴⁵

But even then the dual nature of numbers and skill was recognized. As Bülow wrote, "among the moderns, victory is decided by number, and not by courage and skill in Tactics. But that number must be conducted with ability; for, when the fronts of armies meet in battle, the more disciplined will, no doubt, put the less to flight."¹⁰⁴⁶ Mass armies of the modern era were created through turning citizens into soldiers adhering to the tradition Napoleon started. Conscription created the mass armies of the World Wars and the resulting number of casualties led Liddell Hart to argue that "it fosters the fetish of numbers"¹⁰⁴⁷ and that "conscription has been the cancer of civilisation."¹⁰⁴⁸ Growth of both masses and their mobility has had many consequences not only on the development of the art of war but also to the results of wars to the societies waging them. Occasionally these by-products may be difficult to discern.

As an example, the growth of mobility in warfare has never been only a good thing, since it enabled war to engulf larger and larger areas of territory and submit those areas to exploitation. Increasing mobility has always managed to make war more effective and being more effective required more resources or caused wider destruction. As long as battles were fought in confined areas and only between armies the amount of destruction was spatially limited. We have all read how nothing grew where the hooves of Attila the Hun had touched the ground. This is because he and other nomadic warriors led their troops over wide swathes of land and used this land to feed and support them. This was not a pattern of behavior specific to only horse armies but other invading armies alike. As Jomini described it, "*Caesar said that war should support war, and he is generally believed to have lived at the expense of the countries he overran*."¹⁰⁴⁹ Invasion as a military strategy enabled making the enemy pay for the majority of costs and suffer the damaged since everything occurred on his territory. But the better the mobility of armies was, the wider they could expand the damage they caused on their surroundings. Napoleon's system of marches increased the mobility and the range of his troops. Even if economic concerns and costs had been set

¹⁰⁴¹ Keegan (1998), p. xiii argued that the Greek world had a "*passion for discord*." A lot of other suitable heroic examples could be found from its history.

¹⁰⁴² Sun Pin (1995), p. 92.

¹⁰⁴³ Delbrück (1990c), p. 283.

¹⁰⁴⁴ Svechin (1992), p. 180.

¹⁰⁴⁵ Delbrück (1990c), pp. 142, 169-170. The pure feudal system was based on barter economy and only later combinations of barter and money economies began to emerge.

¹⁰⁴⁶ Bülow (2013), p.189.

¹⁰⁴⁷ Liddell Hart (1950), p. 336.

¹⁰⁴⁸ Liddell Hart (1950), p. 338.

¹⁰⁴⁹ Jomini (2007), p. 103.

aside, bringing the supplies the armies required from their homelands would have hindered their speed of movement. They had to be fast of foot and this in turn required them to march light. Jomini saw the effect of Napoleon's armies on the areas they passed through.

"If the art of war is enlarged by the adoption of the system of marches, humanity, on the contrary, loses by it; for these rapid incursions and bivouacs of considerable masses, feeding upon the regions they overrun, are not materially different from the devastations of the barbarian hordes between the fourth and thirteenth centuries."¹⁰⁵⁰

Napoleon's marches and foraging provided his troops with speed relative to his opponents and thus organizational mobility, but the methods could not be employed much longer.¹⁰⁵¹ If we look at the time of mass armies and even mechanized armies the costs of mobilization extends beyond the physical damage caused by the troops themselves. The millionman armies took their manpower out of their production in agriculture and industry alike while the state still had to provide for them since the armies were too huge and too geographically concentrated to manage to live on the land.¹⁰⁵² Motorization and mechanization spread them over wider areas and minimized force concentration, but the increased amount of movement required more resources and especially petroleum.

The successes of the massive but mobile citizen armies of Napoleon led to successive generations of military minds being infatuated with the genius of Napoleon as Jomini and Clausewitz had written their ideas and interpretations of the tenets of Napoleonic warfare for guidance. Napoleon organized his armies to concentrate more soldiers in terms of time and place to bring about a favorable outcome of the battle. Concentration of mass and force was the lesson admirers picked out of his art of war and tended to multiply the mass. Napoleonic way of war brought about a new sense of time-consciousness. He was the first commander to begin issuing time-specific orders¹⁰⁵³. This enabled him to concentrate mass into the right place at the right time better than his opponents. Some of Napoleon's concentrations of forces were evidence of logistic genius in action. If his followers lacked the genius, they tended to attempt to make good by increasing the mass. As Smith has argued, Napoleon's innovations gave him an advantage over his opponent on the operational level, but on the tactical level his armies were less effective, since they could not always translate mass of men into mass of firepower.¹⁰⁵⁴

Germany was among those countries intent on learning what made Napoleonic warfare so efficient and Scharnhorst led a commission determined to adapt the French methods into German context.¹⁰⁵⁵ Clausewitz was among the people chosen for the commission and his theories would have a huge impact especially at the beginning of industrialized and mechanized age.¹⁰⁵⁶ As Fuller interpreted it, the aim of Clausewitzian thought "*was to turn the State into a military machine, and at the very time when steam power was beginning to turn it into an industrial machine. Hence onwards, both armies and factories increasingly ceased to be the servants of the people to become their masters.*"¹⁰⁵⁷ Liddell Hart and Fuller both witnessed the horrors of what they perceived to be Clausewitzian destructive battles and unfortunately turned their backs to this philosopher of warfare¹⁰⁵⁸. They did not perceive that the fault was not in

¹⁰⁵⁰ Jomini (2007), p. 100.

¹⁰⁵¹ Smith (2008), p. 38.

¹⁰⁵² See e.g. Bernhardi (1914), pp. 24-27 who argued before the World Wars that "*living on the country*" had become impossible because of the great number of troops.

¹⁰⁵³ Bucholz (2001), p. 12.

¹⁰⁵⁴ Smith (2008), p. 45.

¹⁰⁵⁵ Paret (2009), p. 86.

¹⁰⁵⁶ See Clausewitz (1989).

¹⁰⁵⁷ Fuller (1946), p. 111.

¹⁰⁵⁸ Strachan (2013), p. 51 is among those who argue that to link Clausewitz to the mass army, brutality of battle and wars of annihilation have misjudged them. He goes further to argue that the war plans of European armies in 1914 were essentially Jominian since there were operational plans for single campaign, no grand tactics, and they ignored the contingent effects of plans. *"From today's perspective they were campaign plans, not war plans (but then significantly, so were the plans for Afghanistan in 2001, Iraq in 2003 and Libya in 2011)"* Strachan (2013), p. 245.

Clausewitz, but in those who had read and only partially understood his logic. This lack of insight led to the birth of mass armies and the concept of the entire nation at war. As Fuller eloquently put this development:

"from 1866 onwards mass armies take the field. The long-service standing army progressively gives way to the short-service conscript. Quality is ousted by quantity and war becomes the affair of the "average man." [...] the larger armies grow the more dependent do they become on industry to equip, arm and supply them both in peace and war. Industry, the postal and telegraph system etc., are organized for war, for a nation in arms demands a nation of armourers and technicians to sustain and maintain it. The nation which makes the greatest use of peace intervals to advance its mechanical and engineering potentials for war, and which possesses the greatest number of skilled workers as well as of trained soldiers, and the most abundant supplies of raw materials as well as of arms, is the nation upon whom victory smiles."¹⁰⁵⁹

To put increasing masses of troops into action the nation-states could no longer rely on armies of high-quality professionals, but focused on creating quantity. In order to produce a mass of soldiers, nation-states had to rely on conscription, which involved all families in warfare. Similarly all resources, workforce and means of production of the society were harnessed for the service of a mass army. As quantity replaced quality the art of war diminished in importance. Fuller wrote that the "conflict of masses is a war of accidents in which genius is out of place. Though the general can still plot and plan, and increasingly must do so, he can no longer lead or command because the masses are too vast for his grasp."¹⁰⁶⁰ With the war of the mass operational artists lost their personal touch.

"From 1870 onwards, a new civilization had arisen in Europe, based on the enormous growth of railways and the facilities rendered possible by the motor car and lorry. Soldiers had studied these means, not in order to mechanicalize armies, that is to replace muscular by mechanical power, but from the point of view that these means of movement would enable an enemy's frontier to be submerged under a veritable inundation of flesh. Millions of men would sweep forward and, like immense clouds of locusts, would gain victory by sheer weight of numbers."¹⁰⁶¹

The possibilities of mechanization and motorization were not wholly understood. The steam engine provided propulsion for the railway and its influence could not initially be infused into the actual battle. It was of no operational or tactical use to increase the concentration of troops in the vicinity of the battlefield if there was no means of fulfilling the rule Lloyd proposed, namely that "general, who, by the facility of his motions, or by his artifice, can bring most men into action, at the same time, and at the same point, must, if the troops are equally good, necessarily prevail and therefore, all evolutions, which do not lend to this object, must be exploded."¹⁰⁶² Forces need to be concentrated spatio-temporally and those forces which cannot be a part of the equation, should be calculated to produce a suitable reserve..

The ease of having more and more men at the commander's disposal led to a situation in which some were squandered in action. Even with increased and modernized means of transport, it ultimately became "difficult to handle armies of millions, to keep them supplied, and to prevent them clogging the arteries of movement. Their very mass stultified the dreams of Napoleonic manoeuvres in which their creators had indulged."¹⁰⁶³ Soon the warriors awoke from their romantic visions of being modern Napoleons and searched for new ways of concentration of force when they realized they had been beaten by the same concept of mass they had enamored themselves with.

As Martin van Creveld perceptively noted, the concentration of force can be created either in space or in time. Out of these, the latter is "probably even more difficult to achieve. A numerically inferior force will seek to compensate by secrecy and rapidity of movement. It will try

¹⁰⁵⁹ Fuller (1946), p. 117.

¹⁰⁶⁰ Fuller (1946), p. 120.

¹⁰⁶¹ Fuller (1923), pp. 76-77.

¹⁰⁶² Henry Lloyd, History of the Late War in Germany. Cited in Liddell Hart (1978), p. 103.

¹⁰⁶³ Liddell Hart (1936), p. 22.

to keep its opponents separate and guessing about its own intentions. It will concentrate against each one in turn, beating them in detail."¹⁰⁶⁴ This requires mobility and skillful maneuvers. Spatial concentration of forces is inconsequential if they do not arrive at the right time, that is, concentrate temporally as well.¹⁰⁶⁵

In the time of Moltke the Elder the growth spur of the mass armies and their lack of mobility greatly hindered the possibility to practice the art of war through maneuver. Envelopment maneuvers or flanking attacks had resulted in many glorious German victories such as Königgrätz, Gravelotte-St. Privat, or Sedan and Moltke fully embraced the ideas of flanking. Schlieffen even believed the flank attack was "*the gist of the entire history of war*."¹⁰⁶⁶ According to Bucholz size, space and time were paramount in his strategic thinking and right combinations had to be created.¹⁰⁶⁷ Yet, as the number of soldiers in an army increased they occupied more space on the battlefield and flanking a mass army required time. Moltke noted that "*armies of a hundred thousand and more occupy a space of more than four miles. An envelopment of their flanks becomes a day's march, delays the decision of arms to the subsequent day, gives the opponent an opportunity to evade it.*"¹⁰⁶⁸ Attacking the flanks of the rear of the enemy would have to affect a surprise in order to be decisive. When the battle formation of the army is large enough, the time to circumvent it becomes long enough for the defender to prepare for the attack.

The mass kept growing towards WW I. As Bernhardi argued, "numbers will therefore always form one of the most essential factors in strategical calculations, and of success. Yet numerical superiority is not always the most important condition for success."¹⁰⁶⁹ What had worked for Moltke, certainly did not work in the rifle-wars. The idea of amassing troops to the utmost of transport capacity was increasingly difficult since to "adjust it to conditions where one man with a machine-gun might count for more than a score, or a hundred, or sometimes even a thousand, who were advancing upon him with the bayonet."1070 As Liddell Hart eloquently put it "the formula of victory became merely a formula of futility – and death. The more ranks of attackers, the more swathes of dead."1071 Certainly something new needed to be invented. The primary task was to resurrect armor in order to plough through the war without exhausting the supply of men in the fighting age a nation could produce for the military machine to grind. Already in 1923 Fuller perceived a lesson from the WWI that the proponents of effects-based operations paraded as a novel invention. He decried the logic of the mass army and argued that the idea of superiority of numbers traditionally meant men, but that earlier each man was merely a mounting for a weapon. Thus the number and potency of weapons was the decisive factor and not the men.

> "Men, in themselves, are an encumbrance on the battlefield, and the fewer men we employ, without detracting from sufficiency of weapon-power, the greater will be our concentration of strength, for the aim of concentration is as much concerned with securing an army against blows as it is with enabling an army to deliver them."¹⁰⁷²

This is an interesting argument on behalf of professional armies and as a step away from the massive troop concentrations. The object in mind of the operational artist is to produce as great a concentration of weapon power as possible and at the same time employ as few men as possible to wield the weapons. Writing already in the 1920s Fuller propagated amassing fires or effects and not forces. The fewer men there were on the battlefield, the

¹⁰⁶⁴ Creveld (1991), p. 114.

¹⁰⁶⁵ Foertsch (1939), p. 42.

¹⁰⁶⁶ Vego (2009), p. VII-58. Moltke and Schlieffen had an influence on the ideas of Seeckt and he often quoted them. All three men laid an emphasis on maneuver and this led to the ideas of flanking the enemy. See Corum (1992), p. 51.

¹⁰⁶⁷ Bucholz (2001), p. 3.

¹⁰⁶⁸ Moltke (1993), p. 56.

¹⁰⁶⁹ Bernhardi (1914), p. 39.

¹⁰⁷⁰ Liddell Hart (1936), p. 68.

¹⁰⁷¹ Ibid.

¹⁰⁷² Fuller (1923), pp. 34-35.

less devastation the enemy could inflict on them due to dispersal of the fighters. However, once again Fuller perhaps stopped his thought a little before the mark. In order to inflict as serious losses on the enemy as possible, it would be still useful to put into battle as many men as possibly can take part in it as long as they can be equipped with efficient weapons. Therefore, while the initial idea is sound, the logic of war only causes the potential for destruction to grow when more effective weapons are used. The general would still want just as many soldiers as humanly possible to wield these weapons to maximize the damage they can do. However, there is a limit to number of men that is practicable on the battlefield and this had already been reached.

After the fiascos of the WWI the military thinkers began to develop a meaningful new dogma for tactics and operational art. Tanks offered protection for the infantry coupled with mobility and firepower. The new tactics of mechanized warfare was essentially an attempt to make machines perform the task of men, to engage the enemy and pierce his defenses. Superiority in manpower by a horde army could not create a success – only heaps of cadavers.¹⁰⁷³ German military thinkers from Schlieffen onwards clearly recognized that "especially in the period of mass-armies, strategy of annihilation is only possible by continuous movement. Only by movement can rigid fronts be avoided."¹⁰⁷⁴ From the perspective of operational art this was an important development, but the German over-emphasis on operational art and sidelining strategy had dire consequences as the first operations had run their course.¹⁰⁷⁵ Movement and upholding momentum allowed disturbing the stable equilibrium of trenched fronts. Motorization brought about the required mobility but in the aftermath of Versailles even with the best efforts and energy of Seeckt, Guderian, and Hitler motorization and mechanization could not be extended as far as would have been necessary¹⁰⁷⁶.

Since mass armies led to mass destruction of individual soldiers and mass consumption of resources of societies almost every military theorist in the West, most notably Fuller, Liddell Hart and De Gaulle wanted to return to the age of professional high quality armies. They were frightened by the type of army early indust-reality had created.¹⁰⁷⁷

"In the last war we saw armies even larger than the fabulous hordes of Xerxes and Darius – we saw millions and millions of men; such was its main characteristic. We saw the total impossibility of leadership exerting control over these masses. We saw the insuperable difficulties of supplying them. We saw their enormous vulnerability to fire power, and we saw that, like swarms of locusts, they not only destroyed the enemy's country, but devoured the resources of their own."¹⁰⁷⁸

Here is spelled out the view Fuller held of WW I. He wished to see armies that would remain controllable and could be supplied without an unusual strain on the economy. Just like Fuller, Seeckt sought for new solutions. For him the creation of the nation in arms, the mass army, did not lead to military benefits. No matter how profound the struggles, the war would not end in the devastating attack or annihilation on the battlefield.¹⁰⁷⁹ It would

¹⁰⁷³ Even if the destructivity of war surprised most military men in WWI the point Echevarria (2014), p. 213 makes is that it should not have done so. In the texts of the German and other military theorists of the day it was clearly recognized that lethality of the battlefield had dramatically increased.

¹⁰⁷⁴ Ehrfurth (1991), p. 510.

¹⁰⁷⁵ Gray (2007), p. 107.

¹⁰⁷⁶ Concerning the Treaty of Versailles, the harshness of the impact on Germany military and society in general was not as dramatic as German texts seek to convey to the reader. But even in Britain many of the liberals of the 1930s saw Germany as deeply-wronged people by the treaty. On this see Howard (2008), p. 85.
¹⁰⁷⁷ It must be noted here that the Western thinkers were scared of the mass army because of the costs in money and men. The wholesale slaughter of World War I was not to be repeated again. However, characteristic to his style and communist way of thought Sokolovsky among others in Russia interpreted this Western

tendency to favor small and professional armies to be the "*result of the bourgeoisie's fear of the armed working class.*" Sokolovsky (1963), p. 54.

¹⁰⁷⁸ Fuller (1932), pp. 211-212.

¹⁰⁷⁹ Already von der Goltz, writing in the 1880s, had started to question the traditional German emphasis on the battle of annihilation. Echevarria (2000), p. 226. Seeckt, however, was the one who shed the weight of having to plan "new Cannaes" from the German military thinkers.

solidify into trench warfare where ultimately one side is no longer able to withstand the casualties and his manpower, material, and morale are extinguished. Raising the entire nation in arms, according to Seeckt, had reached the end of its line. The *fureur de nombre* had ran its course, mass had become immobile. It could no longer maneuver and reach victory. It was only able to suffocate.¹⁰⁸⁰ The result of suffocating the enemy becomes too costly in terms of men, money and material and the principle of the economy of time is violated. Seeckt's operational art depended on having a clear idea of the interrelations of time, force, and space and how to think ahead, simplify the process and act swiftly to surprise and envelop the enemy.¹⁰⁸¹

Seeckt was forced to favor well-trained and equipped small troops for different reasons than the British and French proponents of mechanized warfare. His concept of a decisive and determined offensive with small but select and well-trained units was born out of necessity – there just was not sufficient numerical strength in the remnants of the decapitated German army. He proposed a professional army of twenty-four divisions with 200 000 men¹⁰⁸². Seeckt's work was a "*starting point for a systematic development with a view to the arming of the nation. The German military art has always been based, in fact, on the use of human masses as numerous as possible, as in 1870 and 1914.*"¹⁰⁸³ In this sense, in the interwar period the Germans followed a doctrine of mechanized mass much in the vein of the Soviet thinkers, but did not have the resources to build the kind of mass they would have preferred. In another sense, they followed the early British views on evolution of a mechanized striking force. They built a great number of simple and relatively cheap tanks as was possible for them instead of striving for highest available technology.¹⁰⁸⁴ As much mass as possible as cheaply as possible and especially as quickly as possible was the paradigm.

The Soviets ridiculed the theories of these Western thinkers at least partially due to political concerns¹⁰⁸⁵. Isserson blamed the bourgeois military thinkers for attempting to replace a "*scientific theory of the conduct of operations with vague fantasies on perspectives for future war*."¹⁰⁸⁶ Triandafillov saw that the capitalist countries had become fearful of the proletarian masses and their subsequent revolution.¹⁰⁸⁷ But it was the serfdom and resource of human mass that Russia and Soviet strategy and operational art traditionally relied heavily on.¹⁰⁸⁸ Thus Triandafillov acknowledged the ultimate goal behind these suggestions for reformation, but argued that

"the best conditions for free maneuver, for extensive tactical and operational art, will be achieved not through a return to the small armies of the armchair warriors, but by the corresponding increase in the mobility of modern million-man armies by improving the technology of transportation assets (employment of vehicle transport, six-wheeled vehicles, wider development of railroads, and so forth)."¹⁰⁸⁹

Political viewpoints aside, there is a profound truth in Svechin's statement "*in the flame of war small states burn up very quickly*."¹⁰⁹⁰ The same applies to its army as well. A 'million-man army' has longer duration on the battlefields even if the war proceeds unfavorably and the

¹⁰⁸⁰ Seeckt (1930), pp. 61-62.

¹⁰⁸¹ Vego (2009), p. I-22.

¹⁰⁸² Corum (1992), p. 29.

¹⁰⁸³ Sikorski (1943), p. 31.

¹⁰⁸⁴ Martel (1945), p. 126.

¹⁰⁸⁵ This tendency to praise the originality of Russian and Soviet though and derision of the Western thinkers makes many of the treatises tedious reading. As for example Bazilevich (1945), p. 3 begins his pamphlet "*The Russian art of war has developed on a world scale as an independent branch of the art of war.*" Some perceptive notions get lost among the propaganda. Tukhachevsky, in turn argued about Fuller's *Reformation of War* that "*there is much of importance and interest to be learnt from it*" but immediately continued that the book was "*a product of muddled*, *eclectic thinking*," Tukhachevsky, cited in Simpkin (1987), p. 125.

¹⁰⁸⁶ Isserson (2013), p. 9.

¹⁰⁸⁷ Triandafillov (1994), p. 29.

¹⁰⁸⁸ Adamsky (2010), p. 43.

¹⁰⁸⁹ Triandafillov (1994), p. 29.

¹⁰⁹⁰ Svechin (1992), p. 181.

idea of a great mass was still sound and only the degree of its motorization and mechanization was to be increased to add to its quality and worth in combat.¹⁰⁹¹

Another important Soviet theorist who discarded the western theorists was Tukhachevsky, who certainly did not do justice to the role Fuller's theories played in fueling Soviet thinking. He seems to have adopted much, but at the same time justifiably argued on behalf of the all-arms battle being superior to the tanks only type of though abundant in the West.¹⁰⁹² Furthermore, he took completely different view on the size of the mechanized army than his Western counterparts. Tukhachevsky's vision was of a mass mechanized army with 260 divisions, 40 000 aircraft and 50 000 tanks which could properly fight out a battle of annihilation¹⁰⁹³. Tukhachevsky and Triandafillov worked together in developing Soviet operational art and specifically deep operation theory. It was the role of the Triandfillov to turn Tukhachevsky's innovative ideas into concrete guidance.¹⁰⁹⁴

In Russia and the Soviet Union the life of a *muzbik* never accounted for much. The West had been abhorred by the waste of human lives in WW I and attempted to minimize the amount of blood to be spilled in the future war. Both recognized that what was needed was an attempt to cut the bounds of static trench-war and restore the glory of mobility to its former place of honor among other aspects of operational art. Soviet Union just chose a different path. It wanted to keep in place the massive million-man armies, but enhance their mobility. It was recognized in the late 30's that the future enemy would likely be Nazi Germany and by that time its strength was evident to the Soviet leadership. The future enemy was understood to be motorized, armored and equipped with a strong air force.¹⁰⁹⁵ The closer the advent of WWII became, the bigger the proportion of mechanized troops grew in all armed forces, but quality was side-tracked in favor of quantity of men.

The difference in perspectives of the military minds in the West and in Russia is exemplified by the attitudes of theorists towards the question whether quality or quantity of troops matter. Russian doctrine focused on mobilization in phases and the 'peak of the war' occurring only after several months of full mobilization.¹⁰⁹⁶ As we saw, even in WW II the armies that ended victorious relied not on quality of small troops operating with boldness, but the superiority of mass, advancing with all bases secured and avoiding risks. Pre-war theorists in the West and especially in Britain spoke for highly professional, small armies¹⁰⁹⁷but still Montgomery with his slow and certain movement was one of the commanders who were not defeated in a major battle during the course of the long war. De Gaulle had other visions;

> "One sees, then, how the professional army, ready to march anywhere at any moment, capable, thanks to the internal combustion engine, of reaching the battlefield in a few hours, able to produce every effect of surprise or destruction that it can furnish from the material at its disposal, in short, constructed in all its component parts with a view to obtaining the most complete and the swiftest local results, is in accordance with modern political conditions. There is a grim relationship between the properties of speed, power and concentration which modern weapons confer upon a well-trained military elite, and the tendency of nations

 ¹⁰⁹¹ For a thorough discussion on the development of Soviet operational art and a discussion whether the operations were indeed "deep" or only dense in the sense of tightly-packed troops see Lalu (2014).
 ¹⁰⁹² Simpkin (1985), p. 17.

¹⁰⁹³ See Kipp (2011), p. 71.

¹⁰⁹⁴ Lalu (2014), pp. 84, 125. Lalu wrote that the two wrote about operational art on different levels but cooperated deeply on creating battle manuals. Since Tukhachevsky was the more senior, often the final products bore only his name.

¹⁰⁹⁵ Zukov (1969), p. 172.

¹⁰⁹⁶ On this see Svechin (1992), p. 200.

¹⁰⁹⁷ Foertsch (1939), p.121 perceptively noted that one of the reasons the British spoke on behalf of small and professional mechanized armies was that as an island-state Britain did not need as large an army as those in continental Europe with long land borders.

to limit the objects of dispute in order to be able to seize them as rapidly as possible and at the least possible cost."¹⁰⁹⁸

Triandafillov's answer to these claims is conservative and harsh. He argued that such a small professional army would risk isolation after penetration deep into enemy territory unless it was followed by a more traditional mass army for the purposes of protection. In his argument "A 'ghasthy' army also has the resources to battle both tanks and vehicle-mounted infantry. States with million-man armies have all capabilities required not only to drive out, but to isolate and destroy small motorized units that have invaded their territory."¹⁰⁹⁹

Another point where he did not see eye to eye with the Western thinkers was the role of the tank in future warfare. While almost everyone in the industrialized West viewed the tank as the future master of the battlefield, Triandafillov reserved this role for another arm. "Thus, infantry and artillery will comprise the basic mass of future mobilized armies. [...] Infantry and artillery will mainly conduct a future war. Tanks (augmenting and partially replacing artillery) will act in direct concert."¹¹⁰⁰ This emphasis on the role of infantry and giving an augmenting role to the tanks is a result of societal structure. At the time of writing Russia was to a large degree an agricultural society where the peasants were an inexhaustible resource. Since the structure of nation was not focused on industrial production, it is understandable that machines played the second violin to the men. This tendency to develop an industrial-age or Second Wave mass army out of agricultural people with the mass production of materiel started doctrinally in the 1920's and is occasionally referred to as the first Military-Technical Revolution in Russia. In contrast the second such revolution occurred in the 1950 and revolved around nuclear weapons and missiles. The third one took place on a philosophical level with the advent of the first clearly Third Wave technologies in the 1970s¹¹⁰¹. But even mechanization of the army was a demanding task to begin with for what was essentially still mostly a First Wave society. A mass of infantrymen was easier to create in Russia than a mass of machines. This led to the idea of maintaining the traditional 'ghastly armies' and supplying them with the modern tanks.

Thus, in order to solve the dilemma of choosing mass or quality troops once and for all Triandafillov and other Soviet military theorists took a somewhat Solomonian approach. The debate over the preference of mechanized and sophisticated troops over mass armies was settled by deciding to attempt to have the cake and eat it, that is, by building mechanized mass armies. This decision shaped not only the outcome of WW II but development or armies for most of the Cold War as well and proved the truthfulness of Bloch's claim that "*mass attracts mass, such is the law of gravitation in war*."¹¹⁰² As long as one party in a conflict relies on mass, it is almost inescapable that the other side has to resort to a mass army as well. In many cases quality of troops is more important than their quantity and mass, since high technology weapons and professional soldiers act as force multipliers. In Russian thought one of the ways of saving time is by being vastly superior in forces. Triandafillov attempted to use his methodical calculations is estimating how long a battle would last. He argued that a battle under

> "most favorable conditions (sufficient superiority in forces overall and in suppressive assets in particular, their uninterrupted commitment, highly-trained forces), an outcome cannot be achieved in less than four-five days. If the forces are poorly trained and are not distinguished by special mobility and agility, these time frames can be increased by a factor of 1.5 to 2, even given a sufficient superiority in forces. It goes without saying that outcome periods can be extended even more, given any shortage of forces, artillery especially. Given an overall shortage of forces, there may not be any outcome: the operation will founder:"¹¹⁰³

¹⁰⁹⁸ De Gaulle (1976), pp. 78-79.

¹⁰⁹⁹ Triandafillov (1994), pp. 27-28.

¹¹⁰⁰ Triandafillov (1994), p. 63.

¹¹⁰¹ Adamsky (2010), pp. 26-28.

¹¹⁰² Bloch (1914), p. 58.

¹¹⁰³ Triandafillov (1994), p. 108.

The logic is that one must be superior to his enemy in numbers, in firepower, in mobility, and in training. The best way to save time in battle is to strive to be superior in every sense. If this is not the case, the result of the battle may be long in coming and it might not in the end be favorable. It must be recognized that even if superiority of numbers is a prerequisite of victory, it is often achieved through efficient leadership than a mere comparison of numbers. As Ehrfurth wrote, "absolute superiority everywhere is unattainable; hence it must frequently be replaced by relative superiority somewhere. To achieve relative superiority somewhere is the main objective of almost all military movements and the essential purpose of generalship."¹¹⁰⁴ To achieve the necessary conditions for breaking through the enemy defensive formations, such spatio-temporally concentrated superiority has to be created by concentrating one's forces or their effects. Furthermore, the rapid breakthrough in the initial stages of a battle is important to achieve in order to win time. This is due to the fact that the defender reinforces his front lines continuously from the initial clash onwards. In the best case, if the breakthrough is quick enough, the defender is not able to bring his reserves into action and initiate a counter-attack to check the breakthrough. Triandafillov wrote that,

"at the same time combat is joined, the defender adopts a whole series of measures to reinforce the forces under attack. As indicated above, immediate reserves initially will flow there. Deeper reserves and even forces taken from other fronts (or sectors of the front) will also flow there if the site of the unfolding events is in a sector important from the standpoint of the conduct of the war (or of operations). Duration of an operation greatly depends on the number and rate of accumulation of new forces by the defense. If reserves begin to arrive immediately and in sufficient quantity, an operation may then enter a new phase and last a very long time, as was the approximate case in the March 1918 German offensive."¹¹⁰⁵

The Soviet theorists took the view of adding momentum to the mass. Motorizing mass armies and using them in deep operations in such a manner that the sheer weight and number of advancing units would increase the pressure on the defender and simply not allow for him to bring the offensive movement into a standstill. If we take a suitable analogy, a T-Model Ford could be stopped quite easily and quickly. The mass of a freight train, no matter how one attempts to halt it, keeps it grinding forward in its tracks for a considerable distance.

This creates a paradox. Mobility brings victories, but needs to be supported by a huge mass of support in form of troops and materiel. Only a relatively small part of a modern army is truly mobile and the supply columns have grown and grown. In a spatially bounded area of operations, no matter how extensive the area is, unless there is a strategically decisive objective such as the capital of a nation, sooner or later he wins the campaign who can guarantee his forces all the supplies they require.¹¹⁰⁶ Mass slows down movement and limits mobility of the troops. But simultaneously mobile parts of the army require a huge mass to perform the supporting functions and the more time passes in the campaign, the likelier it becomes that one with mass will turn out victorious. Once the offensive of the mobile forces is curtailed, mass has to be used. Once the sweeping maneuvers cease when the defender has been able to slow the attack and force it into a standstill, only amassing an amount of troops that far surpasses those of the defender can restore mobility.

The focus of mechanization was in tanks and armored troop carriers. The idea was to decrease the number of infantrymen and replace them with the tanks.

"The supersedure of railways by cross-country machines vastly reduce the numbers of modern infantry, for, as I have shown, the horde army is the creation of the railway. Again, the reintroduction of armour will carry with it a similar influence, consequently the most destructive and easily destroyable arm in modern warfare will in bulk disappear."¹¹⁰⁷

¹¹⁰⁴ Ehrfurth (1991), p. 394.

¹¹⁰⁵ Triandafillov (1994), p. 110.

¹¹⁰⁶ This is among the reasons why Montgomery was able to defeat Rommel in the North African deserts. ¹¹⁰⁷ Fuller (1932), p. 273.

The purpose of mechanization was to eliminate the horde armies and as a byproduct to decrease the casualties a nation is likely to suffer during a war. The infantryman, out of all players on the battlefield, is the most destructive and simultaneously easiest to destroy. The proponents of mechanization wanted to save lives by placing them behind armor and use the mobility of these armored vehicles to effectively balance the force the enemy had in his infantry. The purpose was noble, but ultimately led only to mechanized horde armies either by the creation of mechanized million-man armies Triandafillov propagated or through supplementing traditional armies with a mechanized component. As de Gaulle wrote,

"the moment has come when, to our mass of reserves and of recruits (the principal element of national defence, but one which is slow to mobilize and clumsy to set going, and whose gigantic effort can only be used in the last degree of danger) we must add a manoeuvring instrument which is capable of acting without delay, that is to say, one which is permanent in its force, coherent, broken to battle."¹¹⁰⁸

The mass reservist army is a strong defender of a country, but cumbersome to fully mobilize. Liddell Hart noted that besides the slow mobilization "*in a democratic country there is a natural inclination to delay its mobilisation. It can never have the same readiness for action as a professional army.*"¹¹⁰⁹ Relying only on quality would be harmful on the long run since the combat value of both armies levels out as the professionals are diluted with replacements and the inferior mass becomes battle hardened.¹¹¹⁰

Experience has shown that sooner or later the forces on both sides will swell out of proportion when compared to those available in the beginning of war. The Russians, with their concept of million man armies were in the course of WWII able to show the British and French proponents of small and professional armies their errors. War should be started without delay, with an instrument that is already fully operational, but continued with reserves whose number should be increased as much as possible as soon as the society is able to churn them out. At the start of the war the professional army has a huge advantage since,

> "they will be able to pass in a single bound from peace to war, capture valuable spoils and spread confusion among the enemy during his mobilization period. Their objectives will, of course, be limited by the means which will have to achieve them. It will not be a question of destroying, by this initial attack, all the forces of the enemy, but one of getting in the first blow. In modern conflicts, where everything has its percussions and repercussions, it is well to show one's determination and to spread anguish beyond the frontier at the first opportunity."¹¹¹¹

While De Gaulle's, Fuller's and Liddell Hart's emphasis on having a professional army is unabashed, there is no denying that some reasons for their preference are justified. Among these is the idea that the fact of a professional army taking less time to mobilize for war paradoxically creates a situation in which the conscript mass army is a more provocative way to uphold national defense. A reservist army will not have perfect cohesion immediately after mobilization and thus in the beginning are not suitable for difficult operations.¹¹¹² Liddell Hart argued that such an army

"is inherently less ready for war than a professional army, and therefore more conducive to war. The explanation of the paradox is that the loss of time has to be made up by rapidity of mobilisation in order not to be caught at a disadvantage. Now, the mobilisation of a vast citizen army is a process impossible to camouflage, and compelling other nations to follow suit:"¹¹¹³

¹¹⁰⁸ De Gaulle (1976), pp. 42-43.

¹¹⁰⁹ Liddell Hart (1950), p. 336.

¹¹¹⁰ Svechin (1992), p. 181.

¹¹¹¹ De Gaulle (1976), p.133.

¹¹¹² Sikorski (1943), p. 91.

¹¹¹³ Liddell Hart, (1927), p. 238.

Saving time in this particular instance in counter-productive. The bigger the reservist army is the more of a threat it creates for adjoining nations once full mobilization commences. Liddell Hart argued that "a professional force has the quality of constant yet unprovocative readiness, and is thus no more menace at a crisis than at a time of quietude."¹¹¹⁴ There is no sudden increase in strength by a troop build-up, no mobilization and thus no elevated threat level. Thus, strangely, the professional army with its smaller size but almost instant preparedness to fight is the more peaceful option. A standing professional army, no matter if its strength in numbers is closer to Triandafillov's views than the Western ones, may keep international tension on a high level. But the creation of a mass army out of the population produces a shock-wave in the tension and sends a strong signal of hostile intentions.

To summarize, the problem of quality versus quantity is closely related to time. The massive nation in arms type of army has its advantages, but it comes at a price. Time is lost in mobilizing and supplying the huge reservist army. Thus its suitability to rapid operations can be questionable. The small, mobile and professional army loses no time in the early stages of a war. There is no need for large-scale mobilization, no time lost in training and the army is ready to carry out its tasks practically instantly. Furthermore, as Svechin noted, mobilization is a continuous process instead of a single event in which general mobilization occurs at the same time.¹¹¹⁵ Nevertheless, while a mass army is slow to operate, once it gains momentum and experience, the smaller but more professional army is apt to be crushed. If a nation has the resources and the will, it would be best to strive to model its army along the lines proposed by Triandafillov. This would be the time-winning solution, but since this rarely is an option, in order not to lose time, one must include a small, mechanized and professional elements in the army to initiate action and big reservist component to be mobilized with the protection of the professional part.

There is no denying that this is a compromise, but one dictated by necessity. The ratio of these two forces should be carefully calculated so that no extra time is lost in getting the entire field army functional but bearing in mind the relative costs of both components. The best compromise is a marriage of rapid operability with optimal cost-efficiency. Time is money and in this case to minimize the loss of time in the beginning of a war would mean spending exorbitant amount of money.

The efficiency of our contemporary weapons and their destructive potential coupled with the increased respect for human lives ensure that the era of the 'million man armies' has ended. However, even at the dawn of the post-Cold War era Odom argued that "for the next decade or so, quantitative factors will also continue to define the nature of modern warfare. High quality but small forces stand no chance against larger high-quality forces."¹¹¹⁶ Even during the Cold War quality dominated quantity and there was no foreseeable change¹¹¹⁷. Quantity is still meaningful, but quality of the troops is the main factor. The level of technology we have requires professionals to handle the weapons. Vego estimates that "the size of one's land forces and methods in planning and conducting major offensive and defensive land operations will continue to evolve. In the future, major land operations will most likely be conducted with much smaller but more capable forces than they are today.²¹¹¹⁸ Forces in the future will be equipped with higher level of technological weapons and gadgets, they will be better trained and more professional, but there still will remain a considerable number of men involved in fighting our wars. Better weapons and better training will enable the actual number of troops to diminish. But, again, it is not quality vs. quantity but finding a balance between the two and their respective capabilities. Perhaps the bottom line can still be found in Svechin's statement that "Reality

¹¹¹⁴ Liddell Hart (1936), p. 22.

¹¹¹⁵ Svechin (1992), p. 200.

¹¹¹⁶ Odom (1993), p. 60.

¹¹¹⁷ Odom (1993), p. 154.

¹¹¹⁸ Vego (2009), p. V-56. For a different and well-argued tendency of numbers of troops remaining constant see O'Hanlon (2015), pp. 88-90, 133, 136, 138-139.

provides a very firm answer to the question: one should not sacrifice quality or quantity too much."¹¹¹⁹ The same principle reversed is just as valid.

5.7. EMPLOYING MASS FROM FORCE CONCENTRATION TO DEEP OPERATIONS

"One must attack!!! Cold arms – bayonets and sabres" Create confusion and take possession without losing a moment."¹¹²⁰

Economy of force as a principle leads to spatio-temporal compression of violence. The quicker, faster and stronger the attack is, the more violent the shock effect and the more likely is a quick result of the battle. Such compression of force causes a steep rise in casual-ty rates, but it lasts for only a short while.

"A rapid attack generally entails fewer losses on the whole, although the latter may appear appalling for the time being. Rapidity is an element of particular importance in the tactical offensive. Frederick the Great thus teaches in his General Principles of War: "Therefore, the sharper the attacks are, the fewer men they will cost."¹¹²¹

Economy of force thus resonates in economy of casualties and wounded on both sides, but only if the principle is applied correctly. In WW I Passchendaele or Flanders serve as examples where the principle was only partially understood. Concerning Flanders, where the British defense was strongest, Ludendorff wished to gain victory through crumbling "*the hostile edifice by closely connected partial blows so that sooner or later the whole structure would collapse* (...) It will be an immense struggle that will begin at one point, continue at another, and take a long time; it is difficult, but it will be successful."^{A122} As a result of improper use of forces the assailant could not bring about a decision to the battle with his attack. Ludendorff managed to erode the British but simultaneously bled his own troops white at a time when the German army could not have afforded it. Thus the massive casualties on both sides, created in a relatively short time, were of no use operationally.

As Simpkin noted, "*military men being great imitators of success, the size and character* of Napoleon's forces sparked a trend towards mass armies, which soon combined with the railway to produce the 'nation in arms' concept."¹¹²³ Napoleonic revolution in tactics was copied and applied in industrial wars quite unsuccessfully. A copy is never as good as the original and if the reasons for the success of the original are not properly understood, the result is not favorable. Indust-reality with its mass-production of weapons and ammunition mass-produced mass armies that could no longer be concentrated like Napoleon did. Even if the armies could attack at the same time, their sheer size grew the decisive 'point' into a vast area of terrain. The "point" stretched into tens or hundreds of kilometers. Mass armies created a situation in which all available force could not be used simultaneously at a given area.

While the principle of economic use of force dictates that there must be enough force to ensure the desired effect, it is useless to amass such a force that congestion does not allow all of its elements to participate in action. This suggests that there is a specific amount of force or mass to be employed economically in any given situation and its exact amount is specific to that situation only. Once a suitable force is determined any

> "increase in mass contributes nothing in theory, and brings a nest of problems in practice. One thus arrives at a concept of a 'sufficient mass' which it is normally pointless to exceed at all, and always pointless to exceed by more than a modest margin of insurance."¹¹²⁴

¹¹¹⁹ Svechin (1992), p. 179.

¹¹²⁰ Suvorov, cited in Longworth (1965), p. 238.

¹¹²¹ von der Goltz (1906), pp. 157-158.

¹¹²² Ludendorff, cited in Goodspeed (1966), pp. 241-243.

¹¹²³ Simpkin (1985), p. 4.

¹¹²⁴ Simpkin (1985), pp. 134-135.
We have here a definition for sufficient mass and the modest margin on insurance is there just in case something unexpected occurs and, for example, not all of the troops make it to the site of the battle. Even if the Napoleonic era was not able to use railways to create force concentrations, Jomini recognized the importance of avoiding exaggerations in concentration. According to him one should "*keep the mass of the force well in hand and ready to act at the proper moment, being careful, however, to avoid the danger of accumulating troops in too large bodies*."¹¹²⁵ Too much mass is then clearly harmful since excessive mass cannot be operated with rapidly. Its movements slow down at some point to a pace when it no longer can answer the demands of the situation. Of whatever mass is available, all that can be brought to bear on the enemy have to be utilized but, as Clausewitz argued, "*nothing is more important in strategy than ensuring that the forces that are to carry out an attack are not used in vain, that is to say, that they are not merely thrust into the air.*"¹¹²⁶

But it is important to utilize that "modest margin of insurance" and within this category can be considered to be the reserves. It is necessary to create a suitable reserve for any operation. The size of this reserve must, once again, be based on estimation on what is a sufficient size for it and how big exactly is the amount of troops that could be brought into the fight. This sufficient mass of reserves should not be exaggerated. Simpkin argued for the lowest limit to mass as well. For him the massive 1960's tank armies of the Soviet Union could not be used to maneuver with and thus represented an excess of mass. The other extreme in order to be able to respond to changes in the situation was a

> "mobile force with enough mass to ensure flexibility. This sets a lower limit to mass. Thus the need to maintain tempo and concentration in time on the one hand, and the need for flexibility on the other, impose upper and lower limits of mass for a given mission and situation."¹¹²⁷

Thus, it was possible to use too much mass and force or too little of it. The idea of economic use of force is dependent of time and place of employment of troops. The principle is sound but its employment must take into account situational demands that change not only from one time-period to another, but according to the type of forces used and above all, the nature of the situation itself. Achieving just a right amount of mass to be used at a given time is an art in itself. Armies of today still recognize the validity of the principle of economy of forces. Nevertheless, especially in the smaller armies this principle often is out of perceived necessity interpreted falsely. Foch expressed the original idea by claiming that

"economy of forces is the art of pouring out all one's resources at a given moment on one spot; of making use there of all troops, and, to make such a thing possible, of making those troops permanently communicate with each other, instead of dividing them and attaching to each fraction some fixed and invariable function; its second part, a result having been attained, is the art of again so disposing the troops as to converge on, and act against, a new single object."¹¹²⁸

We can thus see that the original idea of economy of forces was to concentrate as much force as possible at the same time in the same place. Today, we often interpret economy of force as using the least amount of force possible based on estimations of how little is enough to still ensure victory.¹¹²⁹ This approach is highly problematic, but the problems are often forgotten during long periods of peace. The less force one uses, the smaller is the shock impact on the enemy and when the odds are not overwhelming at a particular time in one particular spot it will take longer to finish the battle. And as the time spent in fighting increases, so do the casualties. Economy of force meant using a vast numerical superiority to gain a quick victory. The example of economy of force is only one of the

¹¹²⁵ Jomini (2007), p. 151.

¹¹²⁶ Clausewitz, cited in Bassford et al (2010), p. 65.

¹¹²⁷ Simpkin (1985), p. 135.

¹¹²⁸ Foch (1920), p. 51.

¹¹²⁹ See Heuser (2002), pp. 86-88 on Clausewitz's ideas on how the economy of force should be applied, that is, bearing down on the enemy with all available force.

many temporary misinterpretations of the principles of the art of war and their utilization in a specific time and place. When Frederick's idea of the oblique order in employing mass was later preached as the infallible rule of winning all battles Jomini commented, "*there is but a step from the sublime to the ridiculous*."¹¹³⁰ How easy it is to take a principle and apply it in an unsuitable manner.

On occasion one can find in the texts of classics strange guidance as to how force should be used. An example of this is attacking everywhere at the same time and still emphasizing force concentration. Foch is among those who seem to contradict themselves. He wrote about the decisive point and simultaneously concentrating all the force there. He similarly argued that "the attack on the whole front must, of course, be resumed at the same time. All the troops of the preparation then turn to execution."¹¹³¹ This is completely juxtaposed to the principle of economy of force. If one requires the entire front to attack at the same time, force is wasted and casualties pile up in all those places where the attacking formations do not have clear numerical superiority. Undoubtedly the entire defensive formation is engaged in battle at the same time, but there is no reason dictated by the tenets of operational art to do this. Engaging the whole front at once does not prevent the defender from using his reserves since they likely await orders for counter-attack in the depth.

Issersson and other Soviet theorists emphasized the idea of consecutive operations, each following the previous and exploiting its gains in close temporal succession. Even if Soviet operational art invented the concept of deep operations¹¹³², closely following each other and building on the successes of each preceding operation, this was only a relatively novel invention since the art of war at the time could be expressed in Ehrfurth's crude summarization of Clausewitzian thought.

"Everything has to be subordinated to the intention of bringing "the maximum of force into battle" at the decisive point. It is a law that heavy blows must be concentrated in space and time. All the advantages of surprise are sacrificed if one attempts to reach victory not by one big blow, but by several simultaneous and successive actions."¹¹³³

Milan Vego in turn credits Fuller with the first theory of deep operations¹¹³⁴ but also von der Goltz had already written about the same idea. "*The rapid repetition of blows considerably adds to their weight, since each blow is not merely felt for the moment, but its after-effects last a considerable time. The avalanche increases in size and weight only whilst it is rolling, and this applies to success in war.*"¹¹³⁵ The Soviet thinkers merely gave the established idea a doctrinal form. There rarely are truly novel innovations in warfare, but more or less adequate interpretations, reformulations and adaptations of old principles. The maxim of spatio-temporally concentrated heavy blows has essentially remained unchanged.

The Soviet invention of deep battle and deep operations was an inventive method of abiding to the same principle different means of temporizing. To some degree the emphasis of depth was based on cultural, geographic and historical reasons. The Soviet Union had enormous depth to use against its enemies and this depth assuredly was one of

¹¹³⁰ Jomini (1992), p. 57. There was nothing actually new to the Frederick's idea of attacking in two lines, each line echeloned, but Frederick was able to make it efficient and flexible through precision and discipline and exact movements of the troops. See Colby (1943), pp. 89-90; Foertsch (1939), pp. 59-60. Praising the oblique order as an all-encompassing key of victory was ridiculous, but resulted from miscomprehension of the advantage Frederick had over his enemies. Bülow (2013), pp. 157 -162 admitted that Frederick was the *primus inter pares* among the users of the oblique order, but argues it was before he used it to attack the flanks of the enemy. The ridiculousness was a result of others using the diagonal step in closing in on the enemy. Nevertheless, as in many other instances, what worked once became an established practice and ultimately ended as almost a parody of itself. On degeneration of Frederick's ideas of order, see Creveld (2008), pp. 355-356.

¹¹³² Triandafillov (1994); Isserson (2013). See also Lalu (2014), pp. 125-146 for a thorough summary of the theory.

¹¹³³ Ehrfurth (1991), p. 517.

¹¹³⁴ Vego (2009), p. V-25.

¹¹³⁵ von der Goltz (1906), p. 218.

the factors why Napoleon failed in his invasion.¹¹³⁶ The other main justification for the doctrine rose from the reliance of Soviet operational art on employment of mass. How could the mass be utilized in a battle? This is a problem that arose simultaneously with the million-men armies. The rationale stated that since not all force could be used at the same time one should calculate the theoretical limits to the amount of force that could be so employed. This would create the maximum and optimal limit to the strength of the attack.

As Isserson noted, "*huge, multimillion-man armies, fully equipped with modern armaments, have no other prospects for use on the contemporary field of titanic battle, except those delineated by the concepts of the deep operation.*"¹¹³⁷ Mass army had potential for creating a huge reserve, the rationale of concentration dictated the need to create a second spearhead to continue the attack at the very same point if the first force concentration had failed and if it had succeeded in creating a break-through, to continue the attack into the depth of the defensive formation. Naturally all possible force should be used simultaneously, but if there is a surplus of troops, they can be used consecutively to cause even more damage.

Nevertheless, in order to maximize the edge gained, the enemy must not be allowed even a short period of recuperation from the initial attack. The consecutive or follow-up attack must be in immediate succession. This is a demanding task for all commanders and the stress of burden is elevated for those higher up in the hierarchy.

> "The unbroken continuance of the operations demands great intellectual energy on the part of the general. We must remember, that whilst the war lasts, there is for him literally not an hour of rest, not one in which the responsibility weighing upon his shoulders slumbers. The night is as the day, and forms no exception."¹¹³⁸

Guderian was a practical soldier and accustomed to presenting his ideas in short and clear form. When it comes to the prerequisites for successful offensive he wrote that "we may summarize the requirements for a decisive tank attack by the concepts of: suitable terrain, surprise and mass attack in the necessary breadth and depth."1139 These are current concerns even today. Terrain can be a hindrance to tanks, since some marshy areas, thick forests, deep snow or abundance of large rocks may be impassable to tanks and or at least drastically slow down the attack. Surprise as an element is also concerned with speed of the attack and indirectly stealing time from the enemy. While time is often considered to be the fourth dimension, breadth and depth are the other two dimensions that are fundamental to land warfare. Mass is a great multiplier of force and, as Guderian perceived, mass can be diminished by using too much breadth in the attack. Guderian only argues that breadth and width have to be "necessary." There is no rule of thumb and the operational artist must balance the factors so, that mass and speed suffice for a suitably deep penetration and not attempt to make the area too wide. Widening the area of attack just as elongation of the duration of the attack disperses mass and deducts from the momentum, thus causing the penetration to be perhaps too shallow. The attacker must evaluate the interrelations of time and space when estimating the number of troops needed for the pursuit or the advance into the rear of the enemy. Triandafillov argued that

> "a powerful crushing blow normally requires, first, that the attacker's pace does not lag behind the rate of withdrawal of the defender's main forces and second, that the attacker has been provided with the capability to penetrate into the depth of the enemy territory to a distance equal to the length of the enemy front under attack. Operations designed against an enemy occupying a front of 350-400 kilometers require a depth of at least these 350-400 kilometers of accelerated pace."¹¹⁴⁰

This gives us a scope of the depth one had to be able to penetrate to really inflict serious damage in the depth. Thus, if one army corps wants to extend the breakthrough it must be

¹¹³⁶ Leonhard (1991), p. 56.

¹¹³⁷ Isserson (2013), p. 3.

¹¹³⁸ von der Goltz (1906), pp. 218-219.

¹¹³⁹ Guderian (1992), p. 181.

¹¹⁴⁰ Triandafillov (1994), p. 148.

done in many successive operations since a depth exemplified by Triandafillov could be reached only by several attacks following one another. Nevertheless, in each of these operations the same principle applies. Time is not to be lost since the enemy will be moving in reserves from the moment it realizes the seriousness of the situation. A company will use its reserves for counter-attack just as an army does. The number of men is smaller and the reaction time is quicker for a company than for a division. As soon as the velocity of attacking units peters out, new, fresh units must be prepared to carry on the advance until the ultimate objective is reached. The beginning of the successive offensive depends on

"how long it takes to bring forces up to strength, replace equipment losses, accumulate new ammunition reserves, and complete the restoration of railroads and dirt roads. Railroads are the greatest choke point requiring the greatest amount of time and the element upon which all remaining problems depend."¹¹⁴¹

If, as Triandafillov wrote, the railroads cause the most probable choke point in keeping the subsequent attacks of deep operations in motion, the answer is to provide the troops beforehand with extra supplies of the most crucial materials and ensure alternative means of transport for the rest. The troops in retreat will attempt to destroy roads, bridges and railways and thus supply convoys require tracked vehicles for maximum mobility. A company or a battalion may be able to retain its movement into the depth calculated in the equation of Triandafillov, but tactical victory is not enough and to make it operational, the temporizing of the follow-up force has to be considered.

This type of a method of attack would not have been applicable prior to motorization and mechanization of the forces due to insufficient mobility. Muscle power could not bring the second attack to bear on the enemy in quick enough succession. The idea of setting the tempo for deep operations was not successive attacks with a discernible time-lag between the concentrated blows but employment of successive forces to keep the blow the defender suffers constant for a prolonged period of time¹¹⁴². As Isserson put it,

> "for us a future operation will no longer be a broken chain of interrupted battles. It will be a continuous chain of merged combat efforts throughout the entire depths. It will be a vast sea of fire and combat, spreading across the front as in the World War, but blazing through the entire depths in future war."¹¹⁴³

With mechanized troops the movement across terrain was rapid enough that when the first and second shock wave of attack followed each other, the second would be able to continue its attack practically without delay. If the waves were properly timed, the initial shock brought on the defender would not abate. Rather its momentary nature would be prolonged and upheld. This should not be understood as keeping the enemy under constant pressure but as prolonging the impact of the shock. There is a huge difference between the two. The benefits potentially gained are lost immediately if the temporal succession of attacks is not immediate. If the enemy has been able to repulse the first attack and even for a moment to recover from its shock a second similar attempt does not hold much greater chances of success. However, by prolonging the shock, making the 'instant last longer', the devastating effects of shock and surprise accumulate. Liddell Hart provided us with an explanation why a shock effect is so valuable in operational art by arguing that

"decisive results come sooner from sudden shocks than from long-drawn pressure. Shocks throw the opponent off his balance. Pressure allows him time to adjust himself to it. That military lesson is closely linked with the general experience of history that human beings have an almost infinite power of accommodation, to degradation of living conditions, so long as the process is gradual."¹¹⁴⁴

¹¹⁴³ Isserson (2013), pp. 47-48.

¹¹⁴¹ Triandafillov (1994), p. 156.

¹¹⁴² As Glantz (1991), p. 12-13 noted, the theory of successive operations of the 1920s was grounding for the theories of deep battle and deep operations of the 1930s and since they were constructed with scientific methods, they remained for a long time an element of Soviet operations.

¹¹⁴⁴ Liddell Hart (1946), p. 25.

The more rigid the operational art and battle plan of the enemy are, the greater is the impact of shock. If damage is dealt simultaneously its effects are multiplied. If pressure and losses the enemy suffers rise linearly and accumulate over time, it is more likely that the enemy commander and his operational plan can be adjusted and corrected to answer the needs of altered conditions. A shock effect, due its unexpected and momentary nature, is more likely to derail the operational plan, because no matter how flexible it is and how much plasticity it has, the plan may not be able to rebound. Accumulating the effects is an attrition-based approach while in designing decisive operations the ultimate object is to synchronize effects so that they occur simultaneously. *"The ability to bit many high-value targets simultaneously gives us the wherewithal to employ a strategy of shock and ane that can bring a situation to a conclusion far more rapidly than an attrition-based approach."*

It should, however, be understood that the shock should be spatially concentrated as well. Otherwise the above would be an oversimplification just like a claim that the more massive the effect of concentration is, the greater the shock. The issue is not quite as clear-cut. It seems that the need for temporally concentrated, that is, synchronized and perhaps simultaneous effects, is a constant requirement, but the spatial locus of the effects and their quantity are dependent on the functions of the targets. Lesser amount of effect on more important targets that furthermore are co-dependent of each other is likely to result in greater shock. As Albert's et al. put it, "shock and awe are achieved not simply as a function of the number of targets destroyed, but as a result of the destruction or neutralization of significant numbers of critical targets within a short period of time and/or the successful targeting of the right target at the right time."1146 Not all targets have to be hit, but the crucial ones have to be taken out simultaneously, if possible. Conceptually this is an extension and a modification of the old Soviet deep operations. As Tukhachevsky wrote, "modern means of neutralization, employed on a mass scale, put within reach the possibility of simultaneous attack and destruction of the entire depth of the enemy's tactical defence."4147 Both methods call for widespread attack, but in the Soviet case it could be attained only through maneuver and not precision strikes. Long-distance weapons also extended the reach from tactical to operational and strategic levels. Furthermore, abiding to the idea of deep operations the shock-effect has to be maintained by successive waves or recreated time after time. This requires a high level of skill in temporization and synchronization from the planners and a profound understanding of the nature of the enemy in order to make the right choices.

No matter how perceptive Triandafillov and other early theorists of deep operations were, they were too tied to the means of the past war to be imaginative enough to set forth a proper vision of future wars. This is evident in Triandafillov's idea that "modern combat is unburried and is conducted exclusively with rifles, machine guns, artillery, tanks and armored vehicles."¹¹⁴⁸ The "unhurried" character was proven untrue time after time in the course of WWII. Speed was to become the essence of mechanized warfare. Combat was a race of which side was the quickest to plan and execute and only hurried and elevated pace allowed for substantial gains to be made. The attacker had to not only seize initiative but also throughout the battle and operation maintain a more rapid pace than the defender. Thus, to summarize the execution of an attack in the mechanized age, Guderian can be cited; "The tank attack must be carried out with utmost speed, in order to take advantage of the surprise effect, penetrate deep into the hostile front, prevent the hostile reserves from going into action, and develop the tactical gains into strategic gains"¹¹⁴⁹

¹¹⁴⁵ Alberts et. al. (2000), p. 107.

¹¹⁴⁶ Alberts et. al. (2000), p. 184. The idea of shock and awe was an attempt to lay out a new paradigm for U.S. defence planning in the mid-nineties. It took principles of the art of war and tried to build an entire system of waging war upon them. On shock and awe see Kagan (2006), pp. 219-223, 261-265.

¹¹⁴⁷ Tukhachevsky, cited in Simpkin (1987), p. 39.

¹¹⁴⁸ Triandafillov (1994), p. 60.

¹¹⁴⁹ Guderian (1937), p. 37.

As Sloan summarized it, the whole development pattern of the military transformation theories from 1990s onwards have attempted to make the shift from massive and heavy armies of the Cold War period to lighter forces that could be operationally deployed in different theatres around the world.¹¹⁵⁰ It seems as if the pattern of development in warfare has again completed a full circle. The jargon and the emphasis is the same as it was in the case of Britain and France with their colonies all over the world and a wish to limit the size of the military after World War I. During the Third Wave we favor quality and deployability as time-saving and victory-winning characteristic of the armed forces. Perhaps some new development sooner or later causes the cycle to make yet another revolution and cause us to favor quantity again.

5.8. INCREASING MOBILITY AND ACCELERATING VELOCITY

"Move with lighting speed either to attack or defend. Talent and nimble feet will give you the upper hand."¹¹⁵¹

To accomplish more and to do it better than the enemy in a given time frame is one of the high points of operational art. Napoleon built roads and waged his war primarily by marching.¹¹⁵² He was able to use marches efficiently in his operational art and excelled in controlling movement. He had a certain set pace for marches he adhered to. According to Jomini, his system was "to march twenty-five miles a day, to fight, and then to camp in quiet. He told me that he knew no other method of conducting a war than this."¹¹⁵³ There was, in other words, an escalated pace of movement that did not vary. This made Napoleon predictable at least in retrospect, but the pace itself created the surprises. In the words of Liddell Hart "the quickened rate of strategic and tactical movement was the root of the French successes and made possible that rapid transference of force and bewildering 'reshuffles' of disposition whereby the French multiplied "mass by velocity."¹¹⁵⁴

Napoleon was a master logistician and his armies moved with better coordination and especially speed than any of his contemporaries. The benefits were immense and are thus described by von der Goltz; "*That an army which excels in marching enjoys great superiority over its opponent, follows from the simple fact that its commander is always in the position of being able to mass his troops more quickly and can thus attack with superior numbers*."¹¹⁵⁵ The troops were unprofessional and not properly drilled according to the existing standards. At the time it was customary for armies to march at 70 paces per minute and Napoleon's men substituted it to 120 paces per minute.¹¹⁵⁶ They did not have the practice to "*conform to the orthodox slow step and the quick step became normal for marching and fighting – a sacrifice of solidity and symmetry to speed. The quickened rate of movement enabled the French to outmanoeuvre their opponents on the battlefield*."¹¹⁵⁷ No doubt Napoleon understood the deficiency of his troops in drills and chose to take advantage of the situation. Napoleon discarded those parts of repetitive drill training that he did not consider beneficial and focused on enhancing the mobility of his

¹¹⁵⁰ Sloan (2008), p. 5.

¹¹⁵¹ Ho Chi Minh (2008), p. 27.

¹¹⁵² Delbrück (1990d), p. 423. Napoleon considered Marlborough as one of the great captains and certainly the two men had the same idea of campaigning by rapid movement and thus surprising the enemy. See Colby (1939), p. 39.

¹¹⁵³ Jomini (2007), p. 100. According to van Creveld, however, Napoleon himself travelled much more during the day, either in carriages or horseback, to carry out his duties as commander. Sometimes it was as much as fifty miles a day. Creveld (2011), p. 18.

¹¹⁵⁴ Liddell Hart (1932), p. 73.

¹¹⁵⁵ von der Goltz (1906), p. 131.

¹¹⁵⁶ Liddell Hart (1932), p. 73.

¹¹⁵⁷ Liddell Hart (1932), p. 66.

troops. Moreover, the benefit of Napoleon's mobility was two-fold. He exploited it both "as a means to surprise his enemy, and also to ensure his own security."¹¹⁵⁸

Napoleon was often outnumbered by his enemies and had to rely on skill and speed in his operations rather than material superiority. Napoleon's original mathematics of war allowed him to overcome this hindrance of numerically inferior troops. He argued that the strength of an army, "like the power in mechanics, is estimated by multiplying the mass by the rapidity; a rapid march augments the moral of an army, and increases all the chances of victory."¹¹⁵⁹ If the mass was inadequate to fulfil the tasks of the army, the numerical comparison could be altered by increased mobility of the troops. Napoleon was offspring of the French Revolution that "introduced the system of divisions, which broke up the excessive compactness of the old formation, and brought upon the field fractions capable of independent movement on any kind of ground."¹¹⁶⁰ Napoleon restructured his armies to work in smaller formations and by making them march rapidly and increasing their speed as formations in the battle itself, he was able to use them to defeat numerically far superior enemies.¹¹⁶¹ He understood that time saved on strategic and operational levels in the movement of armies and on tactical level in the smaller and more agile battle formations had a direct relation to the strength of the army, or rather, on its enhanced performance. In his equation mass multiplied by rapidity equaled capability. Rapidity is about being able to carry out a certain task using less time than is commonly required. We begin to see time as a factor that must be included in all calculations of forces.

A profound understanding on the need to be as fast as possible in all of one's actions can be found in Frederick's maxim that "*promptness contributes a great deal to success in marches and even more in battles. That is why our army is drilled in such a fashion that it acts faster than other. From drill come these maneuvers which enable us to form in the twinkling of an eye.*"¹¹⁶² He used discipline and drill to achieve a slight margin of mobility over his enemies enabling his to strike before the enemy was prepared for it.¹¹⁶³ Herein is an important thought to keep in mind. Mobility is always relative in operational art. One needs to be able to execute movement more rapidly than his enemy.¹¹⁶⁴ There is no requirement to be as rapid as possible, especially in those cases when increased speed of movement increases the potential to make blunders. It is necessary, however, to be faster than the enemy is in his similar actions. Based on calculations and estimations of the different in rate of movement and other activities one is able to grasp how big is his relative temporal edge, or the time he has gained from the enemy, and how this time could best be employed.

During the agrarian age drilling the army to be faster than the enemy in all its actions was a way of winning time from the enemy and ultimately winning the battle. It had often been argued that the more rapid the marches of the army are, the more effective it would be, but Frederick used this maxim to include all actions on the battlefield. If every individual soldier and the troop he belongs to can be honed through drills to automatic responses to input in the form of a command, no time is wasted in execution and this saved time diminishes the time available to the enemy for his response. Speed of action of an individual solder was seen to have an effect on tactical level in battles. With this Germanic tradition of drilling the military at the time of rigid battle formations one could change the formations and move them around quickly enough to throw the enemy off his balance and rhythm tactically, but operational level was not impacted except through speed in marching.

¹¹⁵⁸ Liddell Hart (1932), p. 73.

¹¹⁵⁹ Napoleon (1987), Maxim IX, p. 58.

¹¹⁶⁰ Jomini (1992), p. 278.

¹¹⁶¹ See for example Matheny (2012), pp. 5-7.

¹¹⁶² Frederick (1985), p. 395.

¹¹⁶³ Colby (1943), p. 80.

¹¹⁶⁴ Colby (1943), p. 145.

During indust-reality the situation started to change and the speed of movement stared to be more and more important operationally. Since mass was considered to be a worthy force multiplier in the first years of WWI the development between the World Wars was indeed significant. This led Liddell Hart to claim that, "the smaller our land forces the more essential is it that we should 'multiply their mass by their velocity,' and be able to concentrate them rapidly at any point on the land frontiers."¹¹⁶⁵ Velocity thus became the new mass multiplier that created a dense concentration of force, anywhere and with rapidity. The results of the worship of mass in WWI were echoed in the terms of the Treaty of Versailles that practically decapitated the possibility of Germany to build any military instrument of sufficient strength even for the purposes of national defense¹¹⁶⁶. The father of German mobility in WWII was Seeckt who laid down the principles for operational use of mobile units, whether cavalry, motorized or mechanized.¹¹⁶⁷ His professional army was to be well led and equipped and able to use maneuver more effectively than the mass armies¹¹⁶⁸. In the German Field Service Regulations he wrote that "inferiority of numbers must frequently be counterbalanced by greater mobility. In this connection the marching capacity of the troops, the use of railways, of motor and other transport, as well as the utilisation of darkness as a concealment for movements, will play a great role."1169

Seeckt was well aware of the limitations to the growth of the German army when he wrote that, "*the whole future of warfare appears to me to lie in the employment of mobile armies, relatively small but of high quality, and rendered distinctly more effective by the addition of aircraft, and in the simultaneous mobilization of the whole forces*"¹¹⁷⁰ it is evident that while he emphasized mobility, quality and co-operation, it was partially due to the fact that building mass armies did not appear to be an open option. Seeckt's doctrine could be described, following Sikorski, "*smashing offensive performed with the help of reduced but picked armies – it was imposed by circumstanees*."¹¹⁷¹ Nevertheless, when Hitler unilaterally declared the restrictions void, the emphasis on mobility and quality rendered the German mass armies increasingly efficient. Since Germany was unfortified, the prospect of positional warfare was not a viable option and planners had to take into consideration the idea of mobile defense with a strong element of offense. Guderian saw that only motorized troops could play a part in a war of movement and embarked on a journey of developing them.¹¹⁷²

Martel wrote that by 1935 the British army had conceived of an attack force consisting of fast and lightly armored tanks for mobile warfare and slower and heavily armored ones to support the infantry.¹¹⁷³ Guderian argued based on studying the history of war, the exercises of armored troops in Britain, and his personal experience that tanks as a weapon could reach their full potential only in the case that the other arms they are depended on could become just as maneuverable in all types of terrain. Tanks should in this orchestra play the leading violin and all other instruments should conform to their actions. According to him, tanks should not be attached to the infantry and used piecemeal. There

¹¹⁶⁵ Liddell Hart (1927), p. vi.

¹¹⁶⁶ However, Germany had much of its factories undamaged, a lot of resources and there was no total disarmament of its troops largely because Foch did not believe in a sanction that could not be effectively policed. The treaty was negotiated so thoroughly among the winners that even Foch was ultimately highly critical of the outcome. See Greenhalgh (2011), pp. 499, 508. Nevertheless, Germany was left with hardly adequate military assets to protect itself and no true capability for offensives.

¹¹⁶⁷ Vego (2009), p. I-22.

¹¹⁶⁸ Corum (1992), p. 31.

¹¹⁶⁹ Seeckt in the German field service regulations, cited in Liddell Hart (1927), p. 215. Seeckt did not write any of the interwar manuals, but all of them bore the stamp of his concept of war of maneuver. Corum (1992), p. 49.

¹¹⁷⁰ Seeckt, Cited in Liddell Hart (1948), p. 23. See also Seeckt (1930), p. 69.

¹¹⁷¹ Sikorski (1943), p. 31.

¹¹⁷² Guderian (1956).

¹¹⁷³ Martel (1945), p. 117.

would be no use in creating infantry divisions and supply them with tanks, but rather establish panzer divisions including all supportive elements necessary for tank operations.¹¹⁷⁴

Still, as of today, the old prediction of another early tank enthusiast, Charles De Gaulle has not yet come true. "*To-morrow the professional army will move entirely on caterpillar wheels. Every element of troops and services will make its way across mountains and valleys on the appropriate vehicles. Not a man, not a gun, not a shell, not a piece of bread, will be transported in any other way.*"¹¹⁷⁵ Mechanization must permeate the entire offensive force. Even if the main striking force resided in tanks, "*it is a question of developing the other arms in such a way that they can keep up with them.*"¹¹⁷⁶ Some of this thinking was based on WW I experiences, which sufficed to teach how "*armoured attacks could gain lasting success only when they were followed up without delay by the infantry.*"¹¹⁷⁷

Guderian argued that the offensive power provided by mechanization rested in firepower, speed and armor protection. If any of these characteristics were taken away or considerably reduced, the entire offensive power would suffer. Yet, for him, the most important of the trinity was speed, because "*a curtailment in speed, which may be required to retain contact with the less mobile arms, will afford the opponent more time to bring into play his antitank guns as well as to launch a counterattack with armored fores.*"¹¹⁷⁸ The importance of speed is closely related to time. Time won was taken away from the preparations of the enemy. Time is one of the best allies of an operational artist who can manage and manipulate it properly. For the one not proficient in temporizing it is also one of the most dangerous enemies. In his rush for the Rhine, Patton argued that his troops were

"fighting three enemies. One was the German, the second was the weather, and the third was time. Of these three I conceived the weather to be the most important, because, at that moment, our sick rate for the first time equaled our casualty rate, and the weather was not improving. As to time, every day's delay meant more defences to attack."¹¹⁷⁹

It tells of American material superiority at the time war that the actual physical enemy was the second runner-up in importance. Nevertheless, the other two "enemies" are timerelated. The first is choosing the correct time for attack, since the weather varies from one season to another. In the second time plays a more direct role. The more time is wasted the better the enemy is prepared and the more capable he is of inflicting severe casualties on the attacker. Mobility seemed to be the answer to all three dilemmas.

But what after all is mobility? Liddell Hart divided mobility into three factions. These are "guarding mobility" which means providing reconnaissance and especially protection to the main body of troops by situating the cavalry as a protective screen at a distance towards the enemy. The second is "strategic mobility" where a commander is able to transfer part of his strength "from one point to another to effect an unexpected concentration of force at some vital spot."¹¹⁸⁰ Third comes "hitting-mobility – that used for direct offensive action – which lies in the impetus of attack and demoralizing effect given by speed of onslaught."¹¹⁸¹ The first one is not as important as the other two, that is, the special benefits derived from guarding mobility can be gained by other than mobile troops. It is a question of preventing the enemy to inflict a surprise on one's troops. Even a static extended protective formation is able to produce the

¹¹⁷⁴ Guderian (1956), pp. 20-21.

¹¹⁷⁵ De Gaulle (1976), pp. 99-100. With all of his progressive views De Gaulle admitted his intellectual debt to Fuller. "*He was the prophet, we only followed him ... You will find prophesied in his books everything that the Germans did with tanks.*" Cited in Trythall (1977), pp. 209-210 or Dupuy (1987), p. 18.

¹¹⁷⁶ Guderian (1992), p. 67.

¹¹⁷⁷ Guderian (1992), p. 69.

¹¹⁷⁸ Guderian (1937), p. 15.

¹¹⁷⁹ Patton (1947), p. 156.

¹¹⁸⁰ Liddell Hart (1927), p. 51. Since the terminology of the art of war has been significantly altered what Liddell Hart referred to would today be called operational mobility while strategic mobility would have been reserved to reallocation of troops from some corner of the British empire.

¹¹⁸¹ Liddell Hart (1927), p. 51.

desired effect. When it comes to strategic mobility, which, however, seems to be of wholly operational nature, the importance is immense.

The last aspect of mobility, hitting mobility, resides entirely within the realms of tactics and operational art. When troops were concentrated for attack, hitting mobility ensured they could use their speed to proceed to contact with the enemy, use their concentrated force to break-through the enemy front, and continue the attack into depth before less mobile enemy reserves were able to curb their impetus. To summarize the development, we can quote De Gaulle who wrote that,

"through the tank was reborn the art of surprise, to which it added the relentlessness of machinery. Through it the art of manoeuvring was restored in detail, since it could deliver either a frontal or a flank attack under fire, move and fire at the same time, and advance in any direction. Through it, above all, detachments of fighting men recovered the mobile protection which they appeared to have lost for ever."¹¹⁸²

Progress allowed for machines to infiltrate the battlefield further and further and finally enabled soldiers to breach the enemy front in their vehicles. Simultaneously another tendency manifested itself. Fuller invented a suitable neologism to describe the advantage mechanized army holds over the traditional troops of the past. This was "loco-mobility – their ability to move over every sort of ground and to clear every yard of any locality."1183 Mobility became "loco-mobility". That is, troops were increasingly able to move with fewer restrictions set by features of the terrain. Motorization aimed at increasing the speed and lessening the time it took to transport the soldier to the battle. With automobiles roads became applicable for troop transport. Later, as automobiles gained more torque and means of suspension to leave the roads, most of dry and flat terrain became possible to use for troop transportation. Added to this, tracks instead of wheels and armor of the tanks provided both mobility across terrain unsuitable for automobiles and the ability to proceed under enemy fire. Air mechanization and rotary wing transport was the ultimate in loco-mobility, since terrain features became inconsequential. This placed new demands on taking time into account in planning. It was no longer possible to estimate from the number of roads and average speed of a marching column when an army would be at a certain point. Manipulating time to gain an edge on the enemy became more complicated and this tendency continues during the Third Wave.

Fuller argued that loco-mobility was the essential characteristic of mobility in mechanized warfare. With this he referred to the ability to move flexibly and "freedom of movement in all directions."¹¹⁸⁴ An infantry column had good mobility since marching it could advance fifteen miles a day, "but its loco-mobility – that is, its power to move at right-angles to its line of advance – is negligible."¹¹⁸⁵ The search for flexibility to change direction quickly with the entire force led to a creation of new formations often based on geometry.¹¹⁸⁶ If movement is carried out in a column, they can "be reduced in depth by broadening their fronts until the maximum breadth of frontage is attained by forming into like. This broadening of their front enables them to increase their loco-mobility by becoming more concentrated."¹¹⁸⁷ Likewise, the wedge-formations of tank tactics is a result of searching for a formation that could change its direction as fast as possible while maintaining a sufficient force concentration in all directions. Concentration, being not restricted by roads, and changing the direction of advance rapidly are all facets of loco-mobility. This meant the replacement of line tactics with area tactics where

¹¹⁸² De Gaulle (1976), pp. 67-68.

¹¹⁸³ Liddell Hart (1927), p. 116.

¹¹⁸⁴ Fuller (1923), p. 51.

¹¹⁸⁵ Fuller (1926), p. 160.

¹¹⁸⁶ On this see Bülow (2013); Jomini (2007) or a thorough discussion on Herny Lloyd's and von Bülow's ideas in Gat (2001), p. 69-96 or Paret (2015), pp 11 concerning Clausewitz's criticism of Bülow. These are just a few examples of a very prevalent tendency to use geometry to "decode" the art of war.

¹¹⁸⁷ Fuller (1926), p. 167.

"the front of an army will no longer so completely protect its rear services and its line of communications as today. Attacks will take place in areas and not against lines: they may come from any direction; therefore power to surprise is vastly increased, and the moral attack will grow in importance, its aim being to effect disorganization through demoralization rather than through destruction."¹¹⁸⁸

Yet, loco-mobility is about more than mere ability to move freely – it is also the ability to move fast and with protection. Because what could be more loco-mobile than a lightly armed infantry soldier, who could even cross a river by swimming? Still, he has no protective attributes or a speed greater than a trot over longer distances. Likewise, there is no way a tank could be compatible with a helicopter in terms of rapid movement. But a tank can be employed over a wide range of different terrains with a high level of protection. Besides, getting armor as a protective measure for an automobile can slow it down and make a helicopter unable to fly. Thus, again, loco-mobility is a compromise as well. It is a combination of speed, protection and ability to move in different terrains. As Liddell Hart wrote, there is all too often an irreconcilable conflict between "the respective claims of mobility and security. In reconciling these claims, it is wise generally to give preference to mobility – as the offensive and time-winning factor."¹¹⁸⁹ Security is often at conflicting ends with mobility since to be safe often means to act timidly and not attempt to audaciously take the initiative. But once one is mobile enough, movement brings security since one is the target of enemy fires for a shorter time.

As Guderian wrote in the 1930's, "the demand for speed at present is best met by wheeled vehicles, though their cross-country performance is inferior to that of track-laying vehicles; consequently wheeled vehicles are more sensitive to obstacles."¹¹⁹⁰ Demands are contradictory and the best possible combination as a compromise must the attained, as the Germans managed to do. They proved with *Blitzkrieg* operations the effectiveness of disorganization and demoralization by attacking from an unexpected direction, with unexpected forces or at an unexpected time. This ambiguousness in predetermining the future actions of the enemy spatiotemporally results from increased loco-mobility and only thickened the fog of war. As the evolution of warfare is a continuing process, tanks are old news to us now. In the time when their employment was just beginning, Fuller wrote that,

"success in war depends upon mobility and mobility upon time. Mobility leads to mass, to surprise and to security. Other things being equal, the most mobile side must win: this is a truism in war as in horse-racing. The tank first of all is a time-saving machine, secondly a shield – it is, in fact, an armoured mechanical horse. If in a given time we can do three times as much as the enemy and lose a third less than he does, our possibilities of success are multiplied by nine."¹¹⁹¹

According to Fuller's logic time is the key to success and mobility allows us to save time and strive for better successes. Mobility as a timesaving quality of the tank turns it into a force multiplier since the more mobile counterpart is able to perform more and waste less time than the enemy. Yet mobility could hinder itself as well. According to Liddell Hart,

"motor-mobility has immensely increased the potential speed of manoeuvre and rapidity of concentration. Yet it can be an impediment to both where it is misapplied, or the fundamental elements of the problem are misunderstood. Nothing is more self-obstructing than an accumulation of motor-transport that, through mistaken handling, develops into a congestion."¹¹⁹²

¹¹⁸⁸ Fuller (1943), p. 43.

¹¹⁸⁹ Liddell Hart (1950), p. 316. Liddell Hart uses as examples the success of Napoleonic warfare, Sherman's bold march through Georgia in the American Civil War in 1864 and the victories of the Prussian army in 1866 and 1870 just as well as the victories of the Germans in the beginning of the World War II.

¹¹⁹⁰ Guderian (1937), p. 32.

¹¹⁹¹ Fuller (1918), in a paper "Projected Bases for the Tactical Employment of Tanks in 1918". Cited in Carver (1979), pp. 27-28.

¹¹⁹² Liddell Hart (1950), pp. 294-295.

We return again to congestion. We saw that railways created strategic or operational level congestion in getting the troops to partake in battle. Mechanized and motorized forces can create operational and tactical level congestion either in battle or during intratheater movement. Increased mobility could thus actually lead into even worse congestion. Unless managed properly movement creates an impediment for itself and the possibility to win time ends in losing vast amounts of it. Mass and mobility are natural enemies to each other. This is why armies are never able to move at the pace their vehicles theoretically could uphold. When highly mobile units are joined together to create bigger formations impediments to mobility will occur. In force concentration mobility causes problems

"as a means of amassing weight more easily – and by multiplying their impedimenta they have subtracted from the addition to their mobility. Even where space is large enough to enable a force to outflank and by-pass centres of resistance, its freedom of movement is limited by its own maintenance needs."¹¹⁹³

Open space is no guarantee of the ability to fully employ one's mobility. Mass slows down the speed and need for supplies and maintenance restricts full utilization of all space available for maneuver. As Fuller argued, "mobility in the attack is superior to mass in the defence."¹¹⁹⁴ One had to attempt to use all possible methods in slowing down or halting the enemy with obstacles, minefields etc. while attempting to speed up one's own maneuvers – and naturally countering the resistances the enemy will on its turn inflict on free and rapid movement. Thus the battlefield became an area, where movement is in some parts simultaneously reduced as far as possible and increased in other parts. There existed areas in a state of stagnation and areas of rapid movement and in both types of areas the enemy attempted to alter the status, turning the stasis into motion and halting the movement to a full stop, if possible. However, to summarize, as Sikorski wrote, "in the secrecy and the speed of strategical movement now, even more than in the past, lied the foremost conditions of success."¹¹⁹⁵ Tactics of the defender will attempt to win time by robbing the enemy of his speed but the one on the offensive needs to strive for speed and consume as little time as possible in his bid for victory. Still, according to Fuller, the primary characteristic of the indust-reality is

"movement. And as to this there can be no doubt. Though production has vastly increased, it is movement, in its many forms of steamship, railway, motor-car, telegraph, telephone and wireless transmission, which more than any other factor has created the modern world. Movement is the vital element in what we call Western civilization, and restriction of movement its death element."¹¹⁹⁶

Movement characterizes the Western way of life and the way of fighting wars. Restricting this movement is a death element of both civilization and warfare. In order to counter the increased mobility in warfare there are two options; either one has to be even faster and more mobile than the enemy or do one's utmost to reduce the speed and mobility of the enemy. The former is problematical, because there are limits to the speed that is suitable to strive for, since the pace of battle needs to remain within bounds of human capability to control it. The latter is not suitable either, since a maximal reduction of speed will lead back to trench warfare and almost total stagnation. Therefore, the answer was to be found in the combination of both. In the agrarian First Wave the great captains were mostly able to save time in tactical movement. Indust-real Second Wave saw the impact of accelerated velocity impact operational movement within a theatre of war. During the Third Wave operational velocity has still grown, but the effects start to resonate on the strategic level.

If indeed the keys to victory are to be given to the more active and mobile of the parties to the conflict, "a general who moves his masses rapidly and continually, and gives them proper directions, may be confident both of gaining victories and of securing great results therefrom."¹¹⁹⁷

¹¹⁹³ Liddell Hart (1946), pp. 19-20.

¹¹⁹⁴ Fuller (1948), p. 98.

¹¹⁹⁵ Sikorski (1943), p. 151.

¹¹⁹⁶ Fuller (1932), p. 84.

¹¹⁹⁷ Jomini (1992), p. 176.

One must be careful not to focus his attention only on "rapid and continuous" movement of the masses, but on the idea of "proper" directions. Increased mobility and movement will lead to disorderly or chaotic situations unless strict control is exerted and the "directions" given must be not only "proper" but also well-coordinated and immaculately synchronized. Furthermore, since the enemy exerts his influence one needs to keep these movements simple and quick to execute under pressure. Movement and maneuvers are necessary, but only when they are used to pursue specific goals. These goal differ from time to time. Colby argued that "*movement alone does not win a decisive action; it must deliver a powerful stroke.*"¹¹⁹⁸ Concerning warfare of the same age Jomini claimed that the art of war is to use the mass of troops purposefully and concentrating their movements to "*act at the decisive moment and at the decisive point of the field of battle.*"¹¹⁹⁹ Perhaps the meaning and purpose of the movement has changed over time, but the idea of winning time by moving faster than the enemy to attain a specific goal remains a valid principle.

Fuller argued on behalf of movement as the prominent factor in the battlefield and in the plans of operational artists of the mechanized age. It did not matter whether one initially took the defensive or the offensive stance on the battlefield, one could be victorious if one had enough movement and, furthermore, purposeful movement.

"future plans will have to be based more on movement than on offensive action; by which I do not mean that the offensive will become less important, but that its effect will be the more dependent on correct and rapid movement. Once the opportunity to strike offers itself, movement must be immediate and by signal and not by operation order."¹²⁰⁰

Controlling and regulating movement is no meager task even today. Offence or defense, the effect is directly related to rapid movement, at the right time, into the right place. This lays a special burden on operational artists since they must be able to plan and execute movements as the situation arises. The immediacy Fuller calls for when the moment is ripe can only be reached through thorough preparation. Once the time comes to act, the orders must be already given to the troops in detail and just their execution commanded. The demand for movement extends to the commander himself. If he is to stay abreast developments and not have to base his decisions on hearsay, he must position himself correctly at each moment. "*The correct position for every commander is at the point of greatest importance, a point which is constantly changing in its locality.*"¹²⁰¹ In other words there does not seem to be any Archimedean point on the battlefield that the commander could use. Everything is in motion and the motion should accelerate constantly in order to win time. But just as Fuller emphasizes the proper directions and purposeful movement the same applied to speed. "*Organized velocity*" was supposedly the secret¹²⁰². This makes synchronization of mobile elements demanding to the extreme.

"Forces must attain maximum successes, maximum movement forward. The enemy will attempt especially strongly to defend vital axes, vital points, which cover his withdrawal routes, or a concentration of fresh forces. The art of the attacker is to determine these axes and these points and to unleash the entire mass of forces quickly enough to break out to the flank and rear area of the enemy forces, cut his withdrawal routes and disrupt any new grouping of forces the enemy is preparing. Combat actions during this period require an incredibly fast pace, the maximum possible intensity, great flexibility, and maneuverability. Despite forces being heavier, such mobility within the framework of specific operational norms is fully possible even now."¹²⁰³

¹¹⁹⁸ Colby (1943), p. 147.

¹¹⁹⁹ Jomini (1992), p. 322.

¹²⁰⁰ Fuller (1943), p. 49. Here T.E. Lawrence based on his experience agreed with Fuller. He called operation orders "orthodox-sounding things with zero times and a sequence of movements." Lawrence (1997), p. 311.

¹²⁰¹ Fuller (1943), p. 53.

¹²⁰² Fuller (1948), p. 80.

¹²⁰³ Triandafillov (1994), p. 153.

This quotation from Triandafillov illustrates despite his claims to the contrary not reality but rather a desired end state of what could theoretically be obtained with mobile forces. It was not so much a depiction of what Soviet mechanized warfare actually resembled at the time of writing, but rather visions of what it could be, if fully developed. In real life Clausewitzian fog of war and friction create a situation where attack will not proceed unhindered. Friction distinguishes real war from war on paper and the operational artist has to account for it.¹²⁰⁴ There will be halts and pauses out of necessity, but time will have to be managed. The pace of movement doesn't need to be steady and persistent. There are occasions, such as the follow-through, when the speed of the mechanized and motorized formations should be as high as possible in order for maximum penetration in depth to be reached. During the movement into contact with the enemy and the actual breakthrough attempt it is beneficial for speed not to be constant. For this Liddell Hart offers clear advice, "Pace with variability is the secret of mobility, and sustained momentum, in the follow-through."¹²⁰⁵ It is not only going full speed ahead that epitomizes mobility, but also the ability to use varving speeds and to focus on sustaining momentum to uphold the pace of attack. Mobility allows for variations in the tempo and creates a situation in which the speed of the enemy becomes unpredictable, adding uncertainty for the defender. Variable speeds of thinking and action depending on the circumstances are a way to manage time.

The Soviet concept of deep battle adhered to the idea of pace with variability even if this was not explicitly stated. The idea of deep battle originated in the tactical level and was a first stage in creating a theory of deep operations¹²⁰⁶. Until approximately the 1960s the deep operation theory continued to revolve around a holding force over a wide front, the break-in battle and a mobile force initially composed of cavalry and then deep penetration by mechanized units. As Simpkin described the temporizing and the pace set for this type of attack, "*the principle of 'slow in, fast out' – deliberate action/tight rein in the break-in, and dash/loose rein in the break-out – is unchanged*."¹²⁰⁷ The variability of the pace comes from reliance on attrition in the first part of the attack, slowly and deliberately grinding the enemy. The actual time and place for the planned breakthrough was kept unclear from the enemy, but once fighting there started, the pace was still relatively slow, making sure that there would be no haste and the break-in would open. When it did open, however, speed was accelerated to the maximum that mobility would allow and a dash into the depth began. It was a dream and vision of indust-reality operational art that that one could say:

"There will then be no halt in the advance, or the attack, in a pursuit, or in a retirement; therefore no time will be lost. In brief, to economize time in action will become the soul of every plan."¹²⁰⁸

In this chapter we started inquiring into how the factors of time, space and force could be joined together in most suitable manner for each situation. We saw how despite numerous attempts throughout the ages that even if these are quantifiable factors, they cannot be forced into calculations and equations that would produce an infallible and universal winning formula for war. The human factor complicated the equations by adding so many variables that calculations simply do not produce certainties. The relationships of time, force and space are created anew by the operational artist according to the demands of each situation and only generalizations can be made as guidelines to support creating a favorable balance.

We have discussed how both battle itself and its locale have grown through history from spatially and temporally very tightly confined points to first lines and then to vast areas with the width, depth and height expanding so that what used to be a battlefield is nowadays a battlespace. The battlespace includes additional dimensions such as the elec-

¹²⁰⁴ Howard (1983), p. 26.

¹²⁰⁵ Liddell Hart (1950), p. 288.

¹²⁰⁶ Simpkin (1987), p. 37.

¹²⁰⁷ Simpkin (1985), p. 43.

¹²⁰⁸ Fuller (1943), p. 15.

tromagnetic spectrum and cyberspace, but all in all the fourth and most important dimension framing the battlespace that sets the boundaries for operational art is time.

We have seen how mobility allows for armed forces to conquer vast distances but simultaneously utilize space to win time for defensive actions by retreating and how simultaneously space erodes the force of an attack as lines of communications stretch. We saw how increases in mobility and velocity have been used to master the space by consuming ever shortening times is crossing distances and how the locomobility of the forces allowed more and more of the empty space to be used. Instead of being tied to railroads and roads tanks and planes opened up most of the battlespace for maneuver and made these maneuvers faster and faster. The interconnectedness of space and time is therefore very direct.

The relationship of time and force is no less crucial. We discussed how the cycle between preference for small, highly trained armies and more massive armies has developed over time and came to the conclusion that neither small nor huge is the answer, but rather a balance of quality and quantity has to be found and the balance is connected to time and space as well. We discussed the ideas of how a mass of forces should be used in contrast to small forces of high quality and mobility and noticed that the principles governing the action are essentially the same. The mass must be mobilized to a high degree to be able to create a breakthrough and exploit its success and pursue the enemy. As the mass increased, not all combatants could be brought into the fray at once and thus calculations how much force could be employed in given space became necessary. If there was more mass than could be brought to bear on the enemy at a single point in time, successive operations had to be planned.

All in all, the relationships of time, place and force are complex and one must be able to employ abstract and imaginative thinking instead of mechanized rules if he is to gain mastery over them and balance these physical factors with immaterial ones such as intellect, imagination and morale and weave them into components of his operational art. While it is true that enough force exerted at the right place at the correct moment is enough to win, this does not serve as a guideline for future operational artists. Mastery of the trinity of time, space, and force is a prerequisite of a commander and his ability to balance them optimally is the pinnacle of operational art. The trinity must be conjoined differently in every individual situation. As an example, the role of time and space are different for the attacker and the defender. Thus in the next chapter we burrow into how they should be used for different purposes. The next chapter will dig deeper into how activity should be controlled within the temporal frame by managing the speed of action and trying to identify the most promising moments to initiate action. It is not enough to have unrivalled speed or absolute superiority in mass, but to control them and employ them to gain an advantage.

TIME AND ACTIVITY - CONTROLLING TEMPO AND SEIZING MOMENTS

"The offensive is a decisive form of war. Even when on defense, one's forces would be required to conduct offensive operations in order to obtain and maintain the initiative."¹²⁰⁹

6.1. TIME IN OFFENSIVE AND DEFENSIVE STANCES - DISTURBING THE EQUILIBRIUM

"As concentric operations are most advantageous in attacking, eccentric ones must, of course, be so in defence: every thing must be contrary in the two modes of war so opposite in their nature and their interests."¹²¹⁰

Finding the right approach to time management is always relational to the activity and behavior of the enemy. There are occasions when both armies attempt to reach the same objective irrespective of each other, such as occupying a certain area. If, however, the objectives of the two armies are contradictory, it is likely that the means of fulfilling their tasks are also in opposition to each other. In these occasions it might be beneficial to shape one's actions so as to counter the disposition of the enemy. Or, as Leo VI put it, "General, when the enemy acts boldly, entice him into premature, reckless action and useless maneuvers. If he is on the timid side, hit him hard with constant and rapid attacks. You must know the disposition of the enemy general and employ your own stratagems accordingly."¹²¹¹ Combat is a struggle between two opposed wills and it is worthwhile to choose the stand that best counters the enemy. If he wants to win time, slowing him down is a priority and so on.

To start with, one must first determine what kind of war and for what purpose will he carry out. "War once decided upon, the first point to be decided is, whether it shall be offensive or defensive."1212 This seems self-evident, but this decision is crucial when it comes to the meaning of time in operational art. As Tukhachevsky framed the question, "do we nip at the enemy because we are afraid of spilling too much blood, and thus seek to demoralize him? Or do we take him on, with the ultimate aim of destroying him?"¹²¹³ As a generalization and perhaps even an oversimplification a defensive war requires one to win time from the enemy in the sense of prolonging the war and wearing out the enemy. In an offensive war one wants to win time from the enemy to bring the war to its conclusion as soon as possible. With extra time won from the enemy one is able to strengthen his defense or receive outside help. In winning time by acting rapidly one has to hasten and take advantage of the fact that the enemy has even less time for his actions. Nevertheless, even if one has chosen to partake in a defensive war, Jomini advised how "the best thing for an army standing on the defensive is to know how to take the offensive at a proper time, and to take it."1214 It is a question of when to seize the initiative and switch from passive defense into the offensive. The timing of the action is as important as the action itself but we shall return to this maxim later.

1211 Leo VI (2010), p. 575.

¹²⁰⁹ Vego (2009), p. V-49.

¹²¹⁰ Bülow (2013), p. 80.

¹²¹² Jomini (1992), p. 72. See also Handel (2001), p. 14.

¹²¹³ Tukhachevsky, cited in Simpkin (1987), p. 85.

¹²¹⁴ Jomini (1992), p. 183.

Whether one should choose offensive of defensive action is also related to time in the sense that on the grand scale in different phases of war the capabilities of the armies vary. As Triandafillov wrote, "*during the first months of a war, forces will be better prepared for those forms of combat not requiring complex shifts or maneuvers. These forces will be stronger in the defense than in an offensive.*"¹²¹⁵ Especially when forces consist of non-professional soldiers as in a reservist army they are likely not to have significant experience when a war starts. They receive the most important part of their military training in operations on the battlefields. Defense offers more security and thus is likely to cause fewer casualties. Since it is also the stronger form of battle, it is suitable to choose when the troops do not yet have enough experience. But prowess develops in the course of war and later more complex operations can be performed and once the commander is assured of his troops having adequate skills, the time to seize initiative and attack must be exploited.

Very often military theorists tend to discuss attack and defense as mutually exclusive positions one has to choose from. Even such a bright mind as Isserson wrote that the "basic principles of our military preparation, of our operational art, are the principles of the offensive."¹²¹⁶ It is easy to view the defender as the passive combatant and the assailant as the more energetic and active combatant¹²¹⁷. Seizing initiative is a highly praised decision in operational art and the initiative is always on the side of the attacker. Very often even the commanders-in-chief are slaves to circumstances and the choice is not theirs. "Treatises upon this subject sound for the most part as though attack and defence were exclusively a matter of free choice on the part of the combatants, whereas in reality this is hardly ever the case."¹²¹⁸ Either their political masters or the situation itself clearly dictates whether they are allowed to attack or forced to remain on the defensive. When either of these stances is ordered to the military the commanders on all levels can only attempt to make the best of it and utilize all his knowledge of operational art and exert his energy for the best possible outcome.

Offensive and defensive battles in general treat time in opposing manners and this has not changed fundamentally even if technologies and doctrines have evolved. The proponents of network centric warfare argued that the principle of offensive is "*to act rather than react and to dictate the time, place, purpose, scope, intensity, and pace of operations. This is all about battlespace awareness, speed of command, and responsiveness.*"¹²¹⁹ All of the factors above need to be taken into consideration when one chooses to undertake an offensive battle. Similarly, should one decide to adopt the defensive stance, he does not only leave initiative to the attacker but also the ability to dictate every one of these factors for him. To defend is to be passive and the only way the passive one can utilize time is to slow down the enemy and attempt to prolong the battle and by accomplishing that, to prolong the campaign and the entire war. According to Strachan's interpretation of Clausewitz, time is a great asset enjoyed by the defender, who can trade space into time while the offensive needs to be speedy in its execution¹²²⁰.

It is easy to understand why the offensive stance in warfare is more highly valued than staying on the defensive in military culture that endorses activity in all circumstances. Even in those cases, perhaps most notably WW I, when there was no doubt about the defensive being stronger than offensive due to weapons and prevailing tactics the principle of the concentration of force supports the attacker. We tend to think that there had been a right theory or doctrine of war at the time, but all of the commanders mistakenly stuck to offensive means. If pure defensive had been the right way of warfare, as Echevarria put it, "*no attack equals no war equals no problem.*"¹²²¹ But there was a war to fight and prob-

¹²¹⁵ Triandafillov (1994), p. 51.

¹²¹⁶ Isserson (2013), p. 42.

¹²¹⁷ See e.g. Bernhardi (1914), p. 140.

¹²¹⁸ von der Goltz (1906), p. 151.

¹²¹⁹ Alberts et. al. (2000), pp.7-8.

¹²²⁰ Strachan (2013), p. 55.

¹²²¹ Echevarria (2000), p. 6.

lems were abundant. As von der Goltz put it, "*It is a fateful difference, that the defender is only victorious when he wins at all points, while the attacker triumphs if he gains the upper hand in a single spot.*"¹²²² To win the defender cannot afford to be beaten anywhere at all. If he lacks reconnaissance information where his enemy is concentrating the majority of his forces he has to remain stronger everywhere and this is unlikely to happen. Mobile reserves provide the defender the opportunity to alter the balance of forces to his favor, but mobility can be reduced by the attacker and in any case the attacker has the easier task to concentrate forces to be more powerful in the single spot of his own choosing.

Mobility of the troops is often wrongly perceived to be a tool of the aggressor and attacker only. The defender benefits from his mobility when he brings up reserves, counter-attacks, switches to offensive, or when even a momentary slackening of mobility and maneuver occurs. "*Each pause in the movement was a benefit to the defensive. Defense forces could find time to dig in and brace themselves against heavy attacks.*"¹²²³ It is to the attacker's advantage to uphold continuous movement operationally and tactically as a means to rob time from his enemy. The defender can use mobility of his troops to his advantage on the tactical and operational levels by shifting troop concentrations in his defensive formation to respond quickly. In operational art the attack of the most mobile branch of service, the air force, can be used to support the overall purposes of defense. "*It can attack and hamper the operative offensive movements of the enemy. Hence, the necessity of holding air fighting forces in reserve, ready to intervene immediately. This is an essential part of operative defense."*¹²²⁴

Even if traditionally defense in form of war of position has been the strongest tactically when troops are mobile, attack and defense should go hand in hand on operational level. The same troops should not be simultaneously engaged in attempting to employ both methods, but units should be used in turn and successively for those purposes. If we take the reserve units of a defensive battle, for example, their task is not so much to defend, but to prepare to attack when an order is given. The more mobile they are, the better their chances to accomplish their task in time. The relationship between mobility in defense and offense was articulated shortly by succinctly by von Leeb who claimed that "*rapidity and maneuverability in defense must correspond to rapidity and maneuverability in attack*."¹²²⁵ The real question is how should they correspond? For this discussion WW I as the ultimate war of position is a suitable starting point. The essence of the war for De Gaulle was

> "The rigidity of the whole, and, as a consequence, the maintenance of the line, became indispensable. To wage battle 'in combined strength' was the strict axiom. There would have been no rest for the opposing forces had not their wings rested on impassable obstacles – Switzerland and the sea. Consolidation of the combatants in fortified positions did not change, but rather reinforced, the principle of the continuous front. If a local offensive succeeded in breaking through all the efforts of the defenders were devoted to re-establishing themselves shoulder to shoulder. Hinging, bracing, welding, warping, strategic withdrawal, these were the master words of military art. Meanwhile the attacker, who by his very success had uncovered his defences, slowed down his speed the further he advanced, and spoke only of pivoting, shortening the line, widening breaches, encirclement, reciprocal support. Up to the last shot fired, the opponents formed two flexible, but never broken, lines."¹²²⁶

Perhaps it was the natural path of development for a war that started with an attempt to execute von Schlieffen's version of modern-day Cannae, by outflanking the enemy, that flanking movements were to be averted by the defender at all costs.¹²²⁷ And the best way to protect one's flanks is not to leave any. This irrational rationale led to fronts stretching

¹²²² von der Goltz (1906), p. 156.

¹²²³ Von Leeb (1991), p. 83.

¹²²⁴ Von Leeb (1991), p. 120.

¹²²⁵ Von Leeb (1991), p. 121.

¹²²⁶ De Gaulle (1976), p. 127.

¹²²⁷ The Schlieffen Plan was his 'testament' to his successor and handed over in 1906. Thus, the plan was almost a decade old when it was executed. See Ritter (1958), p. 48.

across the entire continent. As Fuller described it, "whole fronts were entrenched, and before the end of 1914, except for a few small breaks, a man could have walked by trench, had he wished to, from Nieuport almost into Switzerland."¹²²⁸ Extending the fronts from the sea to the Alps allowed for protection of flanks and simultaneously a creation of equilibrium. There was no way to outmaneuver the enemy by advancing to his flanks or his rear. It should have become clear even prior to WW I that mass armies had created a situation in which "it was difficult for one side to outflank or outmaneuver a strong opponent on land. The reason was that the opposing forces were deployed along hundreds of miles of terrain and provided few, if any, gaps in the defense line."¹²²⁰ Thus the principal means available for the commanders was to perform local offensives, hammering into the enemy.¹²³⁰

The defender in turn did everything at his disposal to keep the line intact or re-build lost contact among the troops. Even if the attacker made progress, his momentum dwindled the further he penetrated into the defensive line due to his lack of mobility. He wanted to extend and widen the area where he had made progress but still hold his own lines intact. Due to shortenings of fronts through strategic withdrawals the lines fluctuated on the map, but in the big picture they remained almost immobile.

There is a difference between commanding offensive and defensive battles. In positional warfare everything is planned long in advance but in mobile warfare, especially offensive, the commander is constantly making decisions.¹²³¹ Looking at military history, it is the great conquerors we remember and not the sturdy defenders. Offense has always been the trial by fire of generalship and in those ages when defense dominates the battlefield there is always a deterioration of generalship as well. This happened in the WW I. As Liddell Hart put it, "trench warfare was inevitably the negation of generalship, the triumph of mud over mind. [It] had been created by the machine gun and barbed wire:"¹²³²

One of the greatest tragedies of WW I was the fact that in military theory the preponderance of offense dominating defensive tactics while in military technology and armaments defensive measures were immensely stronger than offensive ones. Foch admitted that everyone "suffered from this abuse of a correct idea, that of the offensive, because it was applied without discernment."¹²³³ Everyone wanted to attack, but defending was easier. Machine-guns and quick loading rifles enabled the infantry to hold their ground against an enemy many times stronger in numbers. This had its effects on the mobility of troops. As Liddell Hart argued, "military bistory reveals that mobility has yielded to stagnation whenever the means of defence have acquired a material preponderance over the means of offense."¹²³⁴ Prior to WWI all armies were imbued with the spirit of the offensive. Attacking was the heart and soul of the military art. Fuller wrote that there was no understanding of

"the protective power of weapons, and the result was static warfare. In the next war, if we do not realize the influence of new forms of movement on weapons and protection, the war, in place of being in nature static, will be dynamic in the extreme; we shall be swept into the sea or into some neutral country."¹²³⁵

Fuller was right in his prediction. The British troops of WWII were literally pushed into the sea from continental Europe and while they were able to evacuate most of their men due to surprising hindrances caused by Hitler, the beginning of the war was devastating again and for the same reasons; not understanding how the means and ways of fighting had been altered. However, just as offensive means were re-invented during the course of the WWI, new and inventive means were discovered in WWII to curb the mobility and the power of

¹²²⁸ Fuller (1920), pp. 14-15.

¹²²⁹ Vego (2009), p. III-7.

¹²³⁰ See also e.g. Beaufre (1965), p. 64.

¹²³¹ Ludendorff (1919), p. 37.

¹²³² Liddell Hart (1927), p. 6.

¹²³³ Focn (1931), p. lix.

¹²³⁴ Liddell Hart (1927), p. 3.

¹²³⁵ Fuller (1926), p. 258.

the offensive. It is a tendency of war to attempt to regain equilibrium, a balance between the offensive and the defensive. Once the balance has been reached, either new weapons or tactics have to be invented to be able to turn the scales in one's favor.

The relationship of defensive and offensive measures in operational art should be like that of balanced scales, but it often resembles a seesaw. There should be equilibrium, but most of the time the weight is on one end of the seesaw. Nevertheless, there is an inborn tendency in warfare itself to search for balance and development of measures to attain it are occasionally astonishingly rapid, if the disequilibrium is profound enough and the need for restoring balance dire. Thus, in the course of a few years, from the dominance of the machine gun, the tank was invented to counter its defensive potential. Then, again, anti-tank measures and minefields were used to counter the offensive, and equilibrium was restored. The task of the operational artists is to invent measures to disrupt the status quo between defensive and offensive means and thus inflict an operational level surprise on his enemy. In most cases the biggest military inventions spring up as a response to altered conditions. Once a need is recognized, a new invention will satisfy it. As Fuller argued, the problem during the WW I was that military thinkers

> "could find no solution to the problem of re-establishing mobility once battle fronts had become entrenched, and as soldiers, for the most part, could only think of war in traditional terms, the solution to this problem had, in the main, to be sought outside normal military thought, and the only place to seek it was among the civil sciences. Being a great chemical country, Germany turned to gas, and being a great engineering country, we, in Great Britain, turned to the petrol engine and produced the tank."¹²³⁶

As so often before, from the myth of Archimedes using solar power in setting the enemy ships aflame to the atom bomb, the answer came from outside the military intelligentsia. Mobility was re-established through novel innovations and, furthermore, the nature of those inventions reflected the characteristics of the civilizations developing them. Since Britain stood in the forefront of industrial revolution and had a tradition of engineering, it chose the mechanical solution and came up with the tank. Whatever is the nature of the new weapons, the immediate response is to start developing counter-measures. Again, resorting to Fuller,

> "a novel weapon or means of warfare, like an unknown plague, fills the imagination of man with horror and intangible fear. Yet, no remedy to this is to be obtained by locking up terror in a mental dungeon; in place, the unknown must be examined in broad daylight, its nature diagnosed and its antidote discovered."¹²³⁷

The novelty of the new weapons creates fear in the enemy and has the potential to cause a temporary paralysis. As Seeckt argued, any offensive means based on technology has always been countered by measures invented by the same technology.¹²³⁸ The ability to attack the imagination and create irrational fear is only temporary since experience breeds familiarization and reduces the fear. While the defender must employ all of his mental capabilities to developing an "antidote" for the new weapon the attacker has only a limited period of time during which to make the most of his temporary advantage. Time is of the essence and this requires a surprising and massive use of the new weapon. This was understood by Swinton who, referring to the tank, wrote that because

"the chances of success of an attack by tanks lies almost entirely in its novelty, and in the element of surprise, it is obvious that no repetition of it will have same opportunity of succeeding as the first unexpected effort. It follows therefore, that these machines should not be used in driblets (for instance, as they may be produced), but that the fact of their existence

¹²³⁶ Fuller (1923), p. 93.

¹²³⁷ Fuller (1923), p. 100.

¹²³⁸ Seeckt (1930), p. 54.

should be kept as secret as possible until the whole are ready to be launched, together with the infantry assault, in one great combined operation."¹²³⁹

The World Wars differed from each other in the means of fighting. The first one was essentially positional and the second mobile warfare. As Rommel made the distinction between the two, "*position warfare is always a struggle for the destruction of men – in contrast to mobile warfare, where everything turns on the destruction of enemy material*."¹²⁴⁰ When mobility reigned during the indust-reality, the way to slow down war and win time for one's own operations was to destroy not only the enemy's guns or tanks but also petrol and ammunition supplies. Without heavy losses in manpower the destruction of material will give one an edge on the enemy who has suffered the losses in mobility and is consequently slower and loses the advantages of temporality. The same targets remain essential during the Third Wave but are supplemented and even surpassed by the network itself as a target.

Warfare always entails a competition between the man and the material. A sword is countered with a shield, a grenade with a concrete bunker, and this cycle will keep turning as long as war will exist. Technology works for both the attacker and the defender and any weapon of offense has a dominant position only for the short period before the defense gets accustomed to it.¹²⁴¹ Material and machines have not, according to Seeckt, gotten the best of man. They have grown to dominate the mass of men but not the man himself, since only he can bring the machine into action. The problem of WWI was that the practically immobile mass of infantrymen was set against a mass of materiel and the bigger the mass of men becomes, the more certain is the victory of materiel mass over it.¹²⁴²

Writing in the thirties, Guderian perceived more than clearly the benefit armored and mechanized troops by combining the men to the machines effectively could have in the future battles and indeed, this very idea held true throughout the Cold War in the European theatre. A future war would be a race of machines carrying men against time. In the words of Guderian, the very beginning of the war is the time when mechanized forces play they greatest role for "upon the outbreak of hostilities, the mechanical elements are given their first as well as their greatest opportunity for speedy gains; for no one can say how the situation might develop after the initial encounter."¹²⁴³ In the initial stages of war mechanized troops are able to drive deep into enemy territory and in the best case scenario, occupy enormous swathes of land before the defender is able to set up his defenses. Mobility and winning time by rapid action made it possible to start the actual fighting on a completely altered playing ground. In this case, the side that has taken the offensive with a speedy, deep thrust can push the war on the territory of his enemy as the locus of combat.

However, energy and momentum are constantly spent in the course of the offensive. Even when operations proceed smoothly, they sooner or later slow down and become static. Both World Wars began with bold drives deep into the enemy territory, but the rapidity of the advance was gradually decimated until the enemy could set up a line of defense which, its momentum diminished, the attack could not penetrate. No matter how energetic one is to begin with, the clockwork machinery of warfare is wound down and a stasis emerges. Liddell Hart argued that the difference between the two World Wars

"can be traced to differences of space and speed rather than of weapons. The weapon development favourable to the offensive has been counter-balanced by the weapon development favourable to the defensive. But other conditions have made the present war less static. While

¹²³⁹ Swinton (1916) "Notes on the Employment of Tanks". Cited in Fuller (1920), p. 51. Actually Swinton wrote his first paper on this idea as early as 1915 arguing that "*they should be employed as a surprise in an assault on the German position on a large scale. To enable the element of surprise to come in, these machines should be built at home secretly and their existence should not be disclosed until all are ready. There should be no preliminary efforts made with a few machines, the result of which would give the scheme away.*" On this see excerpt from Swinton's paper "The Necessity for Machine-gun Destroyers", quoted in Carver (1979), p.18.

¹²⁴⁰ Rommel (1953), p. 133.

¹²⁴¹ Seeckt (1930), p. 65.

¹²⁴² Ibid.

¹²⁴³ Guderian (1937), pp. 5-6.

defence is stronger, space has been wider and forces faster. These offsets have given the offensive a better chance strategically than in the last war – by providing the attacker with no more room for manoeuvre, and more speed of manoeuvre, thus making it easier for him to achieve penetration."¹²⁴⁴

The WW II lasted only a few years, but during that time the nature of warfare was internally altered completely. *Blitzkrieg* of the beginning turned out to be a quick thunderstorm, followed by heavy rain that bogged the mobility of the troops. Winning time by being fast metamorphosed into winning time by slowing down the enemy. Thus,

> "the pendulum of war swings back, and we return to the foot soldier, not infantry trained to attack, but trained to defend. Not infantry armed with rifles and bayonets, but engineers equipped with anti-tank weapons. Finally we arrive at this somewhat perplexing conclusion: as the defensive gains on the offensive, as it always has after some new offensive weapon has been invented, and eventually 'bunker' it, military operations will become slower and slower, until battles between mechanized armies are likely to grow as static as they were between the enormous muscular armies of the World War:"¹²⁴⁵

The defensive once again proved its strength over the offensive and the fast movement that robbed the defender of time was effectively slowed down until the defender was able to match it with his pace. We can draw a conclusion that the attacker always strives to be faster and faster and the defender should not accept this race but rather attempt to slow him down. In the course of time, any offensive invention hastens the pace of warfare and once the defender finds a way to counter it, the battles again start to take the positional form. Liddell Hart wrote prophetically in the period between the World Wars predicting what the next war would be like. He actually gave two options for further development,

> "the next war must either be more mobile than the last, which attained in its middle period the zenith of immobility, or it will cease to be war and become a mere state of impotent exasperation. The motive underlying all subsequent invention, or rather their military development, has been to dissipate this condition of stagnation, and every recent advance in military materiel has been in the direction of greater power and speed of movement."¹²⁴⁶

While all development prior to WWII aimed at creating greater mobility and *Blitzkrieg* was an ode to mobility it seemed that in the course of the war ode became a requiem. Stalingrad was a monument for the "impotent exasperation" Liddell Hart wrote about and generally bold maneuvers became the fewer the longer the war continued. As Svechin perceptively noted, "*It is easy to get involved in positional warfare, even against one's will, but it is not so easy to get out of it; no one managed to do it the World War*."¹²⁴⁷

6.2. CYCLE FROM PASSIVE ATTRITION TO ACTIVE MANEUVER

"In general, static elements of defense can be used pin down, turn, or block the enemy's attacking force and thereby gain time for other friendly forces. Mobile elements can be constantly on the move and thereby prevent the enemy from exploiting his combat success or confuse him."¹²⁴⁸

There are different ways of implementing operational art such as maneuver warfare, annihilation warfare and attrition warfare. All of these can be used as methods of fighting both offensive and defensive battles. The last one is generally fought out to wear down and exhaust the enemy. Besieging and starving cities and fortifications was its classical form. Starvation and deprivation of necessities brought about the victory for the one with more en-

¹²⁴⁴ Liddell Hart (1946), pp. 22-23.

¹²⁴⁵ Fuller (1932), p. 290.

¹²⁴⁶ Liddell Hart (1927), p. 128.

¹²⁴⁷ Svechin (1992), p. 255.

¹²⁴⁸ Vego (2009), p. V-55.

durance. Siege warfare, however, became a thing of the past during Napoleonic Wars. As mobility allowed operational art to re-emerge in the guise on maneuver warfare, the idea of siege warfare faded into obscurity as a result¹²⁴⁹. Positional battles of attrition did not disappear but got new forms. They became 'material battles' and their lowest depths from the perspective of operational art perhaps occurred during WW I. Svechin sarcastically depicted them as "designed to last entire months and involve trampling over the same piece of ground in an organized way and in which therefore gaining ground is less important than inflicting greater losses on the enemy than the losses we bear."¹²⁵⁰ This harsh judgment is not depictive of all battles of attrition. The reason why discussion on the relative pros and cons of attrition and maneuver is included here can be deciphered from Leonhard who argued that

"Time is perhaps the key discriminator between maneuver and attrition theory. Maneuver warfare is an intense contest for time. This has always been the case for those armies in history that have been disposed to fight according to maneuver theory (...) But the urgency of the contest for time is even more evident in modern warfare. The reason is that time is of greater value today than it was in the past. That is, a minute of battle today is more valuable than a minute fifty years ago."¹²⁵¹

The theorists of attrition and maneuver always seem to be portrayed in literature as absolute opposites of each other. One wants to defend, the other to attack. These are stereotypes, since it has always been understood that remaining on the defensive doesn't bring about victory. ¹²⁵² The main difference is that the attritionist wishes to consume as much time as possible and the one favoring maneuver attempts not to waste a single moment. On a more general level in both tactics and operational art maneuver warfare and attrition warfare blend into each other relatively seamlessly and are both just different phases of a battle or an operation. The attacker wishes to use maneuver, but may be forced into a battle of attrition. The defender wishes to diminish the force of the attack for a while and then switch into offensive and maneuver. This is explained by von der Goltz:

"The object of all war, the crushing of the enemy's forces, can, after all, only be achieved by attack. The partisans of defensive also always maintain that it can only be assumed for a time, that in the end the defender must also begin to attack, and answer the thrust that he has parried by a stroke in return, and that he must ever keep this in view. That is to say, in other words, that the defender would also be the attacker, and only awaits the moment when he will be able to take the offensive with prospect of success. To make war means to attack."¹²⁵³

As in all aspects of human experience there is no black or white but many shades of grey. Even Simpkin, with his unashamed advocacy of mobile warfare, saw that attrition and maneuver warfare are interrelated. As defensive attrition may turn into offensive with maneuver, the irregular or guerrilla warfare is often focused on attrition in the first phases while trying to create regular force strong enough to assume the position of the concentrated offensive relying on maneuver. We come back to the idea of cycles. Warfare is a continuous and repetitive cycle in which different methods characteristic to different times blend into each other and each one is continued by another as time and circumstances dictate. There are different theories and methods in the art of war but they are never completely independent from each other. This led Simpkin to argue that,

"there remain, then, these three theories of war – attrition theory, manoeuvre theory and the doctrine of revolutionary war. All these lie on a continuum; and attrition theory becomes complementary to the others once fighting between organized and/or irregular forces breaks out. But just as, within manoeuvre theory, offence and defence are opposite aspects of the

¹²⁴⁹ See Creveld (2011), p. 23.

¹²⁵⁰ Svechin (1992), p. 273.

¹²⁵¹ Leonhard (1991), p. 82.

¹²⁵² Lalu (2014), p. 79 argued that strategy of attrition was the opposite of strategy of destruction in the thinking of Svechin that influenced Soviet operational art.

¹²⁵³ von der Goltz (1906), p. 156.

same continuum, so, within the continuum of the threat and use of armed force, attrition warfare lies at one pole, while manoeuvre warfare and revolutionary warfare adjoin each other astride the opposite pole."¹²⁵⁴

A characteristic of almost all of the great captains of history is that they have been able to use great variability in the tactics they chose for each different opponent and situation.¹²⁵⁵ The tendency to prefer maneuver over attrition comes and goes in cycles and often novel methods in tactics or new technological innovations rejuvenate maneuver. As Colby wrote about Marlborough he was one of the early modern masters of mobile warfare enabled by not only his personal energy but also "the growth of firepower as a decisive element on the battlefield, and a flexibility of maneuver in action that had not been known for centuries."¹²⁵⁶ Or we can justifiably use Frederick the Great both as a shining example of maneuver warfare or a warning example of its use. His art of war vacillated between bold movements designed to destroy the enemy in a decisive battle and the other pole of avoiding battle through sieges and marches planned to exhaust the enemy. In this sense they were attrition warfare as well. They just did not exhaust or drain the enemy of the lives of his soldiers but his energies and supplies. Frederick and Gustavus Adolphus were skilled in choosing the right approach depending on the circumstances. Bülow argued that there was "a wavering between the old and new systems, not did the genius of Gustavus Adolphus decide for either. We find no trace of a regular system in that memorable war."1257 Frederick was more systematic. As Delbrück wrote, "the longer the Seven Years' War continued, the further the king moved away from the pole of battle and closer to the pole of attrition."1258 Frederick attempted to make the best of the situation. If the army is not strong enough, a decisive battle is not the way to victory. The genius of Frederick was in selecting useful means and methods for each occasion¹²⁵⁹.

Most commonly, as von der Goltz wrote, "of two opponents equal in other respects, the more active will be the victor."¹²⁶⁰ And activity in operational art is most often evidenced in the movements of the troops, that is, the ability and willingness to maneuver. We often talk of maneuver as the optimal way of attacking, because in theory it can free the mobility potential of the forces and allow its full exploitation. At the same time we treat defense as a static way of war of which attrition is the penultimate manifestation that bleeds the opposing forces white in immobile frontal contact. Practically nothing could be further from the true meaning of a clash of forces and wills of their commanders. There can be no maneuver without attrition and vice versa. If there is nothing to restrict mobility movement becomes meaningless and it is excessively difficult to actually engage the enemy. For a mobile attack to succeed one has to use a part of his forces to engage the enemy, temporarily tie him down, and restrict his mobility. When the enemy is static, one can use mobility to attack him. A static element is a necessity for mobile warfare and static defense cannot bring a result without a mobile element that attacks once attrition has changed power-ratios. Mobile battles and those of attrition are like the two sides of a coin in operational art.

Kaldor argued that the theories of attrition as wearing down the enemy by imposing on him a higher casualty rate and maneuver theory as using surprise, preemption, mobility, and dispersion to create uncertainty in the enemy were concepts initially developed by Clausewitz.¹²⁶¹ Perhaps Clausewitz wrote down the ideas in the most comprehensive manner, but these ways of fighting have been practiced as long as wars have

¹²⁵⁴ Simpkin (1985), p. 319.

¹²⁵⁵ See for example Delbrück (1990b), p. 375 and his discussion on Justinian in the Byzantine war.

¹²⁵⁶ Colby (1943), p. 17.

¹²⁵⁷ Bülow (2013), p. 235. See Bond (1998), pp. 17-18 on the two-sided approach of Frederick to battles. ¹²⁵⁸ Delbrück (1997), p. 127 had a different view of Frederickian strategy as many others since he counted Frederick among the proponents of exhaustion or attrition warfare. On this see e.g. Bond (2006), p. 24. Rather Frederick chose to make the best of the assets available to him at any given time.

¹²⁵⁹ Colby (1943), p. 103.

¹²⁶⁰ von der Goltz (1906), p. 154.

¹²⁶¹ Kaldor (2007), p. 24. Strachan and Rothe (2007), p. 9 discuss how Kaldor treated Clausewitz as related only to the context of states.

been fought. Throughout history when the art of war is of exceptionally high quality operational art favors maneuver and when they reach a slump, the ugly head of attrition rears.

Unfortunately for mankind the idea of attrition warfare was re-animated as an inbred bastard of the industrial revolution. In the mass-produced bloodbaths it was not only the armies that were exhausted or drained of their resources but also the nation-states that furnished them. For Ludendorff the German offensive in Verdun failed to achieve a decision and turned into the first battle of attrition in WW I in which massive amounts of men and materiel were spent in the very same place while time dragged on in unsuccessful attempts to emerge victorious.¹²⁶² Ehrfurth argued that the breaking point of the wave of attrition warfare was reached in British offensive lasting throughout the summer and fall of 1917 in Flanders and summarized the principle of attrition warfare, "*the concept of the battle of materiel is to defeat the opponent by crushing material superiority without relying on generalship*."¹²⁶³ If the nation had enough resources in men to be trained as soldiers, agricultural capacity to feed them and industry to supply them, a war of indust-reality could proceed almost mechanically. Operational art atrophied because it became secondary in importance to materiel.

Again using Verdun as an example Ludendorff makes a piercing notion of how to conduct a war of position or attrition. If one has chosen the offensive as his approach, the offensive must be called off immediately when the fight takes the shape of battle of attrition, the progress is halted and gaining ground by re-seizing initiative seems unlikely. The time to halt the offensive comes at the very moment when gains no longer balance with the losses suffered. After all, the attacker is able to call off the offensive at any time he so chooses to do. On the other hand, having chosen the defensive, for the defender the battle of attrition continues as long as the offensive persists.¹²⁶⁴

Nevertheless, it is not automatic that the defender would benefit from stubbornly endlessly remaining on the defensive and allowing the enemy to waste its own power in successive attacks. The issue is of rates of attrition and whom they favor over time. According to Guderian, a tremendous failure occurred in not realizing this and "*time showed that the Germans suffered more than the enemy from the way they held on to positions that had been dictated by the needs of the moment, regardless of whether they were suited for defence over a period of time*."¹²⁶⁵ In such a situation the defender has to be able to let timely go of the positions that have become too dear to hold. As Manstein described the pros and cons,

> "though an attacker may bleed to death before an adequately defended front, any attempt to hold one which can at best be manned on the scale of a safety screen will merely cause the meager defending forces to be expended at an excessive rate. Assuming, that is, that the enemy does not simply over-run them."¹²⁶⁶

Attrition warfare should not even be attempted without a certainty that the defending forces are strong enough not to be overrun before the goals of attrition have been reached or the attrition rate of the attacker when compared to the defender is higher so that the balance of power keeps shifting to favor the defender. If one is given a task like Manstein, to keep on the defensive and not give up an inch of territory, one should have actually more power than the attacker does in order for attrition to work on the long run. Attrition should be chosen as only a temporary and short-term option or a phase of a battle.

Maneuver warfare demands much more from the operational artist and his skills. In contrast to attrition, Ludendorff claimed that in a war of maneuver the commander is required to form and reform mental pictures of the prevailing conditions in colorful sequences. His decisions must at any given moment be based on his own capacity and *coup d'oeil*. In war of movement "*the handwork of the soldier becomes an art and he is turned into a com*

¹²⁶² Ludendorff (1919), p. 176.

¹²⁶³ Ehrfurth (1991), p. 523.

¹²⁶⁴ Ludendorff (1919), p. 200.

¹²⁶⁵ Guderian (1992), p. 37.

¹²⁶⁶ Manstein (1982), p. 495.

mander.²¹²⁶⁷ This is due to the necessity of making individual decisions on the spur of the moment at any given time on all levels of war. Since movement is quick, conditions change rapidly. According to Foch,

"Joseph de Maistre wrote: 'A battle lost is a battle one thinks one has lost; for,' he added, 'a battle cannot be lost physically.' Therefore, it can only be lost morally. But then, it is also morally that a battle is won, and we may extend the aphorism by saying: A battle won, is a battle in which one will not confess oneself beaten.¹²⁶⁸

We must be lenient towards Foch because these fantasies were uttered prior to WW I in a lecture to aspiring officers and for example one of his critics, Fuller, seemed to share this idea early on in his career¹²⁶⁹. He followed a long tradition in art of war to emphasize the moral over the physical as an element of heroic warfare. Bülow had earlier written that "not to be really beaten, you have only to believe that you are not so."¹²⁷⁰ It is likely that the carnage the French suffered taught Foch that battles can be lost regardless of one's beliefs. Moral victories do not matter if physical conditions dictate otherwise. In terms of fighting spirit one may indeed not be beaten until one admits it, but the moral dimension of battle is only one among many and an army can sustain only so many losses before yielding.¹²⁷¹ During indust-reality and its mass-produced warfare with its lethal potential one indeed could be destroyed even if one did not confess it to be so. Thus, this type of thinking Foch emphasized was characteristic of the agrarian First Wave but curiously has made a comeback in Third Wave warfare leading Smith to argue that "Our conflicts tend to be timeless, since we are seeking a condition, which then must be maintained until an agreement on a definitive outcome, which may take years or decades."¹²⁷² There is no doubt that the coalition forces won a victory over the Taliban and Iraqi forces, but the war dragged on regardless.

In a battle of attrition the casualties pile up slowly and the resources poured into the war effort drain the economic well-being of the nation inevitably, but the moral breaking point is far removed in time. As Liddell Hart put it, in a war of attrition there could be "neither victory nor defeat, only a common loss. To-day we are suffering not only from exhaustion of the body, political and economic, but from exhaustion of the spirit."¹²⁷³ In contrast to WW I and its attrition strategies there have been times in the course of military history when the art of maneuver has dominated strategic thinking to such a degree that battles were shunned. In the mercenary wars in the large scheme of things the entire military profession would suffer if the battles were battles of annihilation. The incentive on both sides was to save lives and this led to even avoidance of battles and favoring skilled maneuvers.¹²⁷⁴

The Peloponnesian War, of which the first part lasted ten years,¹²⁷⁵ or the Thirty Years' war fit the pattern of fighting as little as possible. Once a war is fought between two groups of men who have made war their livelihood it is only beneficial for all participants to prolong war as long as possible and simultaneously mitigate its destructivi-

¹²⁶⁷ Ludendorff, (1919), p. 37.

¹²⁶⁸ Foch (1920), p. 286. See also Heuser (2007), pp. 147-148

¹²⁶⁹ Fuller conveniently forgot in his later years that in the early stages of his military writing he had embraced some of Foch's thinking. In 1914, in a preface for his "Training Soldiers for War" he had written "Once man's heart is won, men may be slaughtered, they may be annihilated, but they will not be conquered and to will success is all but equivalent to victory." Cited in Trythall (1977), p. 27. This was not all that far from Foch's train of thought. ¹²⁷⁰ Bülow (2013), p. 186.

¹²⁷¹ I must apologize for the Reader for my somewhat biased perspective of Foch, but reading him it is easy to see that he did not belong to the generation of generals of whom Berenhorst quipped that "*the French and Prussian generals divided the art of war between them; the Prussians took the former and the French the latter*." Cited in Gat (2001), p. 157. Reading Greenhalgh's (2011) excellent and in-depth biography of Foch written in a positive tone one cannot help running into expressions such as "*It appears to have been an unfortunate characteristic of Foch's to jump in feet first*." p. 48 thus making it possible to read other evaluations like "*it requires a special sort of character to be able to issue such orders, but Foch had the necessary energy and conviction*." p. 36 in a more ominous light.

¹²⁷³ Liddell Hart (1932), p. 18.

¹²⁷⁴ Fuller (1961), p. 22.

¹²⁷⁵ Thucydides (1971), pp. 321, 323.

ty.¹²⁷⁶ There were but a few land battles during the twenty-seven years of Peloponnesian wars which led Delbrück to call it "*war without decision, through simple attrition*."¹²⁷⁷ This attrition was more a mental erosion of the will to fight than expenditure of physical forces and resources¹²⁷⁸. In the case of the Thirty Years' War there were thirty-three battles none of which led to military resolution. They rather aimed at economic exhaustion of the enemy while somehow supplying one's own forces¹²⁷⁹.

Joly de Maizeroy once summarized art of maneuver warfare to be "not only in knowing how to fight but even more in avoiding the fight, in selecting posts, in directing the marches so as to reach the goal without committing oneself, ... so again as to decide to fight a battle only when it is deemed indispensable."¹²⁸⁰ The logic is perverted. Surely a war without a battle cannot be called a war. Massenbach considered such avoidance of battles in favor of maneuvers the supreme form of military art.¹²⁸¹ I consider it a parody of that art.¹²⁸² In rare cases, conceded Clausewitz, a bloodless victory could be attained through maneuver, but only if one was willing and prepared to shed blood and to fight.¹²⁸³ It is true that one does not have to fight to be victorious, but only if he actually wins that war. If war deteriorates to maneuver for maneuver's sake, there is no glory for the general to be won. A wise interpretation can be found in the writings of Procopius advising the Persian king that

"in war one should not rely on luck and chance, even if one is very much stronger than the enemy, but should preferably seek to lie in wait for the enemy by means of ruses and stratagems. He who moves directly toward danger is not at all sure of victory."¹²⁸⁴

The idea of avoiding open battles is contrary to all the principles of war. While it is true that one should not rush headlong at the enemy at first chance and that is it useful to attempt to erode the enemy power first, operational art should not develop into a direction in which battles are avoided. In successful battles and operations, the phases of attrition and maneuver are present and the switch from one to another needs to occur seamlessly without a moment wasted. Many classical examples of maneuver warfare, like some campaigns of Scipio, Frederick, Justinian, or Caesar were not results of choice, but brought about by a lack of men, material or overall strength of the armies. In the words of Caesar himself,

"Caesar had conceived hopes of ending an affair without an engagement, or without striking a low, because he had cut off the enemy's supplies. Why should he hazard the loss of any of his men, even in a successful battle? Why should he expose soldiers to be wounded; who had deserved so well of him? Why, in short, should he tempt fortune?"²⁸⁵

When the commanders-in-chief doubted their ability to bring about a decisive battle, they resorted to other, more discreet and limited means of engaging the enemy. If both sides to the conflict were too weak, war became a parody of itself and started to resemble complicated drills where sweeping movements and encircling motions were carried out across empty terrain with armies circling around each other in constant movement and next to no actual battles were fought. This type of elaborate military posturing was unable to decide wars. Wars became armed show-offs in which no decision was properly sought for and therefore a state of war lasted for a long time even if actual warfare during these periods was at best spasmodic. Such noted *condottieri* as Paolo Vitelli and Prospero Colonna stated that wars are won by industry and cunning instead of actual clash of arms.¹²⁸⁶

¹²⁷⁶ Fuller (1961), p. 16.

¹²⁷⁷ Delbrück (1990), p. 135.

¹²⁷⁸ Thucydides (1971), p. 19 claims that earlier the siege of Troy lasted for ten years mostly because the Greek army only used whatever portion of their army happened to be available.

¹²⁷⁹ Münkler (2005), pp. 42-47.

¹²⁸⁰ Foch (1920), p. 27.

¹²⁸¹ Ibid.

¹²⁸² Foertsch (1939), p. 29 called wars without battles decadence of the art of war.

¹²⁸³ See Howard (1983), p. 43.

¹²⁸⁴ Procopius, cited in Delbrück (1990b), p. 381.

¹²⁸⁵ Caesar (2010), pp. 178-179.

¹²⁸⁶ Fuller (1961), p. 16.

In the Seven Years' or the Gothic Wars the reason for ineffectiveness could be found either in too few troops or unwillingness to suffer large casualties in the quest for decision. In both cases lack of political will led to prolonged war. Even if the suffering and hardships of the populations and soldiers were spread out over a longer time-span, the total is likely to have been greater than necessary. Concentrating the violence in time and place for a decisive battle, as Clausewitz and later Moltke proposed, would have been the more humane thing to do. For the inefficiency of mere maneuver to win the war we can cite Ritter von Leeb, "one cannot succeed in breaking down the will of the enemy by mere exhaustion, but only through a victorious battle."¹²⁸⁷ According to Delbruck the only one who has ever managed to gain victory and complete destruction of the enemy army without more than a few moderate-sized skirmishes and no major battle was Caesar in the civil war.¹²⁸⁸ This was an exceptional occasion, since it has not been properly replicated since.

As we can see from this example that as an exception proves the rule that maneuver alone cannot bring decisive victories.¹²⁸⁹ Here was another example of a huge leap forward in the art of war that Napoleon brought about. The eighteenth century operational art relied on maneuver deeply entwined with the diplomacy to influence the will of the enemy. Napoleon chose to crush the enemy's main force and thus affect a collapse of the will of the enemy state¹²⁹⁰. As Liddell Hart eloquently described the situation,

"For nearly two centuries the average general was chary of fighting battles at all, while even the great ones took care only to fight when, by chance or by strategy, the dice were loaded heavily on their favour – when, as Saxe said, there was "all imaginable reason to expect the victory ... without trusting anything to accident." There was a change when Napoleon came on the scene. A Corsican, not a Frenchman; a supreme careerist, not a true patriot; he was unchecked in pursuing his ambitions by any sense of responsibility for the ultimate welfare of his country as apart from himself. If his dreams were boundless, he took short views, since his horizon was his own life-span. Time was always against him; and he needed quick results. Non, whatever be the difficulties of winning a war by a battle, it is the quickest means – if it can be achieved. Hence Napoleons predisposition for this means."¹²⁹¹

This is a very good description of Napoleonic warfare since above all else, it was a war against time. Napoleon perceived that he was not about to create an empire that would last for millennia. He had his own lifetime to work with and he fully understood the waning of his vigor and energy by every battle and campaign. Just because he felt the pressure of time, he created similar pressure in his own campaigns and attempted to compress time to make as much as possible out of it. Napoleon did not attempt to make time win his victories for him but pushed continuously for results and decisive battles.

The further back in history we look the more devastating and simultaneously decisive battles we find even if they are still rare phenomena. Already in the late 19th century it had become very rare to achieve decisive victories.¹²⁹² The size and complexity of modern day armies makes them more difficult to destroy utterly, but to some degree the destruction of the enemy has often been the aim for the great captains of the ancient and less 'civilized' times. Spartans, for all their stamina in a battle did not pursue their enemies for long¹²⁹³, but Alexander, Hannibal or Caesar fought cruel battles in which the pursuit of the fleeing enemy was ruthlessly executed until the exhaustion of their own troops. As Delbrück phrased it, "*the highest principle of these commanders was: defeat and destruction of the ene*

¹²⁸⁷ Von Leeb (1991), p. 67.

¹²⁸⁸ Delbrück (1990), pp. 522-523.

¹²⁸⁹ For a discussion on early European thinking on maneuvering to avoid battles versus seeking decisive battles see for example Heuser (2010), pp. 89-96.

¹²⁹⁰ Smith (2008), p. 61.

¹²⁹¹ Liddell Hart (1937), p. 292. See also Danchev (1998), p. 163.

¹²⁹² Bond (1998), pp. 4-5 explains in more detail why indust-reality almost rendered them obsolete.

¹²⁹³ Thucydides (1971), p. 353.

 my^{2294} and they had no moral scruples with the casualties of their own in the pursuit of decisive victories often attained by pursuit of the disorganized enemy troops that practically equaled slaughter.

As a generalization we can write that an annihilating battle is the ultimate outcome of maneuver warfare in its highest form. In the agrarian age a Greek phalanx or Roman cohort was able to annihilate a less organized and more barbaric enemy in a headon collision. As Quintus described the tactics involving a phalanx,

> "The Macedonian line is certainly coarse and inelegant, but it protects behind its shields and lances immovable wedges of tough, densely-packed soldiers. The Macedonians call it a phalanx, an infantry column that holds its ground. They stand man next to man, armies interlocked with arms. They wait eagerly for their commander's signal, and they are trained to follow the standards and not break ranks. To a man they obey their orders."¹²⁹⁵

What the phalanx brought about, was organization of the warriors into units, and this was a prerequisite of any maneuver. Alexander was able to weld the mass into a military machine capable of controlled movement.¹²⁹⁶ The mass armies had different objectives than the mechanized forces that followed them. This was partially due to their different capabilities. An agrarian or industrial but pre-mechanized horde could in extraordinary surroundings swamp the enemy while a mobile mechanized spearhead had a bigger chance to puncture his defenses at a vital point and hit where it truly hurt. The injury would be fatal in both cases, but achieved through different methods.

The battle of Cannae held a fascination over almost all German commanders of the first half of the 20th century. This was a result of Clausewitzian doctrine of destruction of the enemy honed to perfection by Moltke. There always was a tendency to attempt to recreate the conditions of Cannae to annihilate the enemy. Von Schlieffen wanted to use the space in the depth of the enemy for free movement to destroy the enemy in encirclement and considered a frontal attack to be avoided. Attacks had to be made against the flanks to envelop the enemy in order for the battles to be decisive.¹²⁹⁷ This preference for deep, sweeping operations was resurrected in mechanized warfare and. As an example, Rommel wrote to his wife, describing a battle about to take place, "*It's going to be a 'Cannae', modern style*."¹²⁹⁸ As von Schlieffen described this ancient battle Hannibal won,

"according to the principle of Cannae, a broad battle line advances against a narrower but generally deeper one. The overlapping flanks envelop the hostile flanks; the cavalry attacks the rear. Should the flanks be separated from the center, for some reason or other, it is not necessary to assemble them again in order to continue the enveloping maneuver, for they can be sent at once against the flank and rear."¹²⁹⁹

Von Schlieffen argued that not only Hannibal but also Frederick, Moltke and Napoleon had used this method of wide envelopment in their greatest victories, but ultimately conceded that 'Cannaes' are rare, since in order for the battle to lead to complete annihilation, there would have to be a genius like Hannibal on one side and a Terentius Varro on the other. In his eagerness to push the attack, Terentius Varro allowed Hannibal's troops to engulf and surround his own.¹³⁰⁰ While geniuses are rare in the yellowed pages of history, Terentius Varros have "existed during all periods of history. Thus it happened that, though no real Cannae, with the exception of Sedan, has been fought, there has been a whole series of nearly-annihilating battles, and these have always occurred at the turning points of history."¹³⁰¹ Such a victory is dependent on the ignorance of the enemy general that allows catching him unaware and makes

1299 von Schileffen (1936), p. 234.

¹²⁹⁴ Delbrück (1990b), p. 381.

¹²⁹⁵ Quintus (1988), p. 29.

¹²⁹⁶ Stempel (2012), p. 73.

¹²⁹⁷ Schlieffen (1936); Vego (2009), p. V-16. See also Bond (2006), p. 91 on the thinking of Schlieffen.

¹²⁹⁸ Rommel (1953), p. 116. Excerpt from a letter to his wife.

¹³⁰⁰ See e.g. Fuller (1948), p. 44.

¹³⁰¹ Schileffen (1936), pp. 238-239.

him unable to act on his own initiative. One must surprise and the other must be surprised. Only then a battle of annihilation is even possible.¹³⁰² As to what surprises a general, it depends upon his professional abilities. Jomini quipped that "*a general may attempt with a Mack as his antagonist what it would be madness to do with a Napoleon.*"¹³⁰³ A less gifted operational artist is easier to force into a position in which his army may be destroyed, but annihilation is rarely a quick process. Delbruck listed battles in which the enemy was completely destroyed after stubborn battles. These included along with Cannae the Roman army at Lake Trasimeno, the Prussian army in 1806 and three French armies in 1870-1871.¹³⁰⁴ Even if a battle of annihilation is often sought, it is seldom realized.

When either side believed in its potential to bring about a decision to the war in an open battle with the bulk of the enemy forces, maneuver warfare reached its highest peak. Hannibal, Genghis Khan, Napoleon, Frederick (at times), Gustavus Adolphus or Sherman used their mobility and skill of maneuver in operations to force the less skilled enemy into accepting a decisive battle. When such a battle occurred it was likely to result in a rapid termination of the entire war. Out of these aforementioned great captains Genghis Khan is in once sense above the rest and the precursor of the principles of mechanized warfare of the 20th century. All of his troops were mounted and

> "their mobility arose from perfect assimilation to their means of movement – they were bred in the saddle and hoped to die in it – and from ability to live sparsely in order to travel light. Each trooper had spare mounts and carried his own subsistence, so that the Mongol army was unencumbered by masses of transport."¹³⁰⁵

Herein is illustrated the essence of mobile warfare that even modern armies have not been able to replicate. Unlike mechanized armies, the horses could be fed from the fields and massive amounts of petrol did not need to be transported along with the fighting units. The agrarian nature of the societies fought against helped not only Genghis Khan but also the Goths, Huns, Vandals, Normans and Tartars to overrun one enemy after other. Only the inventions of gunpowder, standing armies and cooperation between civilizations ultimately blocked this type of nomadic approach to war.¹³⁰⁶ A horse-army was light and did not require extensive lines of communication and supply because its ability to forage allowed it freedom of operations that cannot be reached with contemporary units. Almost every man and horse in a Mongol army was a fighter and a weapon. Similarly, Carolingian army carried what it needed to sustain itself and foraged the rest. This made the army mobile, but consequently small in numbers.¹³⁰⁷ In contemporary armies much of the numerical strength is consumed in supporting or auxiliary troops.

One of the things in common between the mobile units of the past and present is their ability to inflict serious damage to the enemy if he chooses to flee from the attack. Mechanized mobile armies with their air support brought back into the art of war the prospect of decisive battles.¹³⁰⁸ To win them, mobility has to be exploited since when a commander has scored an important victory,

> "it is generally wrong for him to be satisfied with too narrow a strategic aim. For that is the time to exploit success. It is during the pursuit, when the beaten enemy is still dispirited and disorganized, that most prisoners are made and most booty captured. Troops who on one

¹³⁰² Ehrfurth (1991), pp. 387, 388.

¹³⁰³ Jomini (2007), p. 31. It has to be said that even the eventual victor over Napoleon, Wellington wrote concerning his abilities that "whatever may be thought of Buonaparte as a leader of troops in other respects, there certainly never existed a man in that situation, in any times, in whose presence it was so little safe to make what is called a false movement." Wellington, cited in Bassford et al (2010), pp. 224.

¹³⁰⁴ Delbrück (1990), p. 523.

¹³⁰⁵ Liddell Hart (1932), p. 65.

¹³⁰⁶ Jomini (2007), p. 123.

¹³⁰⁷ Delbrück (1990c), pp. 22-24.

¹³⁰⁸ Bond (1998), p. 9.

day are flying in a wild panic to the rear, may, unless they are continually harried by the pursuer, very soon stand in battle again, freshly organized as fully effective fighting men."¹³⁰⁹

Disorganization of the enemy must be exploited. When disunity reigns among the troops and command alike the enemy is not able to dictate his use of time. He is forced to act within the bounds set by the pursuer and the only option open is to attempt to flee more rapidly or set up a ramshackle defense. If the pursuit falters, the enemy wins time to regroup and plan his counter-attack. Thus the pursuit should be both relentless and an organized part of operations. Liddell Hart emphasized the meaning of pursuit or exploitation of success as a means of victory in the mechanized era while he acknowledged that originally Napoleon systematized it as a function of the battlefield¹³¹⁰. As Rokossovsky described a Soviet pursuit of the Wehrmacht on the Eastern Front in WWII

"Realising that the enemy would make use of the slightest delay in our advance to organize resistance, we did all we could to keep up the pace of the offensive. To this end we dispensed with all regrouping manoeuvres, which would have inevitably slowed down our advance, if only briefly. As our units pushed forward, the frontage shrank and we could have pulled out some forces to the second echelon. But it seemed a pity to waste time, so we merely contracted the battle formations of the forward echelon."¹¹³¹¹

The Soviets thoroughly understood the importance of momentum and keeping the offensive in motion. There was no time waste and thus every unimportant detail was almost ignored and all possible energy was spent on upholding the movement. Pausing movement once an objective has been reached is one of the gravest mistakes a commander can make.

Sometimes conditions for pursuit need to be created by the attacker and this occurs, for example, when he has been able to envelop or encircle the defender. If the defensive formation has retained inner coherence and organization the enemy may be able to create a local superiority in force and break out of the encirclement. If the enemy fails to do so, he may either surrender or in some cases fight to the last man. In this case the casualties on the encircling side would increase considerably. The desire to spare troops led to the idea of leaving the enemy an escape route out of the encirclement. This has occasionally been a misunderstood concept. As de Saxe wrote about this practice,

"The proverb: 'A bridge of gold should be made for the enemy,' in connection with his retreat, is followed religiously. This is false. On the contrary, the pursuit should be pushed to the limit. And the retreat which had appeared such a satisfactory solution will be turned into a rout. A detachment of ten thousand men can destroy an army of one hundred thousand in flight. Nothing inspires so much terror or occasions so much damage, for everything is lost. Substantial efforts are required to restore the defeated army, and in addition you are rid of the enemy for a long time. But many generals do not worry about finishing the war too soon."¹³¹²

If the enemy is provided with such an egress from the encirclement, it would likely make a hasty and disorganized retreat. Pursuing it in flight would lead to lesser casualties than trying to destroy it in encirclement position. In other words, the "bridge of gold" was a great idea if it only seemed golden, but was intended to lure the enemy into chaotic flight while pursuit had been planned. It was not intended to allow the enemy to evacuate his forces but to hasten their destruction. Once the enemy is on the run, "the tactical advantage must be seized. The fleeing enemy who cannot be destroyed today, may return to the battlefield with his power restored tomorrow."¹³¹³ Foot soldiers do not have enough stamina or speed to effectively pursue and chase the enemy beyond a certain limit. As Wellington described the case in Waterloo, "I continued the pursuit till long after dark, and then discontinued it only on account of the fatigue of the troops, who had been engaged during twelve hours, and because I found myself on the same road with Mar-

¹³⁰⁹ Rommel (1953), p. 96.

¹³¹⁰ Liddell Hart, cited in Danchev (2006), p. 100.

¹³¹¹ Rokossovsky (1970), p. 305.

¹³¹² De Saxe (1944), p. 121.

¹³¹³ Rommel (2003), p. 187.

shal Blücher, who assured me of his intention to follow the enemy throughout the night:"¹³¹⁴ But at some point pursuit falters due to the physical strain of keeping up the required unceasing movement. To prevent oneself from falling prey to a trap set up by the fleeing enemy establishing a defensive position one has to have higher mobility than he has. Then and only then can the pursuit continue relentlessly, exert constant pressure on the enemy forces, and prevent their reorganization. If, as von Schlieffen wrote, the enemy should

"be able to get some rest, he could regain his strength, draw in reinforcement, and regain his powers of resistance, even of attack. The longed-for rest should not have been granted. The Second Army should have pursued. During a long period of peace nothing much was heard of pursuits. It was known from many maneuvers that the beaten enemy was, after a lost battle, as fresh, enterprising, and dangerous as twenty-four hours earlier:"¹³¹⁵

Pursuit, stripped to its core, is an attempt to annihilate the enemy and not only to beat him. It is a new phase of the operation. Fuller wrote "the act of annihilation or pursuit is virtually a new attack requiring fresh troops and troops of a more mobile nature to those pursued."¹³¹⁶ Foch agreed that pursued is "a second operation, carefully organized beforehand [...] ready to be put to immediate effect."¹³¹⁷ Foot-soldiers, after a heavy battle are likely to be just as tired on both sides, but the mechanized forces are able to conserve the energy of the attacker, if he could continue his motorized movement with new troops overbearing on the fleeing enemy.

While it is impossible to predict the nature of future warfare, the necessity to save people from excessive suffering creates a pressing need to rethink the tenets of war. One must still echo Corbett's claim that "whatever the form of war, there is no likelihood of our ever going back to the old fallacy of attempting to decide wars by manoeuvres. All forms alike demand the use of battles."¹³¹⁸ On the level of strategy a war can be won without a fight. Once a war breaks out, there can be no operational art without fighting.

6.3. FINDING THE MOMENT TO SWITCH INTO OFFENSIVE

"Success in war depends on coup d'oeil, and on sensing the psychological moment in battle. At Austerlitz, had I attacked six hours earlier, I should have been lost."¹³¹⁹

Not every moment in warfare is equally important. War consists of lengthy periods of waiting in inactivity for a short burst of action. There are periods of uninterrupted kronos-time when time moves linearly but between these periods exist moments of kairos-time that must be used to one's advantage. According to Sun-Tzu, "*armies remain locked in a standoff for years to fight for victory on a single day*."¹³²⁰ Temporizing attack and defense are fundamentally different since the temporal objectives are contradictory. The defender always wants to drag the battle as long as possible since the force and energy the attacker spends increases as time goes on. The attacker profits from being able to break the defense as rapidly as possible in order not to have his fighting strength eroded. This leads to different values directing the two primary means of doing battle. One aims at a standoff, the other at rapid victory. As von der Goltz wrote, "The elements of the offensive are rapidity and vigour; those of the defensive, perseverance and tenacity."¹³²¹ Naturally at the most important point of the battle the defender must change into the offensive posture and adopt the new principles to guide his actions. The passive stance cannot bring about a decisive victory. As Foch wrote,

¹³¹⁴ Wellington, cited in Bassford et al (2010), pp. 18-19.

¹³¹⁵ Schileffen (1936), p. 142.

¹³¹⁶ Fuller (1923), p. 54.

¹³¹⁷ Foch (1931), p. xxxviii.

¹³¹⁸ Corbett (1999), p. 227.

¹³¹⁹ Napoleon, cited in Fuller (1961), p.46.

¹³²⁰ Sun-tzu (1993), p. 185.

¹³²¹ von der Goltz (1906), p. 158.

"offensive form alone, be it resorted to at once or only after the defensive, can lead to results, and must therefore always be adopted - at least in the end. Any defensive battle must, then, end in an offensive action, in a thrust, in a successful counter-attack."¹³²²

If there is no switch to attack, the initial attacker just withdraws, recuperates and after a pause renews his attack with a new ruse or stratagem calculated to enable a breakthrough. The battle is not victorious for the defender if the attacker withdraws voluntarily. It is merely a pause in his operations and a time for him to reset the tempo of the battle. Since we have thus far allowed Liddell Hart and his other critics almost full freedom of speech, let us discuss how Clausewitz perceived the relationship of defense and offense and when the decision to discard one in favor of the other should occur. For Clausewitz a defensive strategy consisted of finding the right balance between waiting and parrying or the defense and offense is a good posture to take, since,

"it is easier to hold ground than take it. It follows that defense is easier than attack, assuming both sides have equal means. Just what is it that makes preservation and protection so much easier? It is the fact that time which is allowed to pass unused accumulates to the credit of the defender. He reaps where he did not som."¹³²⁴

The accumulated time is an important factor in defense, but nevertheless entirely defensive battles should not be carried out because defense always

"has a negative object, it follows that it should be used only so long as weakness compels, and be abandoned as soon as we are strong enough to pursue a positive object. When one has used defensive measures successfully, a more favorable balance of strength is usually created; thus the natural course in war is to begin defensively and end by attacking."¹³²⁵

Defense can only be used to gain time and to prepare to attack. "The essence of defense lies in parrying the attack. This in turn implies waiting, which for us is the main feature of defense and also its chief advantage."¹³²⁶ Waiting wins us time, but it is passive and does not function towards gaining anything else.¹³²⁷ Time won must always be used to do something. In order to positively reap the benefits of waiting it has to be combined with activity. As Clausewitz argued, "We have pointed out that waiting and acting [...] are both essential parts of defense. Without the former, it would not be defense, without the latter, it would not be war."¹³²⁸ To remain constantly of the defensive posture implies submission to the energies and activity of the enemy¹³²⁹. To wage war, one must be able to combine defense and offense, waiting and activity and understand the "dynamic play of forces."¹³³⁰ To begin with defensive warfare

"is most often the choice of the weaker party and time won by temporizing brings about the possibility to gain new friends for him as well as weaken and divide his enemies. Time, then, is less likely to bring favour to the victor than to the vanquished."¹³³¹

Passing time generally works for the defender, but "*time can become a factor in the conqueror's strength as well; but only on condition that a counter-attack is longer possible, that no reversal in conceivable – when indeed the factor is no longer of value.*"¹³³² Fighting a purely defensive war can at best

¹³²² Foch (1920), p. 283. Then, again, Foch contradicts himself here, since in 1914 he had written to his wife concerning operations that "We don't have a victory in the full sense of the word, but we have inflicted a great defeat on the enemy." Greenhalgh (2010), p. 90.

¹³²³ Howard (1983), p. 54.

¹³²⁴ Clausewitz (1989), p. 357.

¹³²⁵ Clausewitz (1989), p. 358. See also Howard (1983), pp. 54-55.

¹³²⁶ Clausewitz (1989), p. 379.

¹³²⁷ See e.g. Bernhardi (1914), p. 140. On Clausewitz's argument that waiting does not mean passivity and that the defense must be active see Bassford (1994), p. 32.

¹³²⁸ Clausewitz (1989), p. 380.

¹³²⁹ See e.g. Sumida (2007), pp. 170-171 on the relationship of defense and offence.

¹³³⁰ Clausewitz (1989), p. 379.

¹³³¹ Clausewitz (1989), pp. 597-598.

¹³³² Clausewitz (1989), p. 598.

bring about a 'draw' as the result of the entire war¹³³³. One needs to prepare for seizing the initiative. Clausewitz stated the reason eloquently;

"while we may have more time and can wait until the enemy is at his weakest, the assumption will remain that we shall have to take the initiative in the end [...]. So long as the defender's strength increases every day while the attacker's diminishes, the absence of a decision is in the former's best interest; but if only because the effects of the general losses to which the defender has continually exposed himself are finally catching up with him, the point of culmination will necessarily be reached when the defender must make up his mind and act, when the advantages of waiting have been completely exhausted."¹³³⁴

Waiting has to either produce an increase of strength for the one who partakes in it by addition of new troops or erosion of the capabilities of the attacker. If these two requirements are no longer fulfilled, the general who has chosen the defensive stance must actively start to seek the auspicious moment and place to initiate his own offensive. Clausewitz in his texts routinely talked in terms of polarities, putting two things in a dialectical relationship to one another, but his interest focused on the spectrum of polarities that connect the poles. There were no fixed relationships among the theoretical elements in operational art¹³³⁵. Thus, after having followed the initial diminution and resulting defeat of Napoleon's army in Russia Clausewitz argued that the defender often is most powerful "*in the heart of one's own country, when the enemy's offensive power is exhausted, and the defensive can then switch with enormous energy to the offensive.*"¹³³⁶ Once the initial fury of the attack has withered, one can take the initiative and commence offensive.

Napoleon saw things similarly as his interpreter, claiming that "the transition from the defensive to the offensive is one of the most delicate operations in war."¹³³⁷ It is one of the kairos-moments in the course of a battle. Regaining the initiative may change the direction of the battle and create an opportunity to gain victory. One must choose wisely the moment for action, since if it is not favorable, it may just as well accelerate the upcoming defeat. "At the commencement of a campaign, to advance or not to advance is a matter of grave consideration, but then once the offensive has been assumed, it must be sustained to the last extremity."¹³³⁸ Napoleon viewed war as a zero-sum-game. Making the choice to act must be thoroughly evaluated, but once the die is cast, there is no turning back. Every decision must be followed through. The actions one undertakes, according to the rules of zero-sum-game, diminish the options open for the other.

To win time for one's own activities one must be able to take that time away from the enemy. Jomini argued that Napoleon and his campaigns give material worth studying for any aspiring general. But not always only in the positive sense, since "*it might be said that he was sent into this world to teach generals and statesmen what they should avoid. His victories teach what may be accomplished by activity, boldness, and skill; his disasters, what might have been avoided by prudence.*"¹³³⁹ Activity and rapidity of movement are means of squeezing every ounce of advantage out of every moment, but failing to be prudent when occasion so demands means taking the chance of losing all if one acts, like Napoleon, rashly and in an ill-timed manner.

Finding the correct movement to discard the defensive position and seizing the initiative after a period of passivity has always been considered to be the very summit of operational art and the issue in which the genius is able to shine. The importance of this moment is to be found from every theorist from Sun Tzu to Napoleon and even the doctrines of today. Bülow optimistically argued that it could happen at any time "by the simple

- 1336 Clausewitz (1989), p. 220.
- ¹³³⁷ Napoleon (1987), Maxim XIX, p. 62.
- ¹³³⁸ Napoleon (1987), Maxim VI, p. 57.

¹³³³ See also Handel (2001), pp.7-8 for discussion of Clausewitz's ideas of counter-attack and re-seizing the initiative by offensive.

¹³³⁴ Clausewitz (1989), p. 383.

¹³³⁵ Moran (2007), p. 95.

¹³³⁹ Jomini (1992), pp. 22-23.

act of falling upon the flanks of the enemy, and attacking his rear."¹³⁴⁰ Even if the act itself is simple, it is not so easy to carry out. The difficulty of finding this moment has increased as warfare has evolved and battlespace has been extended into additional dimensions. Von der Goltz argued, "in these days of great distances it is most difficult to recognize the turning points in the progress of battles."¹³⁴¹ He is right but only partially so because it is not only the distances within the battlefield but the length of the battle that have increased. The situation is even more difficult than he depicted. Again space and time conjoin since the right moment is always related to both time and place. The operational artist has to act in the right time at the right place and the two are not stationary. Perfectly timed action is useless if the locus of the action is incorrect and vice versa.

As the length of the battle has increased from a few hours to days or even weeks and months, the decisive moments are further and further apart in the flow of time.¹³⁴² The more complex battles have become, the more such potentially promising moments to act there are but the harder they are to identify. The operational artist cannot wait endlessly for the kairos-moment. Sooner or later, and preferably sooner, he has to seize the moment and attempt to turn it into a kairos-moment and act decisively. In the words of Foch,

"of all faults, only one is ignominious, inaction. We must therefore constantly try to create events instead of submitting to them, and to organise attack from the first, the rest being subordinate and having to be considered only from the standpoint of the advantages which may result for the attack."¹³⁴³

Foch's claim about being active in attempting to create events and not merely succumbing to them acts a guideline that could be included among the principles of war. There are times when remaining passive and sticking to stubborn defensive is beneficial. But even then within the passivity must grow the seeds of activity, ready to sprout forth at the opportune moment.¹³⁴⁴ Passivity must be changed for activity at the most beneficial moment and identifying this moment depends on many factors. Probably the most important determining factor is which side benefits from the passive defense. According to the principles of attrition warfare, if the fighting strength of the assailant is constantly eroded more than the defender's there is no need to switch to the offensive until the enemy can be beaten with certainty. There are times when remaining on the defensive is a decision in itself and thus an active choice. If every passing moment benefits the assailant and defensive strength is being wasted, it is a necessity to find the first possible moment that promises a chance to turn the tide of the battle since each passing minute makes it more likely that a more opportune moment will not present itself. Von der Goltz wrote that

"as the assailant has taken the initiative in movement, the defender is naturally exposed to the danger of arriving at the critical point later than the former. It will thus be necessary for him to impede the movements of the enemy. This may be done by means of counter-attacks, which come upon the opponent in the midst of the execution of his designs."¹³⁴⁵

What then would be the perfect time to seize the initiative and attack? It is not enough that the enemy is executing his designs since very often plans are created so that once troops are in motion their sheer momentum will make them overcome hindrances. Therefore, a moment when the execution of one phase has ended and the next phase is about to commence is most auspicious since at that moment a certain amount of confusion is bound to reign and a counter-attack may turn the confusion into full paralysis. Von der Goltz continued to provide useful advice and identified one such possible advantageous moment.

¹³⁴⁰ Bülow (2013), p.84.

¹³⁴¹ von der Goltz (1906), p. 162.

¹³⁴² Keegan (1998) notes that twentieth-century wars continued for years and battles for months. He used Verdun as an example since it lasted from February to November 1916.

¹³⁴³ Foch (1920), p. 284.

¹³⁴⁴ See e.g. Bernhardi (1914), p. 158.

¹³⁴⁵ von der Goltz (1906), p. 159.
"Before the strategical defensive changes to the offensive, a pause takes place. The original attacker is crippled and cannot go on. The defender has got rid of the feeling of being mastered, is strengthened in moral and physical respect, and the change of role is thus gradually brought about, long before it is actually announced, to the surprise of the observer not on the spot."¹³⁴⁶

If the original attacker is not able to keep his offensive continuous, the moment when his initial effort falters, a pause occurs, and new units continue the fight, there is a kairosmoment when the first and second wave of troops are intermingled. This type of active defensive approach would be most suitable to countering the Soviet doctrine of deep battle, but can be employed whenever the attacker runs out of momentum and is forced to reinforce his attack with additional troops, be they reserves or new troops composing a second successive attack. When and wherever the enemy is disorganized, the counter-attack has higher probability of success. The same idea was expressed in Chinese texts.

"When the enemy's ranks – front and rear – are not yet settled, strike into them.

When their flags and pennants are in chaos, their men and horses frequently shifting about, then strike into them.

When some of their officers and troops advance while others retreat; when some move to the left, others to the right, then strike into them.

When their battle array is not yet solid, while their officers and troops are looking around at each other, then strike into them."¹³⁴⁷

While T'ai Kung talks of the time when the enemy is just creating his battle-formation, the same applies to the moment when the second wave of attack is about to commence. The same confusion reigns on the battlefield and the ranks are as yet unformed. Even if the original attacker is not crippled by casualties, his materiel is likely to be somewhat depleted and the soldiers weary. The second wave of troops is entering hitherto unknown territory and have to tread carefully so as not to inflict casualties with friendly fire. Responsibility for the front and information concerning the positions of the defender is being exchanged. Attacking at this very moment gives promise of success. But no matter how disorganized the enemy is, the time to attack is not right if one's own troops are not ready to attack. One should commence the counter-attack in accordance with Giap's principle; "*strike to win, strike only when success is certain; if it is not, then don't strike.*"¹³⁴⁸

The right moment to switch from the defensive to the offensive should thus in general happen when the power balance between the two forces is on the brink of changing. The attacker can always dictate the time, concentrate forces and through seizing the initiative master the moment. He concentrates his power in order to affect a break-through and the longer it takes for him to succeed in this, the more his combat power wanes. The culmination point of the defender is reached when the attacker manages to create a breakthrough or he loses his ability to enact a counteroffensive. The attacker's culmination point it turn is reached when his concentrated power no longer exceeds that of the defender.¹³⁴⁹

I propose that the possible point of culmination of the enemy attack is the very moment when the defender should start his attack. This is an easy maxim to state, but the elusive nature of the point of culmination makes it extremely difficult to enact in combat. If culmination point is indeed "*an area of uncertainty or nonrecognition in terms of space and time*"¹³⁵⁰ the commander on the defensive stance must look for a moment when the fierce-

¹³⁴⁶ von der Goltz (1906), p. 162-163.

¹³⁴⁷ T'ai Kung (1993), p. 102. The same conditions seem to apply to cavalry as well. See p. 103.

¹³⁴⁸ Giap (1962), pp. 169-170.

¹³⁴⁹ Vego (2009), pp. VII-75, VII-78. Culmination point of an attack was initially discussed in the context of what we would today term operational level but as a principle it is applicable to the tactical level as well. Perhaps it would be more fitting to talk about "*crisis in battle*" on the tactical level, since it has more to do with the exhaustion and fatigue of the soldiers. On this see Echevarria (2000), p. 15.

¹³⁵⁰ Vego (2009), p. VII-74.

ness of the attack seems to start to wane. This might be an implication that the balance of power or equilibrium of the forces is about to change to favor the defender. However, it might just be a moment when the attacking enemy is preparing to call in his reserves or in some other manner alter the composition of his attack or change tempo for purposes of his own. Therefore Vego recommends not assuming a counteroffensive at a time like this.¹³⁵¹ However, the situation is not so clear-cut. The relationship of the respective combat powers of both sides is hard to quantify and the commander must rely on his *coup d'oeil* to find the right moment. This is the culminating point of the attack when one reaches

"the equilibrium of the combat power of both sides in a conflict. It is a point at which the attacker can still revert to defense to protect his gains and regenerate his combat power. When equilibrium exists, theoretically a determined and agile defender can take the advantage and go on the counterattack or counteroffensive. A culminating point in combat is reached when the relative combat power shifts between two sides. It is the point beyond which the difference in relative combat power begins to decrease rapidly. Theory does not say that if a commander continues beyond the culminating point he will face a defeat. It only warns that the risks of setback and even defeat will be pretty high if he does so."¹³⁵²

Even if theory and practice differ, this can be considered to be one of the most promising kairos-moments within a battle. Sometimes the commander may push on with his attack and ultimately be successful. Similarly, he may just uphold his attack and have it ultimately fail. But if the equilibrium of combat power is waning at the time of reaching the culminating point, it is likely that sudden change in defender's rhythm, pace and activity may increase the disequilibrium and defeat the attack very rapidly. Any moment when the attacker is in a state of mental uncertainty is a favorable moment for the defender. If the balance of combat power has shifted or is about to shift the defender can completely change the game by bold and decisive counteroffensive. The importance of culminating point cannot be discarded. One must do his utmost to avoid reaching one's culminating point and already in planning phase identify possible actions that might speed the enemy towards his.

6.4. USE OF RESERVES

"These desiderata were easy to outline on paper, but less easy to put into effect among the realities of the battlefield. As things turned out, the real or supposed need of the moment often led to the forces being thrown into action too soon; sheer impatience sometimes led to miscalculations of this kind."¹³⁵³

Alexander had something no strategist, operational artist or tactician of today is able to emulate. Even with characters like Rommel, wishing to lead from the front, no one is able to join battles like Alexander did. Delbrück called him not only a great commander on the battlefield "but also a commander in the grand manner" because "he combined in one person the world-conquering strategist and the unexcelled courageous knightly combatant."¹³⁵⁴ Even if he was the greatest conqueror the world has known, he was simultaneously a warrior, leading his troops on the ground, participating in melees with a sword and a spear. The fact that our commanders do not repeat these feats any more is not a fault, since we must remember that Alexander's was a special time. In the words of Delbrück, "the only moment in the development of warfare in which the elements of the conduct of war were so close to each other that the commander, following his nature, was at the same time a combatant."¹³⁵⁵ With all the risks involved, it speaks volumes of Alexander's warrior skills that he managed to keep alive long enough to establish his em-

¹³⁵¹ Vego (2009), p. VII-75.

¹³⁵² Vego (2009), p. VII-74.

¹³⁵³ Guderian (1992), p. 43.

¹³⁵⁴ Delbrück (1990), p. 231.

¹³⁵⁵ Ibid.

pire and simultaneously of his capabilities as a statesman that the demise of the self-same empire was immediate after he died at a young age.

The reason why combination of a commander and a warrior had to be discarded soon after Alexander was the appearance of the tactical reserve on the battlefield. For Alexander leadership of battles was still relatively simple after the tactical formation and method for battle was decided. When the order to engage was given, the commander could join his men in fighting because he no longer had any factual control over them when they all were committed to combat. Reserves altered the situation considerably. The commander moved from the front to the rear¹³⁵⁶. As Delbrück wrote, "only with the advent of the principle of withheld units whose intervention as to time and place is directed by the commander bimself is the latter's regular involvement in the fighting eliminated."¹³⁵⁷ To be able to time the battle, to synchronize the use of his forces, and to make the decision to commit the reserve to battle at the right time and the right place the commander's place has to be somewhat distanced from the close combat.

But what is the right time to commit the reserve? For Warden, the first rule of using reserves what that they should not be used piecemeal and the next two rules were "don't commit too soon, and don't commit too late." Since the right moment is not self-evident for the defender or the assailant, determining it "must be a highly subjective process. It may even be a work of sheer artistry or genius."¹³⁵⁸ The latter has to find a similar opportune moment to send his own reserves through an opening in the defensive formations the first wave of attack had created. In the words of Guderian, "as things turned out, the real or supposed need of the moment often led to the forces being thrown into action too soon; sheer impatience sometimes led to miscalculations of this kind."¹³⁵⁹ The problem of either side increasing its forces at the wrong moment leads to a situation when their value is limited since they cannot exert pressure on the enemy but they are vulnerable to concentrated fire at the decisive point. To have the forces converge in space but to fail to synchronize their effect at the right time is not beneficial. Right place but too soon does not allow for the utilization of the new forces. Too late, and their full effect will not be brought to bear on the enemy.

Napoleon argued that it is precisely these special moments of kairos-time that decide the winners of battles and the action initiated at just the right moment does not have be of huge magnitude to produce a huge impact. According to him, "the fate of a battle is a question of a single moment, a single thought --- the decisive moment arrives, the moral spark is kindled, and the smallest reserve force settles the argument."¹³⁶⁰ This is the idea of reserves put in action. It is not so much a question of applying massive additional force but of exerting necessary force in a timely manner to alter the balance of forces sufficiently. "There is a moment in engagements when the least manoeuvre is decisive and gives the victory; it is the one drop of water which makes the vessel run over."⁽¹³⁶¹

Jomini emphasized the importance of reserves due to the ability of Napoleon to handle his troops. These experiences made him a believer in the role reserves play in modern warfare and led him to state that "from the executive, who prepares national reserves, down to the chief of a platoon of skirmishers, every commander now deserves a reserve. A wise government always provides good reserves for its armies, and the general uses them when they come under his command."¹³⁶² As Fuller later put it, "to fight without a reserve is similar to playing cards without capital - it is sheer gambling. To trust the cast of dice is not generalship."¹³⁶³ Fighting a war is not a gamble and the skilled operational artist should not play his cards like a poker player going all in.

¹³⁵⁶ Foertsch (1939), p. 55.

¹³⁵⁷ Delbrück (1990), p. 232.

¹³⁵⁸ Warden (2000), p. 101.

¹³⁵⁹ Guderian (1992), p. 43.

¹³⁶⁰ Napoleon, cited in Fuller (1960), p. 298.

¹³⁶¹ Ibid.

¹³⁶² Jomini (1992), p. 133.

¹³⁶³ Fuller, cited in Reid (1987), p. 46.

The importance of having a reserve is, then, a principle that encompasses all levels of warfare from the smallest unit to the entire state itself. Every commander needs a reserve and on different levels of warfare they only have different meanings. A tactical reserve determines the outcome of a battle, an operational reserve ensures operational success or consolidates it and a strategic reserve is used to determine victory in a campaign of major operation with added importance.¹³⁶⁴ The reserve is ultimately a safeguard to ensure that the military undertaking will be successful. As Vego wrote, reserves are "the principal tools in the hands of operational commanders for exercising and enlarging their freedom to act. The employment of reserves can often spell the difference between victory and defeat."¹³⁶⁵ Reserves are a necessity for both the defender and the assailant alike, but whichever side employs them, the logic is the same. Sufficient reserves need to be "stationed in such a manner as to be capable of being transferred to a decisive point or direction in a minimum of time."¹³⁶⁶ The use of reserves may or may not be necessary, but they are the final trump card of the commander. The reserve can be employed, if the situation so requires. As Foch wrote,

"the reserve is a club, prepared, organised, reserved, carefully maintained in view of carrying out the one act of battle from which a result is expected — the decisive attack. The reserve is spared with the utmost parsimony, so that the instrument may be as strong, the blow as violent as possible."¹³⁶⁷

The direction of the battle ultimately dictates the use of reserves. The assailant must put his reserves to use at the moment when the attrition rate at where decision is sought favors the defender and the assailant can employ all of his force at the same time. The defender has a slightly different situation. Either the assailant is able to create a breakthrough and he has to commit reserves at this time of the enemy's choosing or he can make the choice himself during a favorable course of the battle and switch into the offensive to win the battle.

"Such a reserve must be hurled in the last instance, without any thought of sparing it; with a view to carrying by force a selected and well-determined point. It must therefore be hurled as one block, in the course of an action exceeding in violence and energy all the combats of the battle, under the conditions demanded by surprise, mass, and speed. We envisage a single goal; a determining act in which all our forces take part, either in order to prepare it, or in order to carry it out."¹³⁶⁸

The decision to initiate the counter-attack with reserves is one of those moments when the operational artist and tactician either make it or break it. When the reserves are committed, it must be done boldly, with no doubt in the mind of the commander and no second-guessing the decision made. All available reserves, in one single point, at the very same instant, is the way to employ reserves. If they are committed piecemeal the possibility of success is diminished considerably. When the reserves are thrown in the battle usually gets its decision either way. Finding or failing to find the correct moment dictates the outcome.

Fuller has complained how "*many generals have attempted to win a military Marathon in sprinting time. They have thrown in all their reserves at once, and so have lost their wind within a few hours of the battle opening. Such operations as these are doomed to failure long before the first shot is ever fired.*"¹³⁶⁹ On one hand the beginning of a battle is an auspicious time when the morale and fighting strength of the enemy can be decimated to a degree when it might even become impossible to him to pursue the fight. On the other hand, a battle is likely to last for a while and "sprinting" or consuming all the energy one has in the beginning is not profitable. The general must be able to deal a swift, severe blow at the initial stages of the battle, but maintain reserves so that should not the first attack become decisive, he has enough troops at his disposal to pursue victory by other means.

¹³⁶⁴ Vego (2009), p. VII-121.

¹³⁶⁵ Vego (2009), p. VII-121.

¹³⁶⁶ Sikorski (1943), p. 166.

¹³⁶⁷ Foch (1920), p. 300.

¹³⁶⁸ Ibid.

¹³⁶⁹ Fuller (1923), p. 36.

All in all, the logic dictating employment of reserves has remained almost unaltered between the day they were first conceived of and today. One must find the right moment, just when there is about to be a shift of power relations within a battle or a campaign and throw his reserves. As Vego wrote,

> "The time to commit operational reserves is usually a critical factor in the conduct of a major operation or campaign. In general, the more mobile and smaller, but combat-ready, the operational reserve, the shorter the time needed to commit it at the point of main attack (or defense). Also, the distance to the employment area, the transportation network, and the terrain features considerably affect the time required for the commitment of an operational reserve in a major operation or campaign."¹³⁷⁰

In other words, it is not sufficient to recognize the opportune moment, but also to be able to ensure that the use of the reserve will have its effect at the right time in the right place to influence the balance of forces. This requires considerable planning regarding the size, composition, location and task of the reserve. The commander must create a reserve for himself out of those units that are among the most mobile troops and locate them close to the possible places of employment but still out of the harm's way until they are called to perform their task. Vego continues to argue that

"Success in employing one's operational reserves essentially depends on the timing of their commitment; otherwise, the operational commander can miss the opportunity to obtain the initiative and also enhance freedom of action for the enemy commander. Equally dangerous is to employ one's operational reserve prematurely. One's premature actions are usually the result of haste and lack of organization. They also might be caused by one's unrealistic assessment of the enemy. In contrast, one's preemptive actions are planned and organized with the aim to achieve surprise. In short, both premature actions and actions taken too late are a good indicator of a commander's failure to use the factor of time properly."¹³⁷¹

Once again the demands of proper timing are excruciatingly harsh on the commander. He will risk losing all if he commits his reserves too early, but the same happens if he throws them into play too late. Thorough planning on the use of the reserve has to be conducted based on a sound estimation of enemy's capabilities. That is, the commander and his staff must be able to pre-determine with considerable precision the tempo of enemy action. Small mistakes in estimations can be rectified with the aforementioned consideration of creating a reserve with high mobility and ensuring that it will be able to move to the right place as rapidly as possible, but this does not offer much leeway. Too soon is just as disastrous as too late and this is the dilemma of the commanders. The reserve used at the right moment to alter the balances of forces momentarily in the place where decision is sought is a possible game-changer. It may turn the course of the battle.

6.5. SLOWING DOWN TO MANAGE TIME AND TEMPO

"While quick decision is the general principle, we must oppose undue impatience."¹³⁷²

Moltke was a proponent of mobile warfare and this permeates all his writings. "Only through a war of movement (Bewegungskriege) can one hope to resist a superior enemy for a long time and to hold terrain. One will scarcely find a position that offers security against envelopment for more than a day and which can save us from a catastrophe if we conduct an immobile defense."¹³⁷³ We often focus on time to be won from the enemy by engaging him sooner than he expects. Mobile warfare can win us time in another manner. A small army can take advantage of its superior mobility to gain protection. A rigid line of defense is easy to penetrate with excessive force, but if the

¹³⁷⁰ Vego (2009), p. III-27.

¹³⁷¹ Vego (2009), p. III-28.

¹³⁷² Mao (1963), p. 142.

¹³⁷³ Moltke (1993), p. 54.

lines are mobile and reform fluently, one can win time for the entire defensive concentration of force and a counter-attack to be carried out as the enemy is slowed down. When the army is mobile enough, it can evade the massed attack of the enemy and reconstruct defensive positions elsewhere. Effectiveness of the army depends on its ability to use the resources of space and time to its advantage. Moltke divided this ability into reliance

> "first on its speed (above else on the rapidity with which the situation is clarified and understood), second on rapidity of decision (Entschluss), and finally on speed of execution. Delay on the part of the command must be made good by swiftness of movement. The commander must never wait for orders where he can gain success by independent decision."¹³⁷⁴

The more time is consumed in comprehending the situation and reaching a decision, the less time is left for the execution of the orders. This is why Moltke emphasized movement as time-saver. But as armies grew more mobile, the amount of time potentially spared by speed of movement became less important than time saved in the decision-making. The ability to react to any given situation using as little time as possible is crucial.

"Every soldier knows that it is of vital importance to quicken the tempo of operations and the rapidity of manoeuvre. It is the way to gain the advantage in modern battle, and to seize the chance of exploiting any advantage gained. The proverb that 'opportunities are fleeting' has an intensified truth since armies have become mobile through motor power."¹³⁷⁵

In contrast to indust-reality the Third Wave armies are facing a somewhat different challenge. The issues of quickening the tempo and rapidity of maneuver are still of utmost importance, but as the theoretical limits to mobility and speed have continuously been pushed back, the issue to tackle is increasingly the control of the speed. The dilemma is then finding the maximum operable speed, or, the pace of operations that is as fast as possible in order to exploit mobility and surprise and simultaneously set such restrictions or limits to the speed that both the physical movement of troops and the pace of decision-making and execution remain on a controllable level. The tempo has to be suitable for the mobility and operational agility of the troops. Vego wrote that

> "Speed is dependent on a force's mobility. High tempo and movement at great depth can enhance the effect of mass. But higher tempo entails higher risk, because the shorter time does not allow for comprehensive planning. Whether the tempo is high or low depends on the force's mobility; its tactical rate of advance; the time to complete movement; quality of intelligence; patterns of combat support; quality of logistic support and sustainment; and so on. A low tempo allows more time to recover from one's errors or mistakes and to prepare a more comprehensive estimate of the operational situation."¹³⁷⁶

The main problem one encounters while reading the vociferous early proponents of mechanized warfare is the unceasing attempt to progressively increase the speed of the units and their activities adhering to societal principles of indust-reality. There is no option of deceleration and adjustment of speed to the prevailing conditions, the most suitable rhythm for one's own forces, or the actions of the enemy. Liddell Hart claimed that

> "unlike Fortune, increased speed is not a fickle jade, but consistently favours the assailant; a cynic might say that is has a good woman's consistent preference for bad men! Every gain in speed increases not only he attacker's security but the defender's insecurity. For the higher the speed the greater the chance of, and scope for, surprise. Speed and surprise are not merehy related; they are twins."¹³⁷⁷

During the Third Wave speed favors the assailant when he is able to control it and either accelerate or decelerate it at will. If speed is allowed to accumulate on its own, there comes a point when security evaporates. Fast pace increases the chances of surprising the enemy but if the speed is too high to allow for timely reaction to changes in the situation the attacker runs the risk of being surprised in turn. Some military thinkers understood early on

¹³⁷⁵ Liddell Hart (1950), p. 290.

¹³⁷⁴ Moltke (1993), p. 161.

¹³⁷⁶ Vego (2009), p. IX-150.

¹³⁷⁷ Liddell Hart (1932), p. 60.

the risks involved with constant acceleration and the fetish for movement. "We live in an age of rapid and unthinking movement. The railway, the steamship, the motor-car, and the aeroplane whirl us from place to place."¹³⁷⁸ This characterization of Fuller is very depictive of the mechanized period of indust-reality but remains even more valid today during the Third Wave. Movement must be controlled. It should be "rapid" but not "unthinking." Troops are whirled around but commanders must remain in charge of the movement to be able to alter it.

The accelerated pace of Second and Third Wave warfare placed new demands on movement of materiel, forces, and immaterial information alike. Movement and speed can never exceed the capacity to control them. Whether we are talking about moving actual troops or information around on the battlefield all movement must be imbued with a sense of purpose and its velocity must be restricted to abide within the limits of control and comprehension. It is a common tendency of military development to aim for increased speed in everything that is to be done. Franks, for example saw the second Gulf War to revolve around speed and argued that the way to win the war was "by getting inside the enemy's decision cycle. Remember: Speed kills . . . the enemy."¹³⁷⁹ But speed can be lethal for one's own operations as well. As long as speed is controllable it is generally a good thing to keep the decision-making cycle revolving with increased speed. If, however, there is a threat of spinning accelerating out of control, the results can be more harmful than those of a more relaxed speed. The ultimate goal is not to be faster and faster but to use the cycle to compress the time at one's disposal and simultaneously disorient the enemy forcing him to slow down. Furthermore, within the decision-making cycle multiple cycles spin simultaneously. Boyd acknowledged that in complex organizations there are several loops on different levels and some are faster than others¹³⁸⁰. As Boyd described his OODA-loop, "Note how orientation shapes observation, shapes decision, shapes action, and in turn is shaped by the feedback and other phenomena coming into our sensing or observing window."¹³⁸¹ Tempo and the ability to properly synchronized the revolutions is important. As adverse as I am to compare operational art to a game of chess due to the human factor and passions involved in the former it still is suitable to quote Leonhard here.

> "Every chess master knows and appreciates the value of tempo. Simply put, tempo consist of the player's pace of moves, such that the opponent, who may have a good plan, has no time to execute it. The player with tempo constantly forces the opponent to react defensively to a series of attacks, threats and feints, all the while advancing his own plan. He need not concern himself overmuch about enemy intentions, because his tempo serves as a shield against enemy attack."¹³⁸²

Everything in war is dependent on circumstances and the actions of the enemy. This is why influencing his freedom to act by enforcing one's own preferred tempo on the enemy is important. Depending on the speed of the enemy it is occasionally beneficial to slacken one's tempo. One needs to seize chances rapidly and exploit advantages, but one can at the same time wait for those chances to actualize. Tempo must be adjusted so that the ratio of right decisions is not diminished. To some degree this has been done and this partially results in Liddell Hart's lament that, "*if the operating speed is faster that formerly it has not quickened to anything like the extent represented by the difference between the old marching-pace and modern motor-pace.*"¹³⁸³ I am tempted to argue that this was a good thing because it indicates that human intellect is still in charge. The motor-pace is harmful, if the leadership cannot produce its decisions timed to the rhythm of war. Reading texts from indust-reality one cannot escape

¹³⁷⁸ Fuller (1932), p. 37.

¹³⁷⁹ Franks (2004), p. 466.

¹³⁸⁰ Kagan (2006), p. 105.

¹³⁸¹ Boyd, cited in Coram (2002), p. 344.

¹³⁸² Leonhard (1991), p. 16. Nevertheless, there is something that makes warfare very similar to chess or any other game. Once the game starts, one defends, the other attacks, one retreats and the other advances - only in war the stakes are immeasurably higher than in any other human interaction. See Creveld (2008), pp. 67-69. ¹³⁸³ Liddell Hart (1950), p. 290.

the emphasis put on machines and technology at the cost of side-lining their human masters. De Gaulle represented an exaggerated infatuation with technology. He wrote that,

"helpful friend at all times, at present the machine controls our destiny. Certainly, from the dawn of history it had relived the toil of our fellowmen. [...]Throughout the ages, neither the part it played nor its form were modified. But the last century radically changed the relations between human beings and their mechanized servants."¹³⁸⁴

During the boom of mechanized warfare it seemed that machines increased the toil of the soldiers since everything was done according to the rules dictated by machines. Because tanks could travel at a certain speed, this became the requirement of warfare. Because machine was able to do this or that, the human had to aspire to perform on a similar level. It was a maxim of Fuller's that "an army superior in activity can always anticipate the motions of a less rapid enemy, and bring more men into action than they can at any given point, though inferior in number. This must generally prove decisive and ensure success."¹³⁸⁵ However, this general rule tends to apply to situations where either the enemy is on the defensive or both armies attempt to attack each other in motion. Even in the latter case it is possible for the slower enemy to decide a place where he awaits the attack. There is no doubt that activity is the key to mastering each situation likely to occur and that devastation awaits the passive counterpart. Activity is not only about moving quickly but being able to grasp the intricacies of each emerging situation instantly. Activity is about seizing initiative and forcing the enemy to a reactive role and only to respond to one's actions. One should not only be fast physically in conducting maneuvers but especially mentally. Activity saves and wins time while passivity squanders it. Even when one seems passive in terms of action, the activity has to be present on the mental level. Although movement occasionally ceases, thinking may not.

Speed has to be strived for, but simultaneously one must understand that to be hasty is to reduce the speed of execution. And even in execution some things can be slower than others. The commander must temporize by synchronizing different speeds so that each component of his force commences its task at a different time, and, adhering to its optimal speed, fulfills its task in temporal synchronization with the others. Patton put the essence of time management into words quite beautifully by contrasting

> "Haste and Speed: There is a great difference between these two words. Haste exists when troops are committed without proper reconnaissance, without the arrangement for proper supporting fire, and before every available man has been brought up. The result of such an attack will be to get the troops into action early, but to complete the action very slowly.

> Speed is acquired by making the necessary reconnaissance, providing proper artillery and other tactical support, including air supports, bringing up every man, and then launching the attack with a predetermined plan so that the time under fire will be reduced to the minimum. At the battalion level four hours spent in preparation for an attack will probably insure the time under fire not exceeding thirty minutes. One hour spent in the preparation of an attack will almost certainly insure time under fire lasting many hours with bloody casualties.¹¹³⁸⁶

Making the attack commence as quickly as humanly possible is likely to draw out the length of the battle, since despite the early start the next stages are going to be slow and proceed with a lot of friction. To act with haste is idiotic, since it extends the time troops have to spend under fire and increase the casualties they will suffer. The commander's calculation must include a weighing of advantages derived from spending more time in preparation and planning and having to use less in the execution of the plan in actual battle. To extend planning often means to shorten execution. Thus, it would always be beneficial to plan as thoroughly as possible. However, one must take into account the enemy. If the enemy is active and attempts to seize or regain the initiative, using time to plan in detail is to give the enemy the edge in the situation. If the enemy is in an inactive state, such as in stable defensive posture, more time can be consumed in preparation.

¹³⁸⁴ De Gaulle (1976), p. 47.

¹³⁸⁵ Fuller (1946), p. 23.

¹³⁸⁶ Patton (1947), p. 349.

Even if Patton spoke of tactics, the arguments resonate in operational art. There is a need to save and manage time on each and every level of warfare. Yet, the meaning of time is different when one ponders the benefits and losses one can experience. The higher up time is managed, the direr are the consequences of failures and the more promising the results of successes. At the same time the amount of time differs. As Patton claimed, "*the more senior the officer, the more time he has. Therefore, the senior should go forward to visit the junior rather than call the junior back to see him.*"¹³⁸⁷ This is in essence the rule of thumb concerning management of time on the level of tactics and operational art, but its implications are to be found elsewhere as well. There is more time higher up within the hierarchy and the importance of managing it from the perspective of results is elevated. Thucydides wrote that "*if you take something one before you are ready for it, hurry at the beginning will mean delay at the end.*"¹³⁸⁸ This is a viewpoint of the strategist and applies well to operational artists alike. Lower down in tactics time is lacking. Things need to be done rapidly, sometimes even in haste, but the consequences are not so far reaching. Thus, the task of each commander is to delegate time to his subordinates.

If time cannot be managed on the tactical level, battles may be lost, operations falter and the strategic goals will not be reached. If, however, on operational level time is lost and plans, operation orders, and such are not drafted early enough to provide all subordinates enough time to do their tasks, the execution may fail completely. While individual battles still may be won, they do not lead to profound results since an inner cohesion in terms of an operational plan does not direct, guide, and interlink them for the fulfillment of a common goal. Rommel recognized the importance of time in the sense that one must always be quicker than his enemy in both decision-making and execution of those decisions. He wrote that in motorized and mechanized warfare

> "speed of operations and reaction time of command were decisive factors. The troops must be able to carry out their tasks with the greatest speed and without delay. One cannot in this situation be satisfied with the norm, but must constantly reach for and demand the best, for whoever makes the most effort is quickest – and the battle always goes to the quickest."¹³⁸⁹

We can read between the lines that while Rommel's ingenuity as a tactician or an operational artist is unquestionable, his talents did not reach to strategy. His writings revolve around the idea of war as a string of battles and not as a total exertion of the entire armed forces or the state itself. As Leonhard phrased the responsibilities of leaders,

> "the tactical commander strives above all to win battles. At the operational planning level, however, the battle is a building block, not an end in itself. The operational commander must be skilled at using battles (whether won, lost or avoided altogether) along with other assets (maneuver, deception, interdiction, etc.) to structure a winning campaign. Hence, operational art provides the justification for a battle."¹³⁹⁰

Even if the strategic perspective on North Africa seemed to be beyond Rommel, his excellence in operational art consisted of just this this skill of structuring a campaign out of the isolated battles fought in the desert. In operational art the temporal seamlessness in the operational structure is evidence of success. The two-fold acceleration of operations and decision-making will enhance the efficiency of a military unit and win a battle. A special emphasis is on the reaction time of command.

Rommel was never satisfied with any attained speed. He demanded constant acceleration and ever-quickening pace of decision and execution. In any situation, according to him, the commander should not be satisfied with the performance of his unit and accept it. One should always make increased effort to be quicker in all one's actions than the enemy since increased effort leads to increased speed and the quickest is the winner of any battle. This cannot form a basis for the strategy. Rommel himself recognized that his

¹³⁸⁷ Patton (1947), p. 350.

¹³⁸⁸ Thucydides (1971), p. 59.

¹³⁸⁹ Rommel (2003), p. 133.

¹³⁹⁰ Leonhard (1991), p. 11.

skill was best manifested in commanding a battle, since "time and time again I have learnt that in close-quarter combat the winner is always he who manages first to envelop his enemy with fire in the shortest time while the one who waits must be the loser."¹³⁹¹ This is simple and functional like a showdown in the Wild West; the first to shoot wins. Time has a very straightforward meaning. Just be quicker than the enemy and victory is yours. As MacArthur put is, "you win or lose, live or die – and the difference is just an eyelash."¹³⁹²

While winning time on the tactical level is of utmost importance the requirements for it come to a large degree from the temporization and timetables of operational command. To be able to fulfill the time-related demands of operational level, junior commanders should be given a rough outline how temporizing of a campaign is to be carried out. Patton argues that "the sole criterion for a commander in carrying out a given operation must be the time be is allowed for it, and he must use all his powers of execution to fulfill the task within that time."¹³⁹³ Higher commanders create the timetable for an operation and give the junior commanders demands concerning when they have to reach certain goals. Then the junior commanders know the amount of time at their disposal and can plan their actions properly in accordance with the timetable. But the timetable of operations has constantly become tighter and tighter. As Triandafillov wrote,

"one must count on more frequent combat and, besides, the intervals between successively developing operations will be shorter than during the first period of the World War and where the Civil War is concerned, these periods of time are not even comparable."¹³⁹⁴

As mechanization increasingly pervaded the troops, the pace of activity in warfare increased in terms of constancy of combat replacing the earlier intermittent nature. Operations began to follow each other in close succession. This was a logical continuum from the recognition of the importance of speed in warfare. Since earlier there had been a lot of 'wasted' time between individual, isolated battles, it was beneficial to press the enemy for time there. By being quick in re-supplying the troops and making plans and preparations for the next battle one could create a situation where the enemy was constantly pressed for time and the race to make consequent battles instantaneous sequels to the first led to a situation where along the course of the battle plans for the entire operation need to be readjusted. But there is a limit to this as well. Fighting cannot continue unceasingly. Periodically the momentum runs out and is replaced by inactivity until a new momentum can be built. Thus, manipulation of time requires the ability to restore the energy, equipment, manpower, and morale of the troops quickly to enable fighting a new battle before the enemy has completed his preparations.

Since war is a reciprocal activity where both parties influence each other constantly through all of their actions, it must be recognized as a general rule, that, as Rommel wrote, "any slowing down of one's own operations tends to increase the speed of the enemy's. Since speed is one of the most important factors in motorized warfare, it is easy to see what effect this would have."¹³⁹⁵ It is important to slow the operational tempo down only in situations where the resulting increase of the speed of the enemy is unlikely to inflict serious harm. Adhering to the same logic, if one wants to slow down the actions of the enemy, he must be more active than before and pick up his own speed.

> "Non-motorised forces cannot create a centre of gravity quickly enough, and they thus lack the quality which matters most in mechanized warfare. Because of their lack of speed the enemy can take them on one after the other, each time with locally superior forces, and destroy them piecemeal without suffering undue casualties himself:"¹³⁹⁶

¹³⁹¹ Rommel (2003), pp.38-39.

¹³⁹² MacArthur (1964), p. 145.

¹³⁹³ Rommel (1953), p. 119.

¹³⁹⁴ Triandafillov (1994), p. 131. Based on his memoirs, Triandafillov, Frunze and Tukhachevsky were the most influential theorists and sources of inspiration for Marshal Zhukov. See e.g. Zukov (1969), pp. 95-96. ¹³⁹⁵ Rommel (1953), p. 285.

¹³⁹⁶ Rommel (1953), p. 379.

If one side is motorized, mechanized, or air mechanized and the other relies on movement by foot or only partial motorization, the advantage one has over the other in speed will alter the balance of forces. Mobility that manifests itself in the ability to project one's forces quickly to any place in the theater changes the strength ratio of the forces completely. Superior mobility makes it possible to create favorable force concentrations in the locale one chooses at the moment one chooses. Mobility endows one with the capability to carry out successive attacks and create temporary superiority at a chosen point and the duration of this superiority has to be efficiently utilized. As Tukhachevsky described it, *"the transition from break-in battle to turning movement must be carefully thought out and adequately planned. These offensive phases must follow one another without any gap in time, let-up in intensity, or biatus in communications and resupply."¹³⁹⁷*

Whether to slow down or increase the tempo of one's operations is largely dependent on the strategic objective one wishes to accomplish. Naturally the decisionmaking cycle has to be rapid so that incoming information is processed as quickly as possible and time is not wasted in producing a decision how to act. This is a requirement of military operations of all types and the idea of adhering to different tempos does not apply in this realm. It is the execution of decisions or the actual pace of operations that needs to be adapted to suit the fulfillment of objectives. Citing Clausewitz, Freytag-Loringhoven argued that "he who would benefit by gaining time and saving his forces must not of his own motion increase the tempo of the war. The weaker one is in war, the more he must seek to profit from the mistakes of the enemy."1398 It generally is more beneficial to the weaker side and the one who holds the defensive stance to slow down not only the speed of the enemy but the rhythm of the entire operation. In relation to the concept of pace with variability this can be a huge asset. If the defender can impose a slower pace on the operations of the attacker and simultaneously prepare his counter-attack, the sudden change in tempo has shock value. For the counter-offensive has to be carried out with as rapid a tempo as possible. The drastic and sudden change of the tempo sets the enemy off balance and forces him to readjust to the new tempo. Thus, being able to suddenly increase the tempo of operations is seizing initiative.

So, to sum up, when one is saving time in military affairs it is always a question on choosing the lesser evil and weighing carefully the pros and cons of the options. To be quick, rapid and fast means that time is not wasted. But even a small glitch may cause an immense delay in practice as the example of a traffic congestion showed. One must not only spend enough time in formulation of executable plan but also to oversee its execution. A sad example of neglecting to do so occurred during the WW I when the French generals seemed to believe that a formulation of a proper plan equaled its fulfilment. Little concern was given to whether the plan fitted the prevailing circumstances and often orders ended up being so unrelated to the situation in which they were received that troops acted on what they deemed best. With the slow pace of pre-mechanized operations the fact that plans and events lived a totally separate existence the results were not as catastrophic as they would be today.¹³⁹⁹

Information and the ability to turn it into knowledge help to disperse the fog of war. As mental 'visibility' clears it is generally possible to decrease the friction that hinders movement and mobility and the force generally is able to plan its operations and execute them faster. Enhancing and increasing knowledge offers the possibility to be more proactive and continuously search for and even create opportunities for action and not be forced to remain reactive. Yet, as in many other issues, the masterful control of temporality in warfare requires the ability to choose one's options. Leonhard phrased it thus,

> "When an army in a conflict has great knowledge, opportunity is the dominant form of warfare. Knowledge-based armies should spend most of their time exploiting opportunity.

¹³⁹⁷ Tukhachevsky, cited in Simpkin (1987), p. 92.

¹³⁹⁸ Freytag-Loringhoven (1991), p. 200. He used Clausewitz as a theoretical background for his work. On this see. e.g. Strachan (2007), pp. 20-21.

¹³⁹⁹ Liddell Hart (1950), p. 113.

When an army has great ignorance, reactive warfare is the norm. Ignorance-based armies will spend most of their time reacting and trying to create opportunity, sometimes through the use of risky offensive action (in accordance with the old principle of offensive). Modern armies must develop and nurture a strong balance between opportunity and reaction. They must be adept at exploiting opportunity when they have it, rather than frittering it away in idleness and inertia. Conversely, they must be skilled in creating opportunity through the prosecution of reactive warfare, that is, through the destruction of enemy opportunity.¹⁴⁰⁰

6.6. PAUSING TO WIN TIME

"In general, one of the operational commander's most difficult tasks is to predict and identify the culminating point and whether it has been exceeded or reached. Hence, it is critically important that the operational commander timely and accurately sense or anticipate the approach to, or arrival at, the point of culmination during a campaign/major operation, so that the ultimate objective can be accomplished. Such a time- or force-sensitive decision creates a danger for a commander who cannot adequately balance ends and means, because it will result in a mismatch between combat and sustaining resources that may force the campaign or major operation to culminate before the assigned objective is reached."¹⁴⁰¹

There have always been pauses in operations even if modern theories seek to get rid of them. Yet some pauses are beneficial while pauses caused by enemy action at unplanned times are inherently harmful. As an example of a proper pause we can use Napoleonic era and the pause that could be held between the approach march to the battlefield and the battle itself. Limited range of weapons made it possible to rest the soldiers during this pause.¹⁴⁰² During the battle the situation was different. Reserves had been engaged for just as long as the front line troops and had spent just as much energy in movement. The objective could never be set beyond winning an individual battle and the entire battle had to be fought before the energy of the troops was exhausted. If this happened before the battle had to be a pause before the next clash of forces could be initiated. Troops had to be rested. Von der Goltz wrote that

"rapidity and continuity of action are the elements of the attack. No halt may be thought of before the object has been attained. Any suspension of operations is dangerous on account of the reaction succeeding a period of unwonted activity. It is difficult, during the operations, to resume the offensive once it has been suspended; and to renew an attack in the course of a battle is practically impossible, unless reinforcements arrive and give a greater access of force than is lost during the period of relaxation. Hence the deliberate suspension of an attack is never justified, except by the definite prospect of the arrival of considerable reinforcements."¹⁴⁰³

This quotation illustrates the need to set the objective meticulously. It should not be too far either in terms of distance or time so that it can be reached before the momentum runs out. Mechanized mobility helps the commander, since he became able to continue the battle, or, conjoin them into an operation without a discernible pause in action. Once the first wave of troops has broken and their energy has been spent in reaching the objective, the next wave can be inserted into the heat of the action to continue the advance. The pauses are still there for the troops and just as necessary as before, but from the operational perspective the campaign continues without standstills. While this is a huge opportunity it simultaneously sets new demands for the commander and his staff. The objectives for each

¹⁴⁰⁰ Leonhard (1998), p. 259.

¹⁴⁰¹ Vego (2009), p. X-80.

¹⁴⁰² Isserson (2013), p. 15.

¹⁴⁰³ von der Goltz (1906), p. 157.

unit still have to be set so that they are reached in desired temporal succession and the moment when one unit continues the attack through the preceding one occupying the frontline requires detailed preparation coupled with immaculate timing.

Jomini argued how "*it is impossible to sketch in advance the whole campaign. The objective point will be determined upon in advance, the general plan to be followed to attain it, and the first enterprise to be undertaken for this end: what is to follow will depend upon the result of this first operation and the new phases it may develop.*"¹⁴⁰⁴ War gains momentum by itself – or falls into stagnation. The direction of war is shown after every major battle. They can be regarded as moments of closure. The situation is evaluated and new directions chosen if the operational plan so dictates. Clausewitz voiced the idea differently,

"Since war contains a host of interactions since the whole series of engagements is, strictly speaking, linked together, since in every victory there is a culminating point beyond which lies the realm of losses and defeats – in view of all these intrinsic characteristics of war, we say there is only one result that counts: final victory. Until then, nothing is decided, nothing won, and nothing lost:"¹⁴⁰⁵

In every victory and defeat lies a point of culmination which opens up new vistas at the very moment the battle is bought to closure and counting of losses begins. Only then one can determine his next move. The chain of command from the tactical leaders to the commander-in-chief is lengthy and the time consumed in asking for, collecting, reporting, and processing information takes a long time. Similarly issuing new orders have to follow the same chain. Therefore, the operational commander is only able to issue orders concerning follow-up operation if it has been pre-planned and warning orders given even before the initial battle commences so that a short order of executing the plan suffices.

All too often in the school books we read of entire wars as pre-planned processes which seem to run towards their inevitable conclusion. Factually this is not true and the historian emplots the history by joining separate units undertaking their respective tasks and into a logical and common whole by creating a narrative that presents coherence on action. One needs to understand that after every battle the war had a possibility to continue in another direction at well. But is the task of the planner to create such an emplotting of a campaign before it commences even if he cannot see beyond that initial clash of forces. He has to take into account that the thrust cannot continue infinitely and plan a suitable moment to halt the advance. This is a part of the management of time. If the halt, of rather, if things proceed favorably, the pause, is preplanned and occurs at a moment most suitable for the attacker, he has been able to plan for a replenishment of ammunition, petrol and other supplies, a change of units in the point of the spearhead, and other administrative issues which are likely to hamper the operation unless they are taken care of. If the halt occurs when the defender has been able to build up enough of resistance to restrict the movement of the attacker, he might be put immediately to the defensive with his troops exhausted and supplies extinguished. Thus, no matter how pressing the urge to push deep into enemy territory, there has to be a calculation of speed, time and the gains of pushing onwards. The point where and when the attack pauses has to be predetermined by the ones planning the attack.

Occasionally the great commanders have chosen more straightforward approaches and Patton's maxim stands testimony to this type of thinking. He has argued "*I believe in fighting until lack of supplies forces you to stop – then digging in.*"¹⁴⁰⁶ This is the easy approach in terms of planning, but tends to reduce the effect of the attack. If the pause is not preplanned, it is likely to be longer and the time lost will be remunerated with blood. If one wishes to economize time, as should be a consideration of every commander who strives for efficiency of execution, such shortcuts as Patton's should not be taken.

¹⁴⁰⁴ Jomini (1992), p. 114.

¹⁴⁰⁵ Clausewitz (1989), p. 582.

¹⁴⁰⁶ Patton (1947), p. 174.

Nevertheless, Patton was well versed in manipulation of time. It is just that his approach was so direct and no-nonsense that he occasionally omitted the finer details. In his eagerness to make most of the time and push onwards until the momentum is exhausted he overlooked the cumulative advantages of the pre-planned pause. In his memoirs he tells of a discussion as an army commander with one of his corps commanders; "Eddy proposed starting his attack on Biburg on the sixth. I told him he must attack on the fourth. He complained very bitterly that I never appreciated time and space factors. I told him that, had I done so with him or any other corps commander, we would still be west of the Seine River."¹⁴⁰⁷ As in other aspects of life and warfare, Patton broke the rules to perform more and more within the time allocated to him. He wanted to be as quick as possible and achieve as much as humanly possible as soon as possible and overlooked many other issues on his ponderous drive towards his objective. "I determined to attack as soon as I could, as I felt that time was more valuable than coordination. In fact, it is my opinion that co-ordination is a very much-misused word and its accomplishment is difficult."1408 Between the lines of these quotations we can perceive Patton's emphasis on time and temporality but we must criticize the fact that his overbearing personality overlooks the intricacies of the manipulation of time.

Managing time and temporizing operations includes due concern to be given to where and when pauses in operations will take place and how they affect the whole plan. Planning the rhythm of battles and operations is incomplete if the operational and tactical pauses are not inserted into where they benefit instead of hinder the operation. According to von der Goltz, "*pauses in the operations and interruptions in the advance must, at all events, ensue, and these do not only entail loss of time, but also enable the defender to bring up reinforcements and so to protect his resistance.*"¹⁴⁰⁹ Thus, the task of the planners is to determine beforehand when the attacking power is about to be spent and has to be replenished. This should be carried out either at a time when it is beneficial to one's operations or, at the least, when the enemy cannot utilize the time to his advantage. Generally, whenever there is a cessation in the attack, it benefits the defender.

Even if more theoretical discussion about culmination points is a relatively recent turn in operational art the concept itself is as old as war. Clausewitz viewed the culmination point as a necessity to calculate; for the attacker so that he avoids overextension and for the defender to determine a moment suitable for a counter-attack¹⁴¹⁰. In essence reaching a culmination point merely is a novel way of saying that the attacker has overextended himself and proceeded further than his resources would have allowed him to do. Culmination is a danger on all levels of warfare and especially in the past entire campaigns and wars ended when the necessity to avoid overextension and apply properly the point of culmination was ignored. An example is the Napoleon's failed invasion of Russia in 1812.¹⁴¹¹ Archduke Charles argued that the main cause of culmination is moving too rapidly and thus draining the fighting power of his troops due to fatigue and disorder. While this unfortunately is an omnipresent threat even today, the point of culmination can just as well be reached through many other mistakes made in planning and execution. Vego defines it

"as a point in terms of time and space reached by the attacker or the defender, after which his stated objectives cannot be accomplished and continued effort to reach them will significantly increase the chances of failure or even defeat. (...) A culminating point should not be understood too literally; it is not a "point," but rather an area of uncertainty or nonrecognition in terms of space and time. The higher the level of war, the larger the area of uncertainty and the more difficult it is to anticipate or sense the culminating point's arrival."¹⁴¹²

¹⁴⁰⁷ Patton (1947), p. 234.

¹⁴⁰⁸ Patton (1947), p. 255.

¹⁴⁰⁹ von der Goltz (1906), p. 85.

¹⁴¹⁰ See Sumida (2007), p. 179.

¹⁴¹¹ Vego (2009), p. VII-73.

¹⁴¹² Vego (2009), p. VII-74.

An example of recognizing the risk and avoiding culmination can be read between the lines of Schwarzkopf's memoirs in which he describes providing his subordinates with his commander's intent of the Desert Storm. "I do not want a mechanical grind-it-out operation. We must be flexible enough to capitalize on things as they occur. The idea is not to do intermediate objectives and then stop to rearm and refuel."¹⁴¹³ The demand for flexibility is contradictory to mechanical means of planning the operation. Nevertheless, during an operation re-loading and refueling have to be done and the logistics planners are given the task to do them so, that even if units have to stop one at a time the attack itself continues with other troops so that there are no pauses in the big picture. By setting such demands, Schwarzkopf forced his subordinates to take the more difficult road. Planning mechanically that once the attack has reached this or that point, rearming and refueling will take place, would have been easier and pre-set pauses would have reduced the risk of culmination. This way pauses were avoided, but the chances of reaching culmination and having to hold a longer, forced pause in operations increased.

The point of culmination must never be reached in order not to lose both time and space. Were it so simple, there would be no battles lost if they were properly planned. Since war is reciprocal activity and the variables at play are a legion, the point of culmination shifts in time with every development in the battle. Nevertheless, advancing as rapidly as possible for the period of time determined in planning as safe and not exhaustive of the supplies and energies of the troops and then slowing down for replenishment of said factors and creating conditions for accelerating the pace again is a good rule for saving time. It also illustrates that there are situations when deliberately slowed action saves time in the long run when the enemy is not able to force his own rhythm on operations.

Yet, once the wave of attack breaks due to overextension, a counter wave occurs and the flow may be reversed. As the Soviet offensive in December of 1941 finally was able to halt the continuous progress of German spearheads the tables were not immediately turned. For two long years the war in the East could be characterized by spectacular offensive gains leading to just as spectacular retreats as the other side had gained enough momentum to counter them. The waves of attacks and counter-attacks taught the Soviets to set the tempo for their operations in accordance with the principle of pace and variability Liddell Hart preferred. "*Stalin and his high command learned to alternate each successful advance with a very deliberate pace, to keep their armies safely short of the culminating point of victory*."¹⁴¹⁴ To curtail the speed and tempo of operations, if deemed necessary, is an effective means of avoiding the point of culmination being reached. To halt one's operations prior to the eventual point of culmination means having an "operational pause". As Vego wrote,

"in a campaign or major operation, it is rare that one's combat actions can be conducted continuously. This is particularly true when facing a relatively stronger enemy. One's materiel and human resources are always limited. Periodic slackening or even the stopping of one's forces—called operational pauses—should be part of a sound campaign plan or plan for a major operation."¹⁴¹⁵

While operational pauses are beneficial to create unpredictability about one's operational tempo, they must support the attainment of operational objectives. Thus an operational pause manages to support the idea of pace with variability since tempo is varied and the enemy finds it harder to estimate one's progress. Even if the name so implies, the activity of the troops does not necessarily come to a halt. "*Properly understood, the term "pause" means a major part of the main forces slackens or even drastically reduces its efforts while the supporting forces intensify their pressure on the enemy's main forces.*"¹⁴¹⁶ At the same time the supporting forces need to accelerate the pace of their actions in support of the main forces in supply, maintenance, and logistical efforts in general. Even if the fighting and mobility of the main forces slack-

¹⁴¹³ Schwarzkopf (1993), p. 502.

¹⁴¹⁴ Luttwak (1987), p. 24.

¹⁴¹⁵ Vego (2009), p. IX-125.

¹⁴¹⁶ Vego (2009), p. IX-126.

ens, the rest of the troops may greatly increase their activity. Operational pauses are not only useful tools of synchronizing and sequencing operations. As Vego wrote, "*their main purpose is to allow sufficient time to regenerate one's combat potential and avoid arriving at or overreaching the point of culmination. An operational pause can also be planned to shift one's forces from one sector of effort to another*"¹⁴¹⁷ Having a pre-planned operational pause is a huge asset to rejuvenate diminished combat power at the time of one's own choosing. If the time to perform these sustaining actions is dictated by the enemy and one is forced to have a pause of operations at an unfavorable to moment, one has reached a point of culmination and a failure to coordinate planning and execution has occurred.

While the essence of this entire chapter is that occasionally there comes a need to curtail the speed of both forces and the decision-making cycle, we must bear in mind what Alberts et. al. warned us about when they argued that it is easy to "construct situations and circumstances where 'speed of command' is irrelevant or worse, harmful. But there are many circumstances and missions where, all things being equal, speed of command will be decisive."¹⁴¹⁸ This is the gist of the argument. One should not blindly rush to endlessly accelerate the speed of decision-making but always estimate based on the temporal pressures whether winning time by being quicker is more appropriate than winning time by spending more time on creating a decision and thus saving time in efficient execution. There is no definite formula which option is correct, since it depends on the context, the situation, and actions of the enemy. Indeed, NCW as a Third Wave warfighting concept attempts to provide,

"an opportunity to increase speed of command when it is appropriate; it does not force us to do so when it is not. Thus, the point we can take away is the need to better understand how we can leverage speed of command in military situations and dispel the myth that speed (or any other single factor) is either a panacea or an unmitigated good."¹⁴¹⁹

Perhaps the most important takeaway from this discussion is the notion that it would be unwise to be the fastest or the slowest counterpart at all times, but that part of the temporizing and synchronization of the speed of planning, command, and execution is the ability to find the proper tempo for each activity on each occasion and it is the task of the commander to understand the pulse of war and use his *comp d'oeil*, or, perhaps in this case, the inner 'ear' to set the right rhythm for battle.

6.7. RHYTHM OF WARFARE

"The movement of the skilled is as apparent as that of a spirit and yet proceeds like that of a ghost, is as brilliant as the stars and yet operates in obscurity. Advancing and retreating, contracting and extending, none sees its form or outline."¹⁴²⁰

As human beings we need rhythm and pattern in our lives. They allow us to function but in time strict adherence to them may rob us of thought, spontaneity, and reason.¹⁴²¹ Following patterns in all human activities leads to routine repetition which should be avoided. Rhythm in warfare is something seldom discussed, but an important part of the movement of the troops.¹⁴²² In the agrarian age to have rhythm saved time, since soldiers could move

¹⁴¹⁷ Ibid.

¹⁴¹⁸ Alberts et. al. (2000), p. 13.

¹⁴¹⁹ Ibid.

¹⁴²⁰ Liu An (2012), p. 111.

¹⁴²¹ Stempel (2012), p. 62.

¹⁴²² The idea of battle, operation or even war having a rhythm of its own should not be confused with an idea of battle rhythm. The latter is a cycle of activities, including briefings, decision-making points and workshops that sets the working pace for the staffs and influences the rhythm of operations through the decisions made and the process of carrying them out. As an example Clark (2001), pp. 198-220 devoted a whole sub-chapter to the discussion of battle rhythm and the only time related issues are the fact that we was awake for 36 hours during Kosovo air campaign, how difficult it was to generate targets in time and how his political masters

as a unified army because their footsteps followed the same rhythm. The Spartans marched slowly to the rhythm of flutes in order not to break their ranks¹⁴²³. So did the Romans, but this was forgotten for a long time¹⁴²⁴. De Saxe wrote that "*it is a comedy to see even a battalion commence movement!* [...]Have them march in cadence. There is the whole secret, and it is the military step of the Roman. That is why these musical marches were instituted, and that is why one beats the drum."¹⁴²⁵ The rhythm of the drum enabled synchronized movement, which was important in keeping close formations together, but also when armies marched to the site of upcoming battle. Since they marched in cadence, one was able to calculate how long a march would last and it became possible to time the arrival of separate formations to the battlefield. Napoleon planned his marches similarly.

It is understandable in our contemporary conjunction with its fetish of unceasingly attempting to accelerate the pace of operations and reducing response times that the idea of natural rhythm is overlooked. Freytag-Loringhoven emphasized that "the leader must be sensitive to the pulse of the battle" and discussed the view General Kuropatkin as a chief of staff had of his commander Skobeleff. He told of the latter's skill "to feel the pulse of the battle accurately - now rapid, now slow - and how Skobeleff would shape his own conduct in action accordingly, sometimes holding back, checking his own impulses by the power of his will, sometimes giving them free rein."¹⁴²⁶ The expression "pulse of battle" refers to a rhythm directing the course of the battle. The rhythm of a battle or an operation is not set but, rather like a pulse, speeds up with exertion and slows down with the moment of relaxation.

Treating the rhythm of the operation as a pulse of some magnificent beast enables us to get insight into how it could be regulated. As we see from the citation above, the commander has to set his own pace of action to correspond to the pulse of the operation when the rhythm takes over. Yet he has the option of setting the pulse by his own actions. This is what planning of operations essentially is. When he sets his plan in motion, the commander sets the rhythm for his operation. However, he is not able to keep the pulse constant any longer than the brief period of time battle proceeds according to his plan. Exertion in moving the troops faster elevates the pulse and over-exertion causes it to stop. Meanwhile the enemy constantly seeks to alter this pulse to be more favorable for his operations. Once the planned and actual course of the battle no longer are in unison, the pulse of the battle takes over and starts to dictate its own rhythm and influence the rhythm of operations alike.

This is a kairos-time of intervention from the commander-in-chief. He still holds the reins in his hand and by judging and choosing his action properly and initiating it at the right time he can speed or slow down the rhythm. What he cannot do, however, is to allow his inner need for speed to dictate his actions. He must set his own rhythm to follow the pulse of the operation and seek a proper moment to shock the battle to assume a new, artificial, rhythm or initiate a new battle to reset the rhythm of the entire operation. As an example we can give the moment when defensive stance switches into offensive. A slow rhythm is replaced with a fast one. This transition, however, cannot be made unless the commander has abided to a slower rhythm to start with. Every event has the potential to alter the natural rhythm of battle and the commander must have his finger on the pulse to deduce the alterations these events constantly cause. This requires a profound understanding of the tempo of warfare. Battle, operation, and war itself adhere to a rhythm.

> "War is a pulsation of violence, variable in strength and therefore variable in the speed with which it explodes and discharges its energy. War moves on its goal with varying

suggested a pause in the air attacks for political purposes. Clark also argued concerning the Kosovo campaign that "*this was not, strictly speaking, a war*." cited in Ignatieff (2001), p. 3.

¹⁴²³ Thucydides (1971), p. 351.

¹⁴²⁴ Bülow (2013), p. 238.

¹⁴²⁵ De Saxe (1987), pp. 202-203.

¹⁴²⁶ Freytag-Loringhoven (1991), p. 208.

speeds, but it always lasts long enough for influence to be exerted on the goal and for its own course to be changed in one way or another."¹¹⁴²⁷

We can see that war had a certain rhythm for Clausewitz as well, hence the "pulsation." Strength and speed of warfare vary, while war progresses towards the final resolution. Sometimes war is slow, sometimes rapid, sometimes time stands still, at other times it races and runs out. Even in the moments when there seems to be no time for anything leadership and influence should be exerted to change the situation. These moments when time flies, are when crucial decisions are made in operational art. When time is stagnant and there seems to be an abundance of it at the commander's disposal, the enemy commander has the same advantage and thus the possibility to create an unexpected move diminishes. When time is scarce, a true operational artist exerts his superiority over a lesser general.

Temporizing movement is not only about moving faster or slower in response to operational needs. Proper movement both prior to battle and during its execution has a rhythm of its own. As von der Goltz wrote, "the movements of armies resolve themselves into a constant separation and reunion. For both the right moment must be chosen. If the forces are concentrated too soon, it will be necessary either to disperse again, or to march in close formation over a narrow space and upon few roads."¹⁴²⁸ The rhythmic pulsation in warfare is both temporal and spatial and occurs within the development of an operation as well. According to Leonhard

> "temporal distribution (also known as preemption) is the temporal converse of concentration. Preemption sacrifices combat power to achieve a temporal advantage, with a view to attacking an unready enemy. Concentration sacrifices time in order to garner combat power, with a view to attacking a ready enemy."¹⁴²⁹

By choosing the right time to disperse the troops and concentrate them again can the commander maximize the effect his troops can inflict on the enemy. Proper temporizing turns execution of operational art into a dance of separation and reunion of forces. If the troops are separated when they should attack their action is not unified and the potential fighting strength is wasted. If they are massed together when under enemy fire from the air or the artillery, the damage grows in proportion to the level of concentration. Van Creveld wrote concerning the concentration of forces in space and time that the art

"consists not simply of concentrating our own forces but by causing the enemy to disperse his. To bring this about, it will normally be necessary for us to disperse our own forces so as to confuse the enemy and draw him away from our real objective. Thus concentration actually consists of dispersion, whereas dispersion consists of concentration, victory going to him who, retaining control and avoiding confusion switches rapidly from one to the other."¹⁴³⁰

The times and places when and where the units should converge and disperse have to be identified during the planning phase of the operation. The idea of rhythm is to use variability and not to choose one or the other but to employ both and use this pulsating rhythm to create discord in the rhythm of the enemy. The idea itself is old but not fully exploited.

"A proper and effective balance between concentration and its two converses, spatial and temporal distribution, leads to success. An overreliance upon either extreme will just as certainly lead to disaster, because the enemy will react to diminish the effects of either. The commander in war should structure his plan to alternate between distribution and concentration. This balance is an important correction to some classical writers' insistence on always remaining concentrated for battle."¹⁴³¹

Clausewitz saw war as a spasmodic process where battles are interrupted by periods of non-action where both sides observe each other and take the defensive stand. One side is usually more motivated than the other and chooses to use the dominating element of of-

¹⁴²⁷ Clausewitz (1989), p. 87.

¹⁴²⁸ von der Goltz (1906), p. 174.

¹⁴²⁹ Leonhard (1998), p. 257.

¹⁴³⁰ Creveld (1991), p. 121.

¹⁴³¹ Leonhard (1998), p. 257.

fence, which will result in a clash and the continuation of action.¹⁴³² The subjective notion of time is different during the spasm and the relaxation. When action increases, time seems to pass by more rapidly and during the period of non-action, there seems to be an abundance of time. Neither ceaseless action in a hurry without pause, nor complete absence of activity is a suitable state for the army to be in. There must always be some task undertaken. As Montgomery wrote,

"the enemy must be forced to dance to your tune all the time. This means that the commander must foresee the battle. He must decide in his own mind, and before the battle begins, how he wants operations to develop; he must then use the military effort at his disposal to force the battle to swing the way he wants. My own military doctrine was based on unbalancing the enemy by manoeuvre while keeping well balanced myself."¹⁴³³

According to Miyamoto Musashi, one cannot control the timing of strategy without relentless practice. To have this ability to fully control actions releases strategy from insecurity. For Musashi the entire life of the warrior and strategist expresses timing. He grows, matures, and withers. Everything is connected to temporality and this needs to be recognized by the strategist. He needs to be able to discern proper and improper timing and among the fast and slow tempos of great and small events alike to be able to choose the most fitting time for action by knowing the distant timing of the background of the unfolding events. By knowing the timing of "emptiness" the strategist will emerge victorious from any battle. It means knowing the timing your enemy uses and based on that utilizing a timing of your own that the enemy cannot expect.¹⁴³⁴

For Musashi the timing of warfare is always joined to a rhythm. Events on a battlefield have a rhythm of their own and timing of one's actions needs to be synchronized with the rhythmic superstructure of operations¹⁴³⁵. One needs to, however, occasionally reset the rhythm and this is where superior timing exhibits itself. The rhythm of the enemy has to be exploited when his situation is not stable to cause confusion among his troops.¹⁴³⁶ A discord has to be introduced into his rhythm while maintaining one's own. If the battle has reached a stasis, there is no resolution that would bring victory. Then one has to cease his effort, apply a new perspective to the situation, and pick up a new rhythm for the continuation of the operation. Something unexpected is required to bring the enemy to the brink of disequilibrium and force him to adapt to one's own rhythm and timing.¹⁴³⁷

Time seems to have a disturbingly dual nature. There is a need to seize the moment, when it arrives, but one can wait for that for a long time. There is no time to be wasted when the time for decision comes, but there is no reason to save time before it. There will at some point be increased activity, but awaiting that, lackadaisical passivity of kronos-time is the prevailing condition. There is no fixed rule for time, just guidelines how it should be treated. The same applies to speed and haste. According to Sun-Tzu, "*it is the nature of the army to stress speed; to take advantage of the enemy's absence; to travel unanticipated roads; and to attack when they are not alert.*"¹⁴³⁸ Simultaneously there should not be too much haste since, "*to race forward day and night without encamping, covering two days normal distance at a time, marching forward a hundred li to contend for gain, the Three Armies' generals will be captured. The strong will be first to arrive, while the exhausted will follow.*"¹⁴³⁹ In Sun-Tzu's thinking winning time should not happen at all costs. It is necessary to stress the speed of movement as a means of gaining an edge on the enemy. Speed allows the army to fill the void enemy has not yet

¹⁴³² Clausewitz (1989), p. 219.

¹⁴³³ Montgomery (2000), p. 17.

¹⁴³⁴ Musashi (1995), p. 58.

¹⁴³⁵ On this see Cleary (2005), p. 38.

¹⁴³⁶ Musashi (1995), p. 97.

¹⁴³⁷ Musashi (1995), p. 89.

¹⁴³⁸ Sun-tzu (1993), p. 179.

¹⁴³⁹ Sun-tzu (1993), p. 169. "L? is a traditional Chinese unit of distance which has varied greatly throughout history but is now standardized at 500 meters. In the time when Sun-Tzu's Art of War was put together it is likely to have been a little over 400 meters.

been able to occupy. To have speed is not the same as to have excessive hurry. Rapid movement should be strived for in a manner that does not erode the capabilities of the army. This is just as evident in the early European masters of war. For example Frederick strove to deliver his attack before the enemy was ready but this was to be done by precision of movement and not by hurrying.¹⁴⁴⁰

In Sun-Tzu's writings "*if the enemy opens the door, you must race in.*"¹⁴⁴¹ But since he also always advocates knowing oneself and the enemy properly, this does not advise rushing in to fall prey to a feint or ruse. Wu-tzu offered additional advice; "*courage is but one of a general's many characteristics for the courageous will rashly join battle with the enemy. To rashly join battle with an enemy not knowing the advantages and disadvantages is not acceptable.*"¹⁴⁴² It would be folly to attack without an afterthought when there seems to be a suitable opening in the ranks of the enemy. The moment may look auspicious, but it can be a stratagem of the enemy to lure one into a trap. Thus, one must "ascertain the enemy's voids and strengths and then *race [to take advantage of] his weak points.*"¹⁴⁴³ The duality of yin and yang appear in strategic and operational thought¹⁴⁴⁴. To describe how the army should be used, following this duality, "its speed is like the wind, its slowness like a forest; its invasion and plundering like a fire; unmoving, it is like the mountains. It is as difficult to know as the darkness; in movement it is like thunder."¹⁴⁴⁵

A good tactical or operational commander must combine in his rhythm haste and prudence, speed and stability into rapid movement in a thought-out manner. One has to win time in order to catch the enemy unprepared, but prepare oneself thoroughly. Time can be squandered as well as stolen from the enemy, but at the heart of everything is painstaking preparation to identify the advantageous moment and to seize immediate initiative at that very instant. For Musashi finding the auspicious timing is not entirely concerned with the simple maxim of striking first. A suitable timing and proper rhythm is also to attack concurrently with the enemy, only harder and using the distraction caused by your attack to emerge victorious. If the enemy is able to beat your timing with his attack, you need to retaliate. If the attack of the enemy is rapid, your response needs to be strong and calm, even slovenly. If the enemy uses a slow attack, then your response needs to be swift and powerful.¹⁴⁴⁶ This idea of a calm and slow counter-attack is something worth looking into in contemporary operations.

Every combatant naturally strives to seize the initiative to commence the battle. If that head start, however, cannot be achieved, one should not aim to respond with the same speed, since the element of surprise belongs to the one who initiated action. To counter-attack with haste is to follow the enemy's timing and adhere to his rhythm. To respond timely with grace, with no hurry, but careful preparation, will enable one to regain the initiative. It is a conscious decision not to subject oneself to the timing of the enemy, but to act with a level head and in unison with the most suitable rhythm to oneself¹⁴⁴⁷. Responding at a time of one's own choosing, instead of hurrying carelessly to be the first to act, will enable acting in accordance to one's planning and timing thus regaining initiative. The lower level of the warfare we discuss, the smaller is the opportunity to use one's own rhythm since tactically a quick response may be a necessity. But already in operational art the situation changes and the response to enemy action may win time by avoiding undue haste.

¹⁴⁴⁰ Colby (1943), p. 80.

¹⁴⁴¹ Sun-tzu (1993), p. 183. Opening the door did not mean deliberate activity but rather the wait-and-see approach when the rush in must occur when conditions for it have ripened. See Yuen (2014), p. 91.
¹⁴⁴² Wu-tzu (1993), p. 217.

¹⁴⁴³ Wu-tzu (1993), p. 213.

¹⁴⁴⁴ Yuen (2014), pp. 28-29 argues that it can be considered as the universal logic of war and strategy.

¹⁴⁴⁵ Sun-tzu (1993), p. 169.

¹⁴⁴⁶ Musashi (1995), p. 80.

¹⁴⁴⁷ As Cleary noted, there is long tendency in Zen-oriented martial arts to identify speed with spontaneity. The precise awakened response is different than an automatic reaction, but the distinction is somewhat blurred. See Cleary (2005), pp. 58-60.

For Musashi it is different to act rapidly than act with haste. In the latter if one's speed to too high and the actions are not properly thought out one will break his own rhythm. Speed itself is not for Musashi a part of what he called strategy, because it is always a part of the idea of speed that things look fast or slow depending on their rhythm. The master of strategy never looks fast, but has exquisite timing. If one acts too slowly, one is not able to exploit the confusion of the enemy to decide the outcome of the battle. The master of strategy acts at the right moment, using immaculate timing and appropriate speed without haste in accordance to his own rhythm that emerges from his thorough knowledge of the Way of strategy.¹⁴⁴⁸ Ssu-ma provided good advice concerning timing. He emphasized the interaction between one's own army and that of the enemy and how one can cause discord in the rhythm of the enemy. One should

"endanger them to observe their fears. Be tranquil to observe if they become lax. Move to observe if they have doubts. Mount a surprise attack and observe their discipline. Mount a sudden strike on their doubts. Attack their haste. Force them to constrict their deployment. Launch a sudden strike against their order. Take advantage of [their failure] to avoid harm. Obstruct their strategy. Seize their thoughts. Capitalize on their fears."¹⁴⁹

In the less mobile warfare of the agrarian China such interaction between the armies was easier to carry out during the operation than in times of greater mobility of the industreality. The most profound guideline in terms of setting the tempo is when Ssu-ma ordered to "attack their haste." When the enemy is pressed for time and forced to hurry, then is the suitable time to attack. Even more importantly one must notice, that during the times he is forced to perform his actions in a hurry, he is open for a surprise attack by the enemy. This should lead the operational artist of today as well to consider if really the most prudent way to carry out a war is to constantly increase his mobility and speed and always press the enemy for time. At least on occasion choosing a rhythm and timing that comes naturally to the general and his troops may be more fruitful. This remains true even during the Third Wave where the idea of time is more flexible.

6.8. SYNCHRONIZING OPERATIONS

"The art of orchestration requires many skills not traditionally found or emphasized in the military: diplomacy, patience, consensus building, and imagination. Of these, the last is the hardest to cultivate. Orchestration requires imagination, because, just as the conductor of a symphony hears the music in his head - hears what it ought to sound like - and waves his baton accordingly, so the military commander must be able to imagine what the end state of his forces' efforts should be."¹⁴⁵⁰

There is an immense challenge for the armies of the past and today alike to be able to combine thorough planning operations with effective execution of those plans in practice. The combination of a detailed plan and a chaotic execution has been seen often enough in reality while it mostly remains *non-dit* in the memoirs of the generals who fought those battles. Sherman is a notable expression since he wrote about the Battle of Bull Run that "*that it was one of the best-planned battles of the war, but one of the worst-fought*."¹⁴⁵¹ As Stoker described it, all too often during the entire American Civil War "*those concorting the plans did not take into consideration the realities of terrain, logistics, capabilities, and, perhaps most important, time*."¹⁴⁵² Problems emerge when events in real life refuse to conform to the plan. This does not mean that planning should not be as thorough as possible, but rather that the plan thus created

¹⁴⁴⁸ Musashi (1995), p. 99.

¹⁴⁴⁹ Ssu-ma (1993), p. 142.

¹⁴⁵⁰ Leonhard (1998), p. 203.

¹⁴⁵¹ Sherman (1890), p. 209.

¹⁴⁵² Stoker (2010), p. 9.

must have the potential to be further developed according to the emerging situations in the course of the battle or campaign.

Planning is a time-consuming process, but if conducted properly, a huge time-saver in the execution of battles and operations. As Jomini wrote, "concert in action makes strength; order produces this concert, and discipline insures order; and without discipline and order no success is possible."¹⁴⁵³ To be able to strive for rapid victories, the operational plans need to be painstakingly crafted. Therefore, one cannot be hasty in planning and attempt to artificially produce plans faster. What one can do, is to increase the efficiency and streamline the planning process to ensure that not a moment is lost. However, there remains the problem that the more economical, efficient, and streamlined any organization is, the greater is its vulnerability.¹⁴⁵⁴. According to Vego

"planning time can be greatly reduced if the planning is conducted concurrently rather than sequentially. Also, the simpler the planning process, the more speed is enhanced. In addition, the more experienced the operational commanders and planners, the faster they will be at improvising and preparing operation plans."¹⁴⁵⁵

The traditional mode of planning dictates that one echelon of command prepares its own plan of combat or campaign complete with the tasks given to its subordinate commands and then distributes this product de facto ordering the subordinates to initiate their own planning cycles. After these plans are finalized, they are again given as orders to the next echelon of command and so on. Even if some tasks are disseminated as warning orders and some planning can occur even without the actual order itself, the process is simply too long to function when the time-pressure is on every link in the chain of command.

By making the process concurrent, that is, designing it so, that subordinate commands are involved in higher level planning and simultaneously conducting their own planning time can be saved. The process becomes faster and by involving subordinates in the same planning phases where their tasks are drafted, the commander's intent becomes clearer to his subordinates. There is no doubt that being given a ready-made order as a basis of one's own planning and finalizing it in turn before assigning tasks to one's subordinates is the simplest possible procedure, but the simplicity lost in concurrent planning is more than rewarded by gained time. To win time in planning a balance between simplicity and effectiveness must be reached. We must remember that speeding up the process is the objective but as our technological means of waging war have developed to the level of so-phistication we have today, the commanders making the decisions must be made to understand what is possible to achieve with the aforesaid technology. Leonhard wrote concerning the Third Wave warfare that, "when it comes to handling the technical complexity or warfighting, it is the younger generation that is most comfortable. In a sense, we have to keep things simple so the leaders can participate."¹⁴⁵⁶

Even if we have some tools, techniques and methods pertinent to the Third Wave embedded in our doctrines, we still tend to view them either as separate elements which have to be coordinated or attempt to use them in traditional ways. This incompatibility does not deal with only tools and their use but concerns the way we conceive and plan out operations. As Alberts et. al. describe the way we treat operational art,

> "our current approach to developing a military campaign plan is predicated upon a fairly well understood set of relationships among events that take time to unfold. Thus, the plan can be decomposed into a series of steps, each one building in a linear fashion on the preceding steps. Our ability to deal with something as complex as a military campaign depends upon our ability to break it down into these manageable pieces. We can do so because of our ability to separate events in time and space. Organizationally, we deal at three levels the strategic, operational, and tactical. Geographically, we deal with sectors or theaters.

¹⁴⁵³ Jomini (2007), p. 31.

¹⁴⁵⁴ Creveld (1991), p. 121.

¹⁴⁵⁵ Vego (2009), p. III-25.

¹⁴⁵⁶ Leonhard (1998), p. 173.

Functionally, we usually deal with specific jobs or tasks in a sequential manner (e.g., first we do suppression of enemy air defenses and achieve air superiority, then we attack other targets). The battlespace is thus segmented, and we can deal with smaller isolated problems, tasks, or battles. The nature of Information Age Warfare makes it more and more difficult to operate in this reductivist fashion. Technology has compressed the space and time continuum, and political realities have collapsed the clear separations among the strategic, operational, and tactical levels by introducing more dynamic rules of engagement. The new Circus Maximus introduces a dose of chaos, and the Wired World makes the process nonlinear. We will find it necessary to manage larger and larger pieces, and do it more and more quickly in situations that are unlike those of former ages.²¹⁴⁵⁷

Once again the reader must benevolently allow for such a longish quote, but it is included out of necessity to allow the writers to express their idea of sequential actions as opposed to the simultaneous actions of the information age. In strategy there are two types of strategies, one is sequential and proceeds by discernible steps. The other is the cumulative in which the accumulation of actions taken may lead to critical mass. These two can be used simultaneously as they do not contradict each other.¹⁴⁵⁸ In operational art sequencing is a practical necessity. Sequential nature of operations was born out of the indust-real willingness to divide and subdivide everything mechanistically into smaller and smaller parts.¹⁴⁵⁹ This enabled the commanders to comprehend and control of operations. Different pieces and phases connect to each other and the causal development of action and reaction leading to new action is visible and can be handled. Operations have grown into uncontrollable and complex entities. Thus they have to be broken down into subunits that the planners can tackle individually and combine into an operation *in toto*. As Vego described the task,

"planners use major phases to break their tasks into more manageable parts. The major phases in the employment of one's combat forces at the operational level are mobilization, predeployment, deployment, combat employment, posthostilities, redeployment, demobilization, and reconstitution. The initial campaign would most likely encompass all of the major phases. The separation between the successive major phases is usually blurred."¹⁴⁶⁰

This is exactly the point. For the purposes of planning the artificial division of operations into separate phases is a necessity. During the actual execution of the plan the phases somewhat blend together, but if the system of planning is efficient enough it enables the commander to follow closely how the plan proceeds and whether the intermediate objectives have been reached. Based on his estimation of the situation he is then able to order the switch from one phase in operations to another. Within a phase of operations simultaneity is desirable.

Sequencing is an important part of synchronization. The entire development trajectory of RMA, EBO, NCW and military transformation has followed the idea of waging war by exploiting new technologies to create tactical effects which in turn should be carefully sequenced so, that the combined effect would have operational level impact.¹⁴⁶¹ Warden wanted to strategically shorten the war as much as possible and for this purpose he advocated conducting operationally a "*parallel attack*" which means basically operations synchronized in time and space according to the existing principles of war. In his words, once the enemy system is understood, crucial systematic vulnerabilities have been found, and the desired effect is decided on, "*parallel attack will normally be the preferred approach, unless there is some cogent reason to prolong the war*."¹⁴⁶² A state has a limited number of vital strategic

¹⁴⁵⁷ Alberts et. al. (2000), p. 70.

¹⁴⁵⁸ Wylie (2914), pp. 24-25.

¹⁴⁵⁹ One needs only to recall how Jomini described each level of warfare being in turn responsible for a certain phase like logistics transporting the troops where strategy had dictated, tactics for the actual fighting and grand tactics for what happens after the battle. Jomini (2007), p. 51.

¹⁴⁶⁰ Vego (2009), p. VI-3.

¹⁴⁶¹ See Strachan (2013), p. 214.

¹⁴⁶² Warden (1995), p.19.

targets and many of these have no backups or are difficult to repair. If a significant percentage of these can be attacked simultaneously, that is, in parallel, the damage reaches the breaking-point of the "system". The purpose of the parallel attack is to concentrate the violence in time and space alike so that the shock accumulates to become unbearable. Should attacks occur one after the other, the enemy system would automatically be offered time to recuperate from a previous attack before the next one. When they occur simultaneously, it acts as an effect-multiplier. In Warden's words,

> "contrast parallel attack with serial attack in which only one or two targets come under attack in a given day (or longer). The enemy can alleviate the effects of serial attack by dispersal over time, by increasing the defenses of targets that are likely to be attacked, by concentrating his resources to repair damage to single targets, and by conducting counteroffensives. Parallel attack deprives him of the ability to respond effectively, and the greater the percentage of targets hit in a single blow, the more nearly impossible his response."¹⁴⁶³

Hitting tens or hundreds of parallel targets simultaneously requires a vast array of capabilities and practically demands a quantitative and qualitative superiority such as what a superpower can amass against a small state. Serial attacks are the way operations have generally been fought in the past and even present excluding the most advanced armed forces. Serial attacks have been the norm because in the words of Warden

> "parallel attack has not been possible on any appreciable scale in the past because a commander had to concentrate his forces in order to prevail against a single vulnerable part of the enemy's forces. If he prevailed, he could reconcentrate and move on to attack another point in the enemy's defenses. The process of concentrating and reconcentrating was normally lengthy and one that the enemy worked hard to foil. This process, better understood when labeled "serial warfare," permitted maneuver and countermaneuver, attack and counterattack, and movement and pause. It also gave rise to the phenomenon known as the culminating point in campaigns that point at which the campaign is in near equilibrium where the right effort on either side can have significant effect. All of our thinking on war is based on serial effects, on ebb and flow. The capability to execute parallel war, however, makes that thinking obsolete:"¹⁴⁶⁴

Clausewitz gave guidance into timing one's operations by arguing that *"in the tactical realm force can be used successively, while strategy knows only the simultaneous use of force.*"¹⁴⁶⁵ In operational art of the Third Wave one should to some degree combine the successive and the simultaneous. Synchronized parallel attack is not a new idea, but an ideal that has been the objective of the art of war ever since the first tactical formations appeared on the battlefield providing internal coherence into the chaos of war. Synchronization requires all the synchronized elements, be they men or machines to act in concert with each other and in a unified manner. Nevertheless, the theories do not yet depict the realities most of us are facing because the level of synchronization required remains often unattainable. Alberts et. al continue their argument about transforming the concepts of operational art from sequential to selfsynchronizing actions by claiming that ultimately the acceleration of activities is the root cause. According to them we move from

"a series of static events to a more continuous one by greatly increasing the operating tempo of events. The result is the need for greater integration between the heretofore separate planning and execution processes, requiring more timely interactions between the two, and portents an ultimate merging of these two processes into a seamless form of command and control."¹⁴⁶⁶

While they are absolutely right in their claim that planning and execution are at the moment considered as two different sequences of operational art, our current practices tend to allow both of them to operate in loops of their own. In other words, planning one phase of an

¹⁴⁶³ Warden (1995), p.19-20.

¹⁴⁶⁴ Ibid.

¹⁴⁶⁵ Clausewitz (1989), p. 206.

¹⁴⁶⁶ Alberts et. al. (2000), p. 74.

operation and executing another are two different processes that revolve and evolve on their own simultaneously. Instead of offering a "merging" of these two into "a seamless form of command and control" there is a need to synchronize them so that output of one process acts as an input of another. The principle of simultaneity should not be concerned only with simultaneous effects and attacks but that there should be simultaneous activity on all the levels of warfare and they should provide input for other levels at the same time. This requires synchronization so that in the big operational picture the activity is unceasing and no time is wasted by breaking activity into consequent phases even if this often is the reality on the micro-level on the ground. New orders have to be given so that they feed the other levels and their loops at the proper time. This idea is to be read from Alberts et. al. as well, since they define the relationship of planning and execution by writing that

> "planning is a form of decision making that exists at a headquarters level. When viewed over time, the activities at the different echelons take place sequentially, with one level executing the existing plan while another is developing the new plan. This process has evolved to the point where planning and execution are distinct activities. Efforts to speed up the process so that more responsive plans can be developed are fast approaching the laws of diminishing returns (their natural limits)."¹⁴⁶⁷

The problem is that the cycles of both processes have been accelerated beyond their natural limits and that they still lack synchronization. The cycles need to feed each other, but this has to occur in a synchronized manner. By this I mean that it should not be considered automatic that each rotation of the cycle will fuel the other. On occasion the speed of either or both has to be allowed to relax unless there is a pressing operational need and if there is one, to accelerate to the natural limit again. Even if planning and execution are viewed as processes, the idea that their cycles are interconnected like the mechanism of a clock is a remnant of the industrial age. The selfsynchronization network centric warfare strives for must allow for these cycles to regulate their own speeds and if they are not able to do so, the intent, demands and orders of the commander will produce timings for both cycles to produce their output.

Selfsynchronization is supposed to be "*a mode of interaction between two or more entities.*"¹⁴⁶⁸ But perhaps, due to the idea of omnipresent friction, the command structure is not able to selfsynchronize itself in the most optimal manner, and then the commander resets the rhythm. To use the allegories of rhythm and an orchestra¹⁴⁶⁹, what we see in sequential or serial operational activities is not a harmonious symphony but rather different compositions played one after the other, or, in the worst case, one instrument following the previous one after it has fallen silent. The Third Wave enthusiasts claim that network centric warfare makes it possible not to only synchronize activities but also to enable the network to selfsynchronize itself. This may sound utopian, since even a symphony orchestra requires a conductor to lead it and in a military 'symphony' this is the task of the commander. He needs to get the instruments to play in harmony, complementing each other to maximize their effects and not to use one at a time. In the words of Warden,

"Having selected an objective, the composer decides how best to reach that objective. Should it be a piano concerto, a violin concerto, or a flute concerto? Only one will get him to the objective he has chosen; clearly, a piano cannot say what a violin can say, and vice versa. That he has chosen an instrument to be his key force does not mean that the other instruments do not have roles. To the contrary, the other instruments are vital, for they provide the support that allows the key force to do things it could not do by itself.

During the course of the concerto, the key force will be the only instrument active at certain times; the rest are in repose, awaiting their turn. At other times, the key force is silent while the complementing forces bear the whole burden. The composer, and later, the director, has the task of orchestrating – not subordinating nor integrating – his instruments so that each

¹⁴⁶⁷ Alberts et. al. (2000), p. 75.

¹⁴⁶⁸ Alberts et. al. (2000), p. 175.

¹⁴⁶⁹ Warden (2000), pp. 109-127 wrote a whole chapter on "The Orchestration of War."

can do its job – whether that be as the key force or the supporting force. In the process, he does not try to make one instrument sound like another, or do another's job; rather he uses each to do what it is naturally constituted to do and what only is is capable of doing.^{1470}

Therefore, it is not only the timing of each instrument but their characteristics that have to synchronized to support each other. Simpkin has noted that "*music communicates wholly at the aesthetic level and depends entirely on its dynamics to do so.*"¹⁴⁷¹ If the dynamics of time and space just as well as those of politics and actions within the battlespace have been compressed and blend into each other the military leadership needs to strive to be more dynamic in its actions to retain control of the increasingly fluent and dynamic situations. We still have to operate at least in some part in a sequential manner, since every commander tasks his subordinate commanders with specific parts of the task assigned to him so that the combined effects will fulfill his objectives. Often it is not even beneficial to try to strive for simultaneity. In the words of Leonhard,

"in many respects, modern combat can be viewed as a contest for time. But the need for the simultaneous executions of two separate actions must not be assumed in every case. Often the precise arrangement of attacks in sequence rather than simultaneously produces that sought-after effect known as combat multiplication. (...) Further, in emphasizing simultaneous events, it robs the military planner of appreciation for the powerful potential of sequential events."

The main idea, however is that there has to be at the strategic level a big picture in which the spatial and temporal sequences are combined harmoniously. On operational level the task is to combine the isolated activities in time and space to create this harmony. In addition, the ones responsible operations and adapting the plan must understand the dynamic nature of the different actions or sequences so, that the interrelations between components are clear. In this way once chaos of discord enters the harmony, as friction of war is bound to cause to happen, the commander is uniquely poised to understand the nature of the discord, that is, locate where in his orchestra it occurs and how it affects the rhythm of the whole, and then synchronize the source of discord with the rhythm of the battle again. While discussing music in accordance to the rhythm of battlespace may seem outlandish and irrational, it might again be beneficial to quote Simpkin who wondered how "*it never ceases to strike me that the modern world's three most successful practitioners of manoueuvre theory, the Germans, the Russians and the Jews, are also the most musical peoples of our civilization.*"¹⁴⁷³

6.9. ASYMMETRIC WARFARE AS VARIABLE OPERATIONAL ART AND TIME-MANAGEMENT

"Whenever possible, the operational commander should use friendly forces asymmetrically and plan for operational/strategic deception. To preserve versatility and variability of decisions, the operational commander should never act according to conventional views and preconceived notions. The art of warfare rests on the freest application of its fundamentals under constantly changing conditions."¹⁷⁴

The idea of variability of pace we discussed in making a breakthrough and exploiting it can be extended to other areas of operational art. The primary point of variable speed is the idea that the enemy is not able to predict correctly the troop movements and synchronize his responses. Variability of pace extended into operational art means that many other factors become unpredictable as well. Giap argued, "our armed forces always act unpredictably in

¹⁴⁷⁰ Warden (2000), pp. 123-124.

¹⁴⁷¹ Simpkin (1985), p. 94.

¹⁴⁷² Leonhard (1991), pp. 177-178.

¹⁴⁷³ Simpkin (1985), p. 94.

¹⁴⁷⁴ Vego (2009), p. X-55.

fighting the enemy, unpredictably in their direction of attack, their target, time, use of force, scope of attack, manner of attack, and so forth."¹⁴⁷⁵ Unpredictability can be a huge asset, if one manages to be able to remain constantly original and surprising in one's practices of operational art – and some of the greatest captains of history were able to accomplish this. We can read this variability from between the lines of military history when, for example, Delbrück described how Alexander "combined the various arms in a different way each time, according to different circumstances, for the strongest possible total effect."¹⁴⁷⁶

The discussion of laymen concerning asymmetric warfare has for years focused on the use or terrorism, weapons of mass destruction, dirty bombs, and similar tactics adopted by illegitimate fighters. Yet, asymmetric nature should be the essence of every sound operational plan of conventional forces as well. As Vego wrote, "*the asymmetric application of available combat potential offers the best opportunity to achieve quick and decisive results, even when the stronger side uses it.*"¹⁴⁷⁷ The idea of asymmetric warfare is to be strong where the enemy is weak and target those weaknesses with all available means that should be different than the ones the enemy employs. As Echevarria noted, since the middle of the 19th century U.S. operational art focused on offensive operations aimed at defeating the enemy's main forces, pitting strength against strength¹⁴⁷⁸. Even if it was a bloody method, it serviced the two World Wars, but problems emerged when in the Vietnam War there was no enemy to hit. New methods had to be learnt but they could have been learnt from history.

From the operational perspective the ancient Indian Kautilya saw three different ways of engaging the enemy. "Open battle, treacherous battle, and silent battle (i.e. killing an enemy by employing spies when there is no talk of battle at all), are the three forms of battle."¹⁴⁷⁹ These three forms of fighting seldom occur simultaneously but emerge in the reversed order they have been written here. Silent battle, or, not to give a too fine an expression for it, political murder or assassinations, are the initial stage of war. They are employed before war has been declared officially and continue for the entire time from the decision to commence hostilities until at least the moment the actual warfare begins. Then assassinations become more difficult and hazardous to carry out. When armies march out to meet each other on the battlefield, it is the time to use treacherous battle. "The beginning of an attack is the time for treacherous fights."⁴⁸⁰ The three types of battle Kautilya described are still relevant because silent and treacherous battle belong to the realm of asymmetric warfare and increase the fighting power of those who seek to avoid open battle. In the words of Vego,

"Asymmetrical action means employing one's force against a dissimilar hostile force, as, for example, naval versus air or land forces. The objective then is to use the strengths of one's forces against enemy weaknesses. Asymmetrical actions usually generate disproportionate outcomes and thus have the potential to produce a quick and decisive victory with minimal losses."¹¹⁴⁸¹

A tank is wasted when it has to fight a tank. Combat aircraft are wasted in engaging in dogfights. Infantry against infantry leads to huge casualties. Simpkin argued that whenever two similar but unequal machines of organisms fight each other directly, the law of probability dictates that the stronger, or the more numerous, will almost inevitably win especially if they follow the same modus operandi. It is only by placing dissimilar opponents against each other when the rules of the game change and create a different kind on contest which even the apparently weaker side can win.¹⁴⁸² Asymmetric warfare is the means for the weaker side to avoid fighting at the time and place of the enemy's choosing where he could

¹⁴⁷⁹ Kautilya, Book VII, Chapter 6, p. 15.

¹⁴⁷⁵ Giap (1970), p. 82.

¹⁴⁷⁶ Delbrück (1990), p. 231.

¹⁴⁷⁷ Vego (2009), p. IX-113.

¹⁴⁷⁸ Echevarria (2011), p. 139.

¹⁴⁸⁰ Kautilya, Book X, Chapter 3, pp 3-4.

¹⁴⁸¹ Vego (2009), p. IX-149.

¹⁴⁸² Simpkin (1985), p. 74.

utilize all his strengths¹⁴⁸³. There is a long tradition of asymmetric warfare is China¹⁴⁸⁴. In his time Sun Pin summarized the essence of asymmetric warfare and its possible benefits;

> "Do not oppose the dense with the dense; do not oppose the dispersed with the dispersed; do not oppose the full with the full; do not oppose the vacuous with the vacuous; do not oppose the urgent with the urgent; do not oppose the slow with the slow; do not oppose the numerous with the numerous; do not oppose the few with the few; do not oppose the rested with the rested; do not oppose the weary with the weary."¹⁴⁸⁵

It is this avoidance of having like fight like that is the bottom line of what we often call asymmetric warfare today. The goal is to fight an enemy where he is weakest and not the strongest. A good WW II example of a failure to do this is evidenced by the battle of Kursk where massive tank armies fought each other almost to the devastation of both. By employing asymmetry, the results would not have been so drastic. But this idea does not concern itself with only tactics. Symmetry and asymmetry exist on all levels of warfare. In operational art it is about choosing the forces to pit against each other, deciding the methods employed and choosing a rhythm for operations that is harmonious with the objective. On the strategic level, as Vego described it,

> "in a symmetrical strategy, a country or group of countries tries to match its superior strength against that of a similar enemy that is unable to adequately respond in kind. An asymmetrical strategy aims to counter the enemy's strengths and to accentuate and exploit his weaknesses and vulnerabilities by applying nonconventional means."1486

On occasion the same idea of asymmetry is discussed through different terminology. Leonhard approached the dilemma through the dualism of "objective" and "subjective" warfare and used interesting allegories to explain the difference between the two opposites. For him subjective conflict is the traditional way of waging war while

> "Objective conflict, on the other hand, occurs when an opponent applies combat power against an unlike and vulnerable aspect of the enemy. A tank overturning an artillery piece, an air force strafing and bombing enemy shipping, or an army conducting population controls are examples of objective conflict. When a business creates wealth and prosperity, or when a man romances a woman, it is an example of objective conflict. Objective conflict pits strength against weakness and vulnerability, or, in a more general sense, it applies energy to something other than competition with a counterpart. At the technical/tactical level of war, it means fighting against an "unlike" system."¹⁴⁸⁷

For the purposes of clarity, we will discuss symmetry and asymmetry as possible choices of tactics. As Beaufre wrote, "choice of tactics is in fact strategy. It is strategy which decides the form in which the conflict is to be waged, whether it is to be offensive or defensive, whether it will use force or subversion. whether force is to be used directly or indirectly."1488 To illustrate this, an excursion into one possible means of employing asymmetry is needed.

Guerrilla warfare¹⁴⁸⁹ in its many different forms is possibly the best-known asymmetric method of fighting. It abides to a set of different rules of temporalities and has an utterly different perspective on how time should be managed than regular warfare and this is evidenced on all levels of war. While regular armies seek decisive battles in order to finish the war as quickly as possible guerrillas are often the ultimate attritionists. As Lawrence wrote about the Arab War and his irregular troops, "Our aim was to seek the enemy's

¹⁴⁸³ For example Handel (2001), p. xxii has argued that since a small state cannot win a high-intensity and high-tech war against the U.S. they will find their "comparative strategic advantage" in "low-intensity, low-tech ... and related methods of war."

¹⁴⁸⁴ Scobell (2011), p. 197.

¹⁴⁸⁵ Sun Pin (1995), p. 225. 1486 Vego (2009), p. I-41.

¹⁴⁸⁷ Leonhard (1998), p. 229.

¹⁴⁸⁸ Beaufre (1965), p. 48.

¹⁴⁸⁹ The expression "Guerrilla" is a diminutive version of the Spanish word "guerra" meaning war. "Little war" is very descriptive indeed.

weakest material link and bear only on that till time made their whole length fall.^{'1490} Guerrillas seek to prolong the war as long as is necessary for the enemy material base and ultimately the will to fight to collapse. These opposed perspectives and objectives lead to differences in thought and often the guerrillas are better than regular armies in thinking outside the box.¹⁴⁹¹ Liddell Hart described this relationship so eloquently that he deserves a longer quotation. He claims that the difference between regular and guerrilla forces

"is shown in the rarity of inspired and creative leadership in the organized armies of history. Generals have been legion; artists of war few. Many more, and infinitely more military genius can be traced in the scantier records of irregular and guerrilla forces. The obvious explanation is that the natural gifts of these leaders who have emerged straight from the womb of conflict, instead of a professional incubation chamber, have not been cramped or warped by convention. To acknowledge the genius of many of these irregular leaders does not imply that they would have been equally successful if placed in command of a more highly organized type of force, at any rate until they had gained experience of its organization and different application."¹⁴⁹²

While guerrillas and the type of asymmetric tactics they tend to favor have been evidenced at least to some degree in most of the conflicts of history, they have left relatively little for students of the art of war to study. There is no coherent theory from those who fought Napoleon's armies nor from many popular uprisings in which guerrilla-type tactics were abundant¹⁴⁹³. Fanon's works from Algeria are in the form on novels, many others stuck to writing diaries, but Guevara, Mao, Giap and Ho Chi Minh left their theories as instructions to future insurrectionists. The guerrilla is advised to

"select the tactic of seeming to come from the east and attacking from the west; avoid the solid, attack the hollow; attack; withdraw; deliver a lighting blow, seek a lightning decision. When guerrillas engage a stronger enemy, they withdraw when he advances, harass his when he stops; strike him when he is weary; pursue him when he withdraws. In guerrilla strategy, the enemy's rear, flanks, and other vulnerable spots are his vital points, and there he must be harassed, attacked, dispersed, exhausted and annihilated."¹⁴⁹⁴

This lengthy quote from Mao is illustrative of numerous points how guerrilla should use the time factor to his advantage. The emphasis on "deliver a lightning blow, seek a lighting decision" shows that a guerrilla operation should be as rapid as possible. It should be a single flash of fighting, causing maximum damage and ending almost as soon as it struck. Timing of the attack should ensure the target is not prepared for it and it comes as a surprise. The guerrilla should withdraw before the enemy can retaliate. Initiative or time is not to be given to the enemy. Simultaneously we can interpret that there is an element on constancy involved. The enemy needs to be "harassed, attacked, dispersed, exhausted and annihilated" at all times.

Picking and choosing the most advantageous timing is of prime importance in guerrilla warfare determined by when the enemy is most disadvantaged. If his troops are tired, dispersed, in recuperation, then the guerrilla attacks with strongest possible force. Whenever the enemy is strong and ready for battle, the guerrilla should only irritate him and erode his morale by lightning-quick and elusive attacks followed by immediate retreat. In the words of Lawrence, for irregular troops, "*dispersal was strength*."¹⁴⁹⁵ These attacks are a

¹⁴⁹⁰ Lawrence (1997), p. 95.

¹⁴⁹¹ Even if this subchapter often uses the expression 'guerrilla' to refer to irregular warfare it is mostly for convenience and not preference for the phrase. As T. E. Lawrence wrote, for his text instead of 'irregular warfare' one could write 'war of movement' and the argument would fit just as well. Gat (2001), p. 674. ¹⁴⁹² Liddell Hart (1937), p. 145.

¹⁴⁹³ Nevertheless, numerous theorists have written on how to counter guerrilla warrfare from Jomini and Clausewitz to today. But guerrillas themselves have seldom explained their art of war.

¹⁴⁹⁴ Mao (2000), p. 46. Handel (2001), p. xxiv writes that in general the work of Mao is close in spirit and context to Clausewitz especially concerning the nature of war, the problem of theory and practice, protracted war and the role people play in it.

¹⁴⁹⁵ Lawrence (1997), p. 95.

method to weaken the enemy, and only when the enemy is weak, the guerrilla will strike with force and attempt at annihilation. At the same time attacks need to be a constant factor. In the words of Ho Chi Minh, *"look far ahead and ponder deeply. Be resolute: attack and attack incessantly.*"¹⁴⁹⁶ Small operations aim to irritate and erode the enemy. When the timing is deemed suitable for causing maximal destruction to the enemy, then the guerrilla will aim to do more damage, but always ready to withdraw, if the enemy can seize the initiative and perform a counter-attack. Thus judging the opportune moment for a particular type of action is the foundation of effective guerrilla strategy. Such as asymmetric situation leads to what Tukhachevky called *"the battle of the bugs"* There is no decisive battle but

"gradually the invading army loses its vitality; more and more it feels the need to bring the occupation to an end. For the professional army this is indeed one of the most difficult situations. But it remains to be seen whether the concept of a 'small war', a battle of the bugs, can really be applied to the struggle of two opposing organised forces, each capable of covering its rear. Surely it cannot!"^{A497}

Just because guerrilla warfare is unorganized and both its structure and discipline differ from conventional army procedures, it often is distasteful for professional soldiers. – And perhaps also because it has proved to be an effective counter-measure against a stronger enemy with more conventional tactics. As Ludendorff wrote about WW I and its occasional guerrilla element, he had expected a humanistic and chivalrous war but could not help being both disappointed and disgusted by the guerrilla warfare he experienced.¹⁴⁹⁸ Leonhard agreed claiming that when traditional military mind "*catches a glimmer of objective conflict, he is quick to set it aside as a nonmilitary - even distasteful - phenomenon.*"¹⁴⁹⁹

We may even argue that guerrilla warfare is distasteful to some of its practitioners since sometimes it is necessarily not their preferred method of fighting. As Coker wrote, "guerrilla warfare may not necessarily be a cultural preference so much as a political necessity."¹⁵⁰⁰ But on the other hand, even if many successful guerrillas have been communists, it must be noted that a choice of tactical method may or may not be an expression of ideology. As Paret wrote, "Tactics often give voice to a social or political reality; at other times they adjust to the most varied conditions."⁴⁵⁰¹ One crucial condition is the culture of the fighters. Lawrence wrote how rare it was in the Arab War for a professional soldier to have "married war and rebellion in himself' as he had dreamed of every British officer doing¹⁵⁰². A professional soldier wishes to use the conventional methods he has been taught and trained in as an operational artist and deploy his troops accordingly. Be the necessity of political or economic nature, resorting to guerrilla warfare is often a choice enforced on the weaker side and only when the weak is able to erode the power of his enemy while growing his own he tends to adopt more traditional methods. As Giap described it, "the war of liberation of the Vietnamese people was a long and vast guerrilla war proceeding form simple to complex then to mobile war in the last years of the resistance."1503

Guevara contrasts the "rigidity of classical warfare" to guerrilla warfare where the guerrilla "*invents his tactics for each moment of battle and constantly surprises his enemy*."¹⁵⁰⁴ The same ideal of inventing both tactics and operational art to be suitable for the requirements of a given moment is a valuable skill for anyone in command of more conventional forces

¹⁴⁹⁶ Ho Chi Minh (2008), p. 27.

¹⁴⁹⁷ Tukhachevsky, cited in Simpkin (1987), p. 87.

¹⁴⁹⁸ Ludendorff (1919), p. 25. Nevertheless, in 1931 Ludendorff had changed his mind and since Germany was militarily weak, se strongly supported a total war philosophy of *Volkskrieg* in which the civilians become the fighters. From an ardent opponent Ludendorff turned into a strong proponent of guerrilla tactics. See Corum (1992), p. 64. This is one more example of the efficacy of asymmetric tactics.

¹⁴⁹⁹ Leonhard (1998), p. 230.

¹⁵⁰⁰ Coker (2010), 229.

¹⁵⁰¹ Paret (2015), p. 108.

¹⁵⁰² Lawrence (1997), p. 301.

¹⁵⁰³ Giap (1962), p. 48.

¹⁵⁰⁴ Guevara (1962), p. 17.

as well. Asymmetry is an asset if it can be utilized. If it is a dirty way of fighting, does it matter when chivalric warfare is a thing of the past? As Ho Chi Minh asked, "Isn't manure dirty? But if it's good for the rice plants, will you refuse to use it?"¹⁵⁰⁵

The idea of guerrilla warfare is to stand in total opposition to the practices of the more conventional armed forces. While for the professional soldier a quick resolution of conflict is a priority, the guerrilla wishes to prolong the war. Even in operations and tactics the guerrilla performs exactly the opposite actions as his enemy. As Mao wrote, when "the enemy advances, we retreat; the enemy camps, we harass; the enemy tires, we attack; the enemy retreats, we pursue."¹⁵⁰⁶ This is not some kind of a metaphysical piece of guerrilla wisdom. It is only common sense that asymmetry should be used more in war. Doing the opposite from the enemy is often the road to victory.

In asymmetric warfare the forces should not be employed as a whole and preferably not at all against a sizable enemy force of the conventional type. They should not be used, as Clausewitz already put it, "to pulverize the core but to nibble at the shell and around the edges. They are meant to operate in areas just outside the theater of war – where the invader will not appear in strength – in order to deny him these areas altogether."¹⁵⁰⁷ In more recent times Giap framed the same thing in other words, emphasizing the need to reduce the enemy strength bit by bit and pave the way for an attack with conventional forces. "We must erode, annihilate, disperse, and [harass] the enemy everywhere, creating conditions for mobile forces to launch concentrated blows to annihilate him wherever his gaps are exposed."¹⁵⁰⁸ In this sense, guerrilla forces eat away the strength of the enemy according to the principles of attrition, but simultaneously probe for a weak spot or a crack in the enemy formation paving the way for a concentrated attack. If there is no regular element to augment the guerrilla forces, their task must out of necessity be focused towards inflicting cumulative damage piecemeal over a long time.

From the perspective of temporality guerrilla warfare is characterized by the idea of dragging the conflict on with the intention of exhausting the more powerful enemy. Beaufre has described a conflict in which the phase of guerrilla warfare is used as tactics as one in which "the local psychological atmosphere has become sufficiently unstable and the struggle tends to drag on forever. This is the classic form of endemic conflict and as a rule it can only be terminated by a compromise based on weariness."¹⁵⁰⁹ As long as fighting is open and carried out by regular army formations, the enemy is there to be attacked and the conflict is unlikely to become truly frozen. But guerrilla action prolongs the fighting indefinitely. In this sense and contrary to regular tactics, guerrilla warfare seeks to keep the war going as long as possible while regular tactics aim for a quick decision. As Ho Chi Minh claimed, "we can surely fight for several years, till victory."¹⁵¹⁰

Guerrilla warfare is thus essentially "*a campaign of attrition*" and the guerrilla "*must hammer away constantly*."¹⁵¹¹ This permanent and continuous attack is a feature that does not occupy such a prominent place in Mao's writings as in many others'. Guevara seems to take a more psychological approach to attacking the enemy.¹⁵¹² If the "hammering away" is constant and new surprises brought by the guerrillas are a constant factor, it puts a stress on the enemy. Again, his time is stolen away. There is no rest for the enemy, not a moment when he can drop his guard and staying alert unceasingly erodes his ability to fight. If the enemy has moment of relaxation, that moment must be determined by the

¹⁵⁰⁵ Ho Chi Minh, cited in Giap (1978), p. 109.

¹⁵⁰⁶ Mao (1963), p. 70.

¹⁵⁰⁷ Clausewitz (1989), p. 481.

¹⁵⁰⁸ Giap (1970), p. 34.

¹⁵⁰⁹ Beaufre (1967), p. 117.

¹⁵¹⁰ Ho Chi Minh, cited in Giap (1978), p. 425.

¹⁵¹¹ Guevara (1962), p. 11.

¹⁵¹² Guevara took the ideas of Mao and applied them in the context of Latin America. The main difference was that Mao wanted to turn the guerrillas into a regular army at a late phase of operations and Guevara saw guerrilla forces as sufficient to accomplish the goal of revolution. Simpkin (1987), pp. 25-27.

guerrillas. "Is the enemy strong? One avoids him. Is he weak? One attacks him."¹⁵¹³ Attrition must not be restricted to the physical diminution of the enemy forces in small or larger skirmishes. In addition there is the mental aspect of attrition as well. This means that even when a battle is not on-going, there is a constant chance of it erupting at any given moment, anywhere. In such war there should be "no fixed line of demarcation, the front being wherever the enemy is found."¹⁵¹⁴ This erodes the morale and fighting spirit of the enemy since he is under constant stress. Giap wrote that the idea behind their way of warfare was to

> "coordinate our activities in various operational areas, continuously attack the enemy everywhere and at any given time, sow chaos in his rear base, and direct powerful blows at him. We can defeat the enemy in a protracted war. We also possess conditions to create opportunities, bide for time, direct timely, vigorous blows at the enemy, and win increasingly great victories."¹⁵¹⁵

Here we can see how time is on the side of the non-conventional forces and attrition worked on their behalf. Setting the rhythm of operations occurred in contradictory terms to those of the U.S. forces. The North Vietnamese aim was to fight a prolonged war until mental and physical attrition of the enemy secured their victory. "Our strategy was, as we have stressed, to wage a long-lasting battle."¹⁵¹⁶ The idea of seizing opportune moments when they occur was shared by both parties to the conflict, but while the U.S. wanted to end the war quickly, Giap's troops bided for time and waited for the best moment to act. No matter how asymmetric a war is, it still ultimately has to end in victory. This means that while for long periods of time the war may seem to be defensive, it is only partial and temporary until conditions have been created for taking the offensive stance.¹⁵¹⁷ For Giap the entire "revolution is an offensive "¹⁵¹⁸ and offensive is the ideological basis of strategy¹⁵¹⁹.

Thus, the nature of guerrilla strategy relies on accumulation of small effects and there is no decisive battle¹⁵²⁰. Even more importantly, there is no place in guerrilla warfare for defense. While an attack should be always launched and pushed with the greatest haste, the actual fighting may well be prolonged over several days, if the enemy is to be annihilated.¹⁵²¹ But there is no losing initiative, which would happen if the guerrilla troops took a defensive stand. "When an army loses initiative, it loses its liberty; its role becomes passive; it faces the danger of defeat and destruction."¹⁵²² Even if the attack will commence lightning-quick, if its objectives require it to be lengthy, the momentum has to be kept up at all times.

Mao emphasizes that it is required of the guerrillas to "consider the situation and decide at what time and at what place they wish to fight."¹⁵²³ By choosing carefully the time and place to retaliate, the guerrilla manages to seize initiative. But making the choice depends on his ability to not get drawn into battle. When the guerrilla deems the time and place inappropriate, he must "move with the fluidity of water and the ease of the blowing wind."¹⁵²⁴

Having discussed guerrilla warfare at length, let us now take another viewpoint into asymmetry. Luttwak claimed that the paradoxical logic of strategy creates situations in which irrational and almost idiotic actions can be undertaken in order to benefit from the confusion caused by the asymmetric nature of this choice.¹⁵²⁵ Gray agrees with the

¹⁵¹⁸ Ibid.

¹⁵¹³ Giap (1962) p. 48

¹⁵¹⁴ Ibid.

¹⁵¹⁵ Giap (1970), p. 63.

¹⁵¹⁶ Giap (1962), p. 27.

¹⁵¹⁷ Giap (1970), p. 64.

¹⁵¹⁹ Giap (1970), p. 67.

¹⁵²⁰ Wylie (2014), p. 54.

¹⁵²¹ Mao (2000), p. 97.

¹⁵²² Mao (2000), p. 98.

¹⁵²³ Mao (2000), p. 103.

¹⁵²⁴ Ibid.

¹⁵²⁵ Luttwak's idea of the paradoxical logic of strategy simply means that often the logic of strategy runs along completely different paths than the logic of other human intercourse. As an example we can Sokolovsky's idea of nuclear weapons as a safeguard of peace. *"The greater the stock-piling of nuclear weapons, the greater the certain-*

idea that strategy is paradoxical and adds that it frequently is ironic.¹⁵²⁶ Van Creveld has further noted that the paradoxical logic work both in space and in time. Just because it is expected, the shortest route may end up being the longest due to enemy activity. In time, an operation once tried with failure may succeed when tried again, because it is not expected, or something that has been successful earlier, will result in failure when tried again.¹⁵²⁷ Perhaps this is one of the reasons why Schelling called the science of international strategy "*retarded*."¹⁵²⁸ Strategic behavior often contradicts common sense and accepted rules.¹⁵²⁹ But the purpose is create a surprise. If one does not seek to surprise the enemy, according to Luttwak, the art of war is reduced to administration. One can move troops around, but success requires a living and most importantly a reacting enemy. To surprise is to prevent the enemy from reacting in time and with full force to. To achieve this

"all sorts of paradoxical choices hay be justified. Violating commonsense notions of what is best, as the shorter route is preferable to the longer, as daylight is preferable to the confusions of night, as full and ample preparation is preferable to hurried improvisation, the worst option may deliberately be chosen in the hope that the unfolding action will for that very reason be unexpected by the enemy, find him unready, and therefore diminish his ability to react."¹⁵³⁰

In other words, it is occasionally logical to do something illogical to create conditions favorable to surprising the enemy. But this may lead to a situation where both sides attempt to outguess the enemy and create endless chains of 'he thinks that I think that he thinks that I think that and therefore doing this is the proper cause of action.¹⁵³¹ Bad options are occasionally the best ones but only if the enemy has not been able to anticipate them. This leads to an intriguing definition of surprise as "*not merely one factor of advantage in warfare among many others, but rather the suspension, if only brief, if only partial, of the entire predicament of strategy, even as the struggle continues.*"¹⁵³² Logic and rationality are discarded temporarily as asymmetric thinking takes over. For a fleeting period of time doing illogical things is an efficient way of jostling the symmetry and equilibrium of the enemy. As humans we strive at rational action, but are constantly influenced by our emotions, fears, and numerous irrational factors. In asymmetric warfare these may even help to manage time. Temporary suspension of logic may save a lot of time if it results in confusing the enemy.

Asymmetric operational art may be created with the help of this paradoxical logic through choosing difficult methods and modes of action over easier ones. All agree that Hannibal leading his troops and elephants over the Alps was not the easiest path, but it surprised the enemy just because it was so unconceivable that anyone would voluntarily choose such an undertaking. Luttwak uses Israel as a more modern example that the search for surprises may be a permanent choice in nationalized tactics and adapted operational art.

"If the unfavorable balance is not merely an accident of time and place in the setting of one engagement, but reflect instead the permanent circumstances of one state among other states, then the pursuit of the line of least expectation by paradoxical action may become characteristic of a national style of warfare."¹⁵³³

Choosing the line of least expenditure of energy creates the simplest operational plans that are simultaneously the easiest to execute. However, just because they are predictable, they are unlikely to work against a more powerful enemy. Choosing the operational lines of least

ty of the impossibility of their use. Thus, the growth of nuclear rocket power is inversely proportional to the feasibility of its application." Sokolovsky (1963), p. 63.

¹⁵²⁶ Gray (2012), p. 37. Bucholz (2001), p. 5 even claims that war itself is ironic.

¹⁵²⁷ Creveld (1991), p. 120.

¹⁵²⁸ Schelling (1963), p. 3.

¹⁵²⁹ Schelling (1963), p. 18.

¹⁵³⁰ Luttwak (1987), p. 8.

¹⁵³¹ In strategy a surprise is more dangerous than in operational art since if surprise carries an advantage, it is worth to avert it and strike first. See Schelling (1963), p. 207.

¹⁵³² Luttwak (1987), p. 8.

¹⁵³³ Luttwak (1987), p. 16.

expectation means that energy may be wasted and the structure of operations becomes complex. Execution is more demanding and objectives become harder to accomplish. But if execution is successful, the element of surprise caused by this illogical and asymmetric approach multiplies the outcome. Unpredictability should be aimed for but if doing the unexpected becomes the norm, it may even become predictable. In this case, doing the very simplest thing and discarding all attempts at surprise may be surprising and unpredictable. Thus works the paradoxical logic of strategy in favor of asymmetric methods.

This leads us again to new interesting notions. What is surprising may in time become the expected. The safe and easy way becomes the hardest. The unexpected becomes the easily predictable. Opposites not only attract themselves but may even be utterly reversed. If any chosen course of action is utilized for too long, it becomes the norm of what to expect. The most outrageous operational plans become the expected modes of action if they are persistently repeated time after time. In other words, dynamism evaporates from the most dynamic methods over time if variability is not introduced into the equation. To be truly unpredictable one must do something unexpected this time and something expected at another time. Luttwak describes it thus,

> "Once time is duly introduced as a dynamic element, we can recognize the logic in its totality as the coming together, even the reversal, of opposites. And this is a process manifest not merely in the fate of counterconventional choices intended to achieve surprise, which eventualby become quite predictable, but rather in all that is strategical, in all that is characterized by the struggle of adversary wills. In other words, if the passage of time is relevant and the paradoxical logic of strategy assumes a dynamic form, it becomes the coming together, even the reversal of opposites. In the realm of strategy, therefore, a course of action cannot persist indefinitely. It will tend to evolve into its opposite, unless the logic of strategy is outweighed by some exogenous change I the circumstances of the participant. Unless such change occurs, the logic will induce a self-negating evolution, which may reach the extreme of a full reversal, undoing both war and peace, victory and defeat, and all they include."¹⁵³⁴

Evolution in operational art requires temporary moments or periods of regression so that the paradoxical reversal of roles does not become reality. The passage of time has to be interrupted by choosing methods that do not abide to the methods common to that time, no matter how unpredictable they may seem to the planners themselves. Thus, on occasion, the paradoxical logic of strategy put to action through asymmetric and variable operational art means that time can be saved and won even by wasting it unnecessarily. It all depends on the moment and the situation. In dynamic form of operational art paradoxical logic becomes the coming together and even the reversal of opposites¹⁵³⁵. For the weak maintaining the guerrilla position of the David against the Goliath is easy, but the stronger belligerent may have to adapt and adopt. As van Creveld depicted it,

"Given time, the fighting itself will cause the two sides to become more like each other, even to the point where opposites converge, merge, and change places. Weakness turns into strength, strength into weakness. The principal reason behind this phenomenon is that war represents perhaps the most imitative activity known to man. The whole secret of victory consists of trying to understand the enemy in order to outwit him."¹⁵³⁶

Instead of thinking of asymmetry through limited paradigms like the weak against the strong asymmetry should be considered an intellectual and perhaps even philosophic approach to operational art. With this I mean that every operation in its every aspect should during the planning phase look for opportunities to exploit asymmetry since it is a powerful disruptive factor in the battlespace. Asymmetry is so much more than just choosing weapons systems to be pitted against each other. At best it means countering every aspect of the art of war of the enemy with something that disrupts it. There is a long Chinese tradition of using two different approaches to warfare; namely the orthodox (*zheng*) and unor-

¹⁵³⁴ Luttwak (1987), p. 18.

¹⁵³⁵ Yuen (2014), p. 29.

¹⁵³⁶ Creveld (1991), 174.

thodox $(qi)^{1537}$. Orthodox refers to conventional stratagems such as a frontal attack and unorthodox to unconventional and indirect approach¹⁵³⁸. Leonhard phrased the same idea by saying that a commander uses asymmetry best to his advantage when he has many different options available to counter a given threat posed by the enemy.

"It is important to reiterate that warfare that pits like systems against one another in massive contests of strength on strength are uneconomical. The greatest expression of destructive efficiency in tactical operations is combined-arms warfare. The commander who comes at the enemy with a variety of threats and attack profiles can probe him, search for weaknesses, and attack that weakness before the enemy can adapt. Conversely, the commander who confronts the enemy with a single type of capability may find himself knocking his head against a brick wall if the enemy has developed appropriate defenses."

If, say, the enemy is equipped with effective anti-tank rocket-launchers, the deployment of tanks has to be rethought and perhaps infantry is a more suitable option. If the enemy strives to be rapid, he has to be countered with slowness and his speed of operations is thus decelerated. If the enemy employs advanced technology, agrarian methods will be difficult for him to counter. If he wishes to win quickly, prolonging the fight is a viable option. It is thus not only weapons or tactics but even the conception of time and temporality in warfare that benefits from applying the principle of asymmetry. One must be able to act in a variable manner in order to reap the full benefits from fluidity in warfare and combine the unchanging and the momentary into the type of concoction most suited for the moment.

"In effect, tactics and procedures must remain in a state of flux, while the principles of maneuver warfare remain immutable. Attendant to the idea of adaptable tactics is the concept, repeatedly emphasized throughout Sun Tzu's works, of attacking weakness rather than strength."¹⁵⁴⁰

By attacking the enemy with different means than those at his disposal initiative is taken and the enemy has to adapt his response to existing circumstances. Similarly one society attacking another benefits if it is able to change its tactics and doctrines to be contradictory to those of the enemy. What good is a cyber-attack if the enemy has no computers? Still, a new and technologically sophisticated way of fighting has a shock-value if one is vastly superior technologically to his enemy. If both have similar methods and technologies at their disposal, the value decreases. Especially in the western world we have attempted continuously to train our militaries to follow the best and newest doctrines and conventions of military art following the latest trends and hype. What if the opposite path were chosen? I am not speaking on behalf of a return to tribal and barbaric warfare per se, but what if the paradigm was consciously altered toward methods of the past to attempt to find something so old that it is actually new in contemporary context? Perhaps something more violent, certainly less sophisticated, is required to cause discord in the enemy because the two paradigms cannot be reconciled due to their asymmetric nature.

Asymmetric method of practicing operational art is a huge cultural asset. An agrarian society can benefit immensely from employing ways and means of warfare most suitable to it against a more techno-centric network society. The paradigms of the art of war are so dissimilar that the entire conduct of war becomes asymmetric. The reason for this longish monologue on opposites is the applicability of the same logic to the management of time. We in the networked information societies are hell-bent on saving time, being quicker, accomplishing more and thus still follow the rhythm of indust-reality. What if we chose a different paradigm? Could we force the enemy battle rhythm offbeat? If our temporizing and rhythm were utterly different, more relaxed and more unpredictable,

¹⁵³⁷ Yuen (2014), pp. 34-35.

¹⁵³⁸ See e.g. Scobell (2011), pp. 201- 205.

¹⁵³⁹ Leonhard (1998), p. 136.

¹⁵⁴⁰ Leonhard (1991), p. 34.

would it not become harder for the enemy to anticipate our actions when there would be a variability of pace inbuilt to our operations?

It could be said that in many cases one belligerent has the clock and the calendar and the other one has the time. It is not only the irregular enemy that may adhere to different timing that its opponent. Russian and Americans have fundamentally different conceptions of time in their military thinking. "Russians think in terms of expanses of time and space that differ from those of most of their Western counterparts. In contrast to a practical US predisposition to be anchored solidly in the present, Russian cultural orientation is toward the past and the distant future."1541 Getting inside the enemy's decision-making loop is useless, since the two loops revolve at totally different speeds to begin with and any synchronization is impossible until this is understood. The key might be found in the combination of being fast and slow, quick and prolonged and thus winning and losing time when it was beneficial to do so. In other words, one must be able to alter the tempo of his operations and not allow operational speed to remain constant. This is also a way to affect a surprise. If one continuously performs according to a set pattern, whether procedural or temporal, one's actions and timings are easily calculated and estimated. One makes it easier for the enemy to augur the correct time and place for his decisive attack. By varying the tempo of all one's actions one is able to remain just a bit more difficult to fathom.

6.10. AFFECTING SURPRISES TO STEAL TIME

"Although minor surprisals may be gained by seizing upon the right opportunities, the possibility of effecting major surprisals is based extensively on forecasts and preparations made during days of peace, especially as regards the nature and requirements of the next war, for the surest foundation of being surprised is to suppose that the next war will be like the last one. In modern times, similarity between wars has seldom occurred, as the most casual retrospect into military history will prove; consequently, when a commander attempts to copy former battles, we find that an army is frequently surprised with its eyes open. It sees things coming, but, blinded by prejudice and shackled by tradition, it does not perceive their consequences, which are only realized when their causes have taken or are actually taking effect:"¹⁵⁴²

As we saw, asymmetry manifesting itself through operational variability is effective in creating surprises. "Doing the same thing many times till the enemy is accustomed to it and then suddenly doing something quite different at the same time of day is sometimes effective in securing surprise."¹⁵⁴³ Despite its simplicity, this advice given by Wavell is still worthy of notice. If we contrast it with a quotation from the German general Heinrici, we see that to be predictable in all of one's actions decreases the chance of creating a surprise. He wrote that, "the Russians usually made about three tries a day – the first about 9 a.m., after heavy artillery preparations; the second between 10 and 11; and the third between 2 and 3 in the afternoon. It was almost like clockwork!"¹⁵⁴⁴ Had the Russians, after a relatively long period of sticking to this "schedule" carried out their attack at a different time than usually, it might have had a chance of success due to the surprise value. To stubbornly attempt something that is costly in men and materiel is not a merit for undying fame. The heart and soul of surprise is to conserve one's own troops while maximizing the damage inflicted upon the enemy.

Meir Finkel has noted that military research has always focused on creating strategic surprise attacks, but claims that the importance of doctrinal and technical surprises is increasing.¹⁵⁴⁵ The commander should always seek new methods of operational art. According to Fuller, "surprise should be regarded as the soul of every operation. It is the secret of victory

¹⁵⁴¹ Adamsky (2010), p. 51.

¹⁵⁴² Fuller (1923), p. 38.

¹⁵⁴³ Wavell (1953), pp. 132-133.

¹⁵⁴⁴ Heinrici, cited in Liddell Hart (1948), p. 233.

¹⁵⁴⁵ Finkel (2011), p. 1.
*and the key to success.*²¹⁵⁴⁶ There are no fixed rules to be blindly obeyed and the challenge for the operational artist lies in understanding each moment and being able to initiate rapid action at these times. The acts may be simple, but full comprehension of the situation at any given time is demanding. Understanding the moment and acting accordingly turns warfare into art. Very complex thinking about adaptation of operational art should result in simplified plans.

"Every complex operation takes time; and this time must be available without a counterattack on one of its parts interfering with the development of the whole. If the enemy decides on a simple attack, one that can be carried out quickly, he will gain the advantage and wreck the grand design. So, in the evaluation of a complex attack, every risk that may be run during its preparatory stages must be weighed. The scheme should only be adopted if there is no danger that the enemy can wreck it by more rapid action. Wherever this is possible we ourselves must choose the shorter path."¹⁵⁴⁷

When one is absorbed in the longish preparations of a complex operation, the enemy is given advantageous time to initiate his attack with the element of surprise. As a guideline it suffices to say that one should plan simple operations that are quick to execute and build the element of surprise by combining these simple actions into a complex pattern on the level of operational art and strategy. Mechanized forces have always preferred fast and simple operations. Martel wrote about the early deployment of tanks in battle that

> "the surprise lay not so much in the method of attack as in the fact that the enemy could never tell when or where the assault would take place. In every case the utmost simplicity was aimed at, and this included preliminary training between infantry and tanks, whenever possible, so that everyone knew exactly what he was required to do. These were the keynotes of our success – simplicity and surprise."¹⁵⁴⁸

To surprise in maneuver warfare requires speed and in order not to lose time the tasks, orders, and procedures need to be short and succinct. The simpler these are the less time is wasted in assimilating orders and during their execution. All too often different stratagems end up increasing the level of difficulty. Luttwak claimed that with the use of "any form of paradoxical action, notably secrecy, deception, and maneuver, the action will tend to become more complicated and more extended, thereby increasing the organizational risks in proportion."¹⁵⁴⁹ Any complication in the execution of operational art makes the task last longer than a simpler version of it would have done. One must evaluate carefully how much time and benefit one could potentially derive from a surprise and how much time is lost with the complication and how much more difficult execution and a victorious outcome may be if the surprise still fails. Being quick is often not enough to surprise the enemy if he can match the speed of movement and some ruse should be used. But execution becomes slower because it is more complicated and the enemy may end up winning time. It is, again, a question of the commander's coup d'oeil whether to be simple, fast, and likely able to execute the plan or complicated, slower, and unsure of success in putting the plan to action. It depends upon the situation which method would win time and which would squander it needlessly.

As already Clausewitz noted, everything in war is simple in itself. The problem arises from the increasing complexity of warfare through not only the armies themselves becoming more complex during the Second and Third Waves but also the plans and orders needed to set them in motion. There are so many simple issues involved that their combination becomes excessively complex¹⁵⁵⁰. This is an important issue to tackle, since as Simpkin noted, "the more complex the system, the greater the probability of failure."¹⁵⁵¹ But if com-

¹⁵⁴⁶ Fuller (1926), p. 272.

¹⁵⁴⁷ Clausewitz (1989), pp. 228-229.

¹⁵⁴⁸ Martel (1931), p. 35.

¹⁵⁴⁹ Luttwak (1987), p. 11.

¹⁵⁵⁰ According to Bernhardi (1914), p. 201 this is what Clausewitz meant. He spoke of the simplicity of the idea and not of the means.

¹⁵⁵¹ Simpkin (1985), p. 179.

plexity is inescapable simplicity may be an outdated objective since, as Leonhard argued, the logic that has always demanded that warfare should be simple "collapses in modern warfighting, but we will find in the end that, if we perform radical surgery on this principle, it will serve us well into the twenty-first century. Information Age warfare demands not simplicity, but rather simplification - a completely different idea."¹⁵⁵² If the friction of war is to be overcome every effort to simplify the complex must be tested.

Loath as we are to do it, we must acknowledge that the level of development in Third Wave societies is too high for Clausewitz's idea of simplicity in warfare to remain valid. Or, rather, war as the continuation of politics with additional means is still a simple idea to grasp but putting it to practice through warfare has become excessively complex and demanding. "The point is that real warfare is not simple. Quite the reverse: It is almost inconceivably complex. The art and science of war demand a continuous process of analysis and simplification. We do not want simple plans; we want complex, effective plans that are simplified for execution."¹⁵⁵³ Simplification is a main means of accelerating speed and only through this heightened speed the enemy can be surprises in accordance with the tradition. When too many simple things are combined the outcome may be too complex to manage due to the accumulating demands.

> "Again, every single thing that must be done to supply, maintain, operate, and command the armed forces may be very simple once all the intangible mysteries that make combat possible are excluded. Yet together they are so complicated that the natural state of military forces of any size is chaos and immobility, from which only discipline and leadership can rescue any purposeful action:"¹⁵⁵⁴

If warfare was only a question of physics it would still be possible to take note of all these issues and include them in the plan as options. Nevertheless, war is reciprocal activity in which vast armies composed of individuals perform their functions guided by their personalities, skills, fears, limitations, and passions. Out of this mess emerges efficient and purposeful action only through energetic command and leadership. Thus, in order not only to win time in execution and surprise the enemy but also to be able to execute his plan at all, the commander must be able to overcome the friction and immobility and accelerate the movement and action of his troops by the force of his will.

The type of military thought that for example Suvorov represented and that continues to influence the military tradition of even present day Russia promotes strong leaders and striving for surprise as two of the main military virtues and surprise was attainable through speed. Thus, "to impose one's will on the enemy it is necessary to surprise him. The school of Suvorov teaches the art of achieving surprise and of securing one's own troops against it. Surprise is obtained above all by speed - speed in conceptions and in execution."1555 The combination of striving for surprise and seeking to secure oneself from being surprised in turn requires remarkable forethought. In contemporary warfare the possibilities and chances of the unexpected occurring are so numerous, that all of them cannot be addressed and eliminated one at a time. In this sense imagination and forethought couple with the ability to flexibly react to altered situations with their demands. When commanders wish to stick to the tested and true they leave themselves open for surprises in turn. By supposing that the enemy will act just as before one creates a situation in which having to counter novel ways and means of fighting may cause a major surprise. This led Sikorski to write that "in modern war, surprise would be the rule in planning a battle."1556 Nevertheless, surprise has always been considered as the most effective force multiplier. We find this same emphasis in an ancient Chinese dialogue.

^{&#}x27;King Wei Said: Is there a Way (Tao) for one to attack ten?'

¹⁵⁵² Leonhard (1998), p. 170.

¹⁵⁵³ Leonhard (1998), p. 176.

¹⁵⁵⁴ Luttwak (1987), p. 11.

¹⁵⁵⁵ Andolenko (1956), p. 15-16. See also Lalu (2014), p. 29 who argues that speed was mostly concerned with marching and sufficient rest.

¹⁵⁵⁶ Sikorski (1943), p. 139.

Sun Pin said: 'There is. 'Attack where they are unprepared; go forth where they will not expect it "¹⁵⁵⁷

All too often we tend to think that initiative and surprise are most important on the level of tactics, that is, to use in a battle a method which will surprise the enemy to gain a victory. According to Clausewitz, "they are infinitely more important and effective in strategy than in tactics. Tactical initiative can rarely be expanded into a major victory, but a strategic one has often brought the whole war to an end at a stroke."1558 With tactical initiative one can only win the battle and not the entire war, albeit one's position after the battle is more favorable than preceding it. This difficult feat has to be performed over and over again to emerge victorious from the operation and ultimately the entire war. Zhukov wrote about "operational surprises" meaning the ability of Soviet troops to concentrate their forces and prepare an attack sooner than expected. This type of surprise was confined to theatre-level operations.¹⁵⁵⁹ Should one, however, succeed in performing these actions through imaginative operational art the results are likely to be of great consequence and even disastrous to the enemy on the strategic level. If an invasion can be launched as a surprise the defender is not able to put up much of defense. "In our view an offensive war requires above all a quick, irresistible decision. If so, we have cut the ground from under an alternative idea that a slow, allegedly systematic occupation is safer and wiser than conquest by continuous advance."1560

In the past one single operational surprise of great magnitude that resonates on the strategic level could theoretically decide the outcome of the war in one stroke. As Clausewitz wrote, "surprise plays a much greater role in strategy than in tactics. It is the most important element of victory. Napoleon, Frederick II, Gustavus Adolphus, Caesar, Hannibal, and Alexander owe the brightest rays of their fame to swiftness."¹⁵⁶¹ Surprise is for Clausewitz the main ingredient of victory and surprise is tightly connected to time since speed creates favorable conditions for surprise. The enemy must be robbed of his time to react and prepare and one can best achieve this by increasing his own swiftness. To be able to do more in a shorter time forces the enemy to do what he can in the time left to him.

Execution of one plan and the formulation of the next need to be concurrent activities to keep up the operational tempo and optimize the efficiency of using the time at one's disposal. All planning must search for the chance of surprising the enemy and it is comforting to know, that possibilities for it are endless when imagination guided by reason is allowed to roam freely. As Fuller wrote, "*in war surprise in omnipresent; wherever man is there lurks the possibility of surprise.*"¹⁵⁶² Spontaneous action in seizing the initiative and grasping an opportune moment usually leads to relatively minor surprises. Forethought, planning and preparation are required to create a surprise of operational importance.

In operational art, Fuller argued, the means of creating surprise consist of the trinity of simplicity, speed and secrecy of movement.¹⁵⁶³ Similarly for Liddell Hart "*mobility* and manoeuvre [are] the means to surprise in time and space respectively."¹⁵⁶⁴ Again, mindless movement is not sufficient but a lot of forethought must be involved in designing the most efficient maneuvers. According to Fuller's trinity movements have to be simple to execute, they have to be instigated in secret from the enemy and carried out with utmost speed

¹⁵⁵⁷ Sun Pin (1995), p. 89.

¹⁵⁵⁸ Clausewitz (1989), p. 363.

¹⁵⁵⁹ Zukov (1969), pp. 471, 594-595. Whatever else he was, Zhukov was not an operational artist, nor an intellectual. His command style was ruthless towards losses and used the ideas of deep battle and deep operations without any added innovations. See Forczyk (2012), pp. 32, 60-61.

¹⁵⁶⁰ Clausewitz (1989), p. 598.

¹⁵⁶¹ Clausewitz (1989), pp. 350-351.

¹⁵⁶² Fuller (1926), p. 272.

¹⁵⁶³ Fuller (1926), p. 277. Fuller was nothing short of obsessed with seeing things in threes and this permeates all arguments in The Foundations of the Science of War. In his own words, "*this three fold order I believe to be the key to the understanding of all things; it is my postulate.*" Fuller, cited in Reid (1987), p. 84. For a thorough discussion on the merits and misgivings of this book see Reid (1987), pp. 81-106.

¹⁵⁶⁴ Liddell Hart (1927), pp. 218-219.

manageable. All these issues are concerned with time. Simplicity demands that the planned movement cannot be too intricate to avoid confusion and congestion and allow for fluent execution to save time. Managing to keep the movement secret deprives the enemy from time to react and the speed acts as insurance that the enemy is unprepared due to lack of time.

Finkel has argued that strategic importance of a surprise attack has decreased.¹⁵⁶⁵ In 1914 the German army surprised the French with the so-called Schlieffen plan. It was this same plan that the Germans planned to employ in the advent of the WW II, until Hitler intervened. As Field-Marshal Keitel described it,

"Hitler turned to us and said something like: "That is just the old Schlieffen plan, with a strong right flank along the Atlantic coast; you won't get away with an operation like that twice running. I have quite a different idea and I'll tell you (i.e. Jodl and myself) about it in a day or two and then I'll talk it over with the War Office myself." [...] it was Hitler himself who saw the armoured break-through at Sedan, striking up to the Atlantic coast at Abbeville, as the solution; we would then swing round [northwards] into the rear of the mortised Anglo-French army, which would most probably be advancing across the Franco-Belgian frontier into Belgium, and cut them off."

We should not rush to credit Hitler for the decision. Concerning the invasion and occupation of France Guderian in argued that credit is due elsewhere. While the benefit of reusing the Schlieffen Plan would have been a simplicity of execution, there was nothing novel or surprising about it and thus thoughts turned to another direction. As Manstein phrased it,

> "intentions of the O.K.H. struck me as being essentially an imitation of the famous Schlieffen Plan of 1914. I found it humiliating, to say the least, that our generation could do nothing better than repeat an old recipe, even when this was the product of a man like Schlieffen. What could possibly be achieved by turning up a war plan our opponents had already rehearsed with us once before and against whose repetition they were bound to have taken full precautions?"¹⁵⁶⁷

Perhaps it indeed was Hitler who discredited the old plan, but Manstein was the father of the plan to use strong armored troops to attack the Maginot Line in the vicinity of Sedan via routes through Luxembourg and southern Belgium. After penetrating the fortified line the attack was to be expanded.¹⁵⁶⁸ In the end the only similarities between the plans were the placement of the main force of attack on the northern wing and the march through Belgium.¹⁵⁶⁹ Schlieffen opted for strategic surprise and planners in WW II managed to create conditions for operative and technical surprise. In both cases Germany was able to create an inventive method of attack that almost led to the collapse of Western Europe.¹⁵⁷⁰

As armies moved from the First to Second and lately Third Wave, the chances of strategic surprises diminished. "The history of modern wars shows that the chances of strategic surprise are small indeed. The question might therefore be asked whether in a war which is fought by many millions of soldiers strategic surprises are still possible at all."¹⁵⁷¹ The million-man armies just as the surveil-

¹⁵⁶⁵ Finkel (2011), p. 47.

¹⁵⁶⁶ Keitel (1966), pp.102-103. Keitel was at the time of writing his memoirs waiting to be executed for his war-crimes. In some places his narrative reads as an apology and an attempt to displace guilt from him own shoulders and downplay the importance he had in the operations.

¹⁵⁶⁷ Manstein (1982), p. 98.

¹⁵⁶⁸ Guderian (1956), pp. 81-82. Manstein (1982), p. 94 acknowledged that ultimately the plan was his.
¹⁵⁶⁹ Manstein (1982), p. 99. To this we can also add that Germany repeated the mistake of letting operational art gain priority over strategy. That is, the war itself was not planned out but there was a reliance rapid movement annihilating the enemy army and winning the war. See Gray (2007), p. 107. On the other hand, there were a lot of similarities between the plans for the two wars. Thus Stempel (2012), p. 150 called WW II "*The Great War, Act II*"

¹⁵⁷⁰ Interestingly the Schlieffen Plan was not very comprehensive since it did not discuss political, economic or even wider military aspects of war. It was just a plan how to use the German ground forces. See Heuser (2002), p. 62. Manstein (1982), pp. 99-105 discusses further in detail why the old Schlieffen plan would not have been applicable, but it can be summarized that in 1939 it would not have inflicted a surprise. ¹⁵⁷¹ Ehrfurth (1991), p. 385.

lance equipment of today prevent a total strategic surprise affected with mass from occurring unless the potential belligerents manage to take out each other's surveillance satellites.¹⁵⁷² However, surprise is such a powerful force multiplier that its "*sustainment or restoration at operational level will very likely have strategic repercussions*."¹⁵⁷³ In other words, surprise, if profound enough and effected at the right time and right place, has the potential to reverberate across the levels of warfare so, that a surprise on operational or even tactical level may have immense repercussions on strategy.

The meaning of surprise can be concentrated into Fuller's argument that "the power of surprise lies in stunning the reason. Men have no time to think: shall we do this, or shall we do that? Leadership on these occasions is frequently reduced to zero."¹⁵⁷⁴ It is primarily the intellect of the leadership that a surprise attack is aimed for. Naturally every soldier caught in a whirlwind of the unexpected is influenced and his ability to function is reduced, but instinct takes over and he accustoms itself sooner or later to the altered situation. The time-lapse in searching for a way to cope is less crucial than in the case of the commander. If he has no time to think, if his leadership and control slacken, every passing moment creates increasing confusion. The object of surprise, then, is to

"attack the will of the enemy by accentuating fear, for, if a man is reduced to such a state of fear that he can do nothing save think of protection, he is at our mercy, for his moral endurance has ceased to dominate him. A man whose mind is dominated by fear is a man in panic, consequently the ultimate end of surprise is to reduce our enemy to a condition of panic in which his moral is totally replaced by his instinct of self-preservation in its most irrational form."¹⁵⁷⁵

In a sense 'attacking the enemy's plan' discussed earlier as an attempt to create a surprise is the most effective way of accomplishing set goals. Commanders try to plan for every possible occurrence on the battlefield and their plans attempt to expect the unexpected and unfavorable. In order to create a total surprise, something novel and unorthodox has to be attempted. As this is not a meager task, the most common way of attacking the plan of the enemy commander and creating a surprise is by mastering time in the execution of one's own plans. One has to outrace the enemy and be quicker than the enemy has predicted. Fast decision-making and rapid movement help to catch the enemy off his guard.

There are innumerable ways to create a surprise but only a limited amount of different types of surprises. Sikorski divided them into three categories of strategical, tactical and technical surprise. We might do well to add operational surprise. One should not stake everything on a single trump card. As Sikorski argued, "*the ideal thing, or course, would be to achieve complete surprise in every sphere of action.*"¹⁵⁷⁶ According to Ehrfurth,

"there is one important military principle of almost eternal validity: if, at the beginning of a war, absolute numerical superiority is not obtainable, one should try to be superior at least in one important weapon."¹⁵⁷⁷

Interestingly out of the different types of surprises technical surprise has the most profound impact on other types of surprises. Strategical, operational, and tactical surprises are caused by novel and original modes of action. Perhaps in all surprises the common denominator is the ability to do something unexpected and unsuspected. This may occur in the shape of a new doctrine, which generally is brought about by a technical innovation that enables doing something new. As Sikorski wrote, "*technical surprise has always had the greatest influence on the evolution of war in accordance with the importance and the efficiency of the new armaments and of the inventions relating to them.*"¹⁵⁷⁸ New innovations result in new armaments and they

¹⁵⁷² Simpkin (1985), p. 179.

¹⁵⁷³ Simpkin (1985), p. 112.

¹⁵⁷⁴ Fuller (1926), p. 321.

¹⁵⁷⁵ Fuller (1926), p. 273.

¹⁵⁷⁶ Sikorski (1943), p. 138.

¹⁵⁷⁷ Ehrfurth (1991), p. 545.

¹⁵⁷⁸ Sikorski (1943), p. 140.

require new ways of using them. In this sense a technical innovation not only creates conditions for technical surprise but new technology sparks the creation of suitable new doctrines and new tactics. Not only is the introduction of a new weapon into the battlefield a technical surprise but its meaning in increased by the fact that it creates a new method of fighting which may lead to strategical operational and tactical surprises alike. As Finkel wrote, since the proof of surprise is its result, it does not matter if it occurs through a new weapon or a new warfighting doctrine.¹⁵⁷⁹ The two go hand-in-hand.

Even if the early stages of war are replete with auspicious moments for technical surprises there is no reason to disregard the profound effect new technologies and techniques potentially have operationally and strategically. As an example the roll-out of tanks in Cambrai had potential for widespread effect. There was a real chance of a decisive operational victory with the possibility of turning it into a strategic one, if only the tanks had been used more daringly. This was not only the finding of the British tank proponents, but shared on the German side as well¹⁵⁸⁰. Guderian wrote that even a complete breakthrough of the German lines had been "*well within the bounds of possibility, if only the tanks had been employed in a more effective way, and if the offensive tactics of the other arms had been brought into full accord with the performance of the new arm, the tank.*"¹⁵⁸¹ As there were insufficient mobile reserves, the attack was not continued into the depth and it lacked the support of the air force.¹⁵⁸² Von Leeb thought that commonly the reason why tactical success could not be exploited operationally was that attacks were carried out on too short a front, but in this case the dimension of depth was more problematic.¹⁵⁸³

Nevertheless, tanks proved themselves in the initial battles to be a veritable force on the battlefield. But people cannot be surprised time after time by using the same measures. When the tank was no longer a novelty on the battlefields the primary means to surprise were to be found in the rapidity of maneuver the tanks possessed. For Guderian,

> "possessing both strategic and tactical mobility, mechanized forces may be speedily concentrated and employed. More so than in the case of other ground forces, this characteristic inherent in the mechanized arm permits of surprise employment. The preparations for the attack must aim, therefore, at surprise effect. This calls for the utmost economy in, and condensation of, the preparatory measures, which may be accomplished by taking advantage of darkness and speed in concentrating, by timely depositing the most urgent supplies, by carefully regulating the traffic, and by issuing precise and comprehensive orders."¹⁵⁸⁴

By making preparations for the attack in secret the ability of mechanized units to pulsatingly disperse and concentrate their forces and redirect their effort may yet create favorable conditions for even operational surprise depriving the enemy from time to prepare his defenses. In some cases surprise can be inflicted with a rapid decision to strike elsewhere than planned, but we can consider it as rule of the thumb that to maximize the chances of success of surprising the enemy a lot of meticulous planning is required and preparations to ensure fluid movement are a precondition of success. Concentration under the cover of darkness, supplying the units before attack, and traffic control consume time, but the objective is to save time from the execution phase when the attack must proceed rapidly. Planning and execution must go hand in hand. Guderian listed the main means of surprise;

¹⁵⁷⁹ Finkel (2011), p. 27.

¹⁵⁸⁰ On this see for example Goodspeed (1966), pp. 229-230 for Ludendorff's viewpoint. Perhaps, as Finkel (2011), p. 26 suggests, the surprise deployment of tanks created "too great" a success and this is why it was not properly exploited.

¹⁵⁸¹ Guderian (1992), p. 67.

¹⁵⁸² Guderian (1992), p. 89.

¹⁵⁸³ Von Leeb (1991), p. 101.

¹⁵⁸⁴ Guderian (1937), p. 11. The idea of utilizing the hours of darkness for troop movements and concentration of forces was a common practice at the time. See Zukov (1969), pp. 147-148. The use of nighttime in preparation of upcoming battles was another way in which the age of mechanization raised the speed of warfare. War had now permanently become a 24-hour business.

"Surprise may be attained through speedy and well-concealed movements, through the appropriate preparation and execution of the attack, and through new weapons of unprecedented capability. The rapid execution of the armoured attack is of decisive importance to the outcome of the battle."¹⁵⁸⁵

By the time WW II started the tank was a well-established weapon and could create no technical surprise whatsoever. Thus Guderian focused on employing the tanks as weapons instead of infantry protection and created new techniques of employing them. On an existing technology he built new tactics aiming to affect surprise. In this sense the result was what Finkel labelled "*operational-tactical doctrinal surprise*."¹⁵⁸⁶ The development between the World Wars is sufficient basis to argue in unison with Erhfurth that,

"timely changes and incessant improvement of fighting techniques are of extreme importance. The opponent can be fundamentally surprised by new techniques. Novel methods can basically change the course of war. Consequently, the science of war should never be suppressed; even, or rather, particularly in time of war, it should supplement and direct the practice of the battlefield. It is the task of the theorist to understand quickly every novelty and to advise on their adoption."¹⁵⁸⁷

The scientific study of techniques and technologies, doctrines and weaponry, indeed, all scientific inquiry into the art of war and its methods has to intensify during the war in order to both counter the technical surprises of the enemy and to attempt to affect such a surprise on him instead. The better up-to-date the science of war is the shorter time an enemy surprise can wreak havoc among the troops. It enables creating a technological or doctrinal countermeasure. "*Every new weapon is immediately imitated in time of peace by the neighbor; in time of war by the enemy No country has a monopoly of any weapon. This is a law. No technical advantage lasts for a long period of time.*"¹⁵⁸⁸ As Cambrai in 1917 was the first occasion on which tanks were used on the battlefield, it speaks volumes that by April of 1918 tanks had spread so widely among the belligerents that the first battle in which tanks fought each other occurred as the Germans attacked Villers Bretonneux.¹⁵⁸⁹

It is, furthermore, not only that new technologies spread rapidly among the belligerents and this shortens the time a technical surprise can be effective, but occasionally a new weapon may be rapidly countered and become inconsequential due to its very effectiveness in the beginning. This somewhat paradoxical claim is illustrated with the example of the torpedo boat.¹⁵⁹⁰ Its emergence on the seas was highly effective and it was even claimed that such a weapon would make the large warships obsolete. Its shock effect became neutralized quickly "because of its very efficiency, which had both evoked a strong reaction and precluded any remedial response: weapons highly efficient because narrowly specialized cannot accommodate broad counter-countermeasures."

If anyone had sought to build an entire navy of them, this would have led to a disaster because the torpedo boat is too narrowly specialized. The relationship of these specialized weapons and their vulnerability to countermeasures is not an accident but rather "*a typical expression of the paradoxical logic of strategy in its dynamic form.*"¹⁵⁹² We can expand this thought into any other new weapon currently in development or already in operational use.

¹⁵⁹¹ Luttwak (1987), p. 35. See also Finkel (2011), pp. 89-90.

¹⁵⁸⁵ Guderian (1992), p. 205.

¹⁵⁸⁶ Finkel (2011), pp. 28-29.

¹⁵⁸⁷ Ehrfurth (1991), p. 547.

¹⁵⁸⁸ Ehrfurth (1991), p. 548.

¹⁵⁸⁹ Martel (1931), p. 30. Although Swinton had theorized earlier the use of tanks his theories had not been widely read by the tankers. Thus Fuller planned the use of tanks at Cambrai. See Trythall (1977), p. 53.

¹⁵⁹⁰ We can detect one more development cycle within the use of the torpedo as a weapon. As Sumida (2003) has described the development of British torpedo tactics in the pre-WWI years, the large battleships were the primary launchers of the first torpedoes. Since they were too slow to be invulnerable to the enemy torpedoes in turn development led towards the small and fast-moving torpedo boats which in turn could not be enough to rid the seas of the large warships and yet new methods had to be developed.

¹⁵⁹² Luttwak (1987), p. 36.

Automated weapons such as drones can't compose the main force of any military system because they are too specialized and broader counter-measures are easy to develop to evade the sphere in which they operate and utilize the rest of the spectrum of force.

Technical surprise has always played an important role on the battlefield and this is likely to still increase in the future. Every new weapon should initially be used in huge quantities. To maximize their shock impact they should not be deployed piecemeal. At the crest of the Second Wave Martel wrote of the need to ensure that

> "there is one model of every munition of war which is ready for mass production if war becomes imminent. There will always be improved models under trial which can come into production stage at a later date, but there should always be one model complete in every detail and good enough for immediate requirements which can be released for production."¹⁵⁹³

As Svechin argued the mass production of new weapons has to commence without testing them first on the battlefield. While this involves huge risks, it must be taken for surprise to be effective since "*there is no need for gradualists, and experiment on the battlefield*."¹⁵⁹⁴ Nevertheless, new weapons are in essence only auxiliary weapons and used in support of the preexisting weapons to supplement their effect. If one develops an entire doctrine based on a new weapon, this type of specialized operational art will sooner or later be overcome by the use of more traditional form of operational art because it works on a wider spectrum of ways and means. There are, of course, different views. For example Leonhard argued that

"in the future, mass production of the implements of war will not work. Technological advancements happen too fast in the Information Age. Even the idea of "wartime production" is outdated (...) Instead the future of material acquisition will be the rapid development and fielding of prototypes. The overwhelming numbers of the Sherman tank will be displaced by the dislocating quality of tomorrow's weapons."¹⁵⁹⁵

Nevertheless, the logic is still the same. Even if the weapons on tomorrow's battlefields are prototypes, to be most effective, there must be as many of the prototypes as it is possible to produce under the time constraints. The problem is that mass production takes time and as Third Wave armies are so highly networked that they every weapon and technology implemented changes the composition of the entire system of systems¹⁵⁹⁶. With the addition of every new gadget the system needs to be reconfigured to some degree. And the more complex the system becomes, the more widespread the reverberation of any single component that breaks down. And due to acceleration in technological development cycles new inventions are on offer faster and faster. "*Therefore, future warfare will feature constant myriad technological advances that come at a tempo that disallows mass production. The result is that a nation-state that opts for mass production will, at that same moment, drop out of the technology race.*"⁽¹⁵⁹⁷ Still, there must always be enough of the new weapons to mass their effects. And for a nation unable to compete technologically as the Third Wave would require, there is the option of reverting back to simpler and cheaper mass-produced materiel and weapons of the indust-reality and fight asymmetrically.

While the material aspect of technical surprise is not to be handled lightly, to create superior mobility one needed not only technological means but also the skill and determination to handle them. This led Fuller to argue that all the means of surprise ultimately "spring from the ability of the general, the courage of his men, and the perfection of their weapons."¹⁵⁹⁸ None of these are constants over longer periods of time. The courage of men may be bolstered and it may vanish, the superiority of any given weapon can soon be countered, but the most obscure factor is the ability of the commander. For Fuller "it is the dark horse of

¹⁵⁹³ Martel (1945), p. 120.

¹⁵⁹⁴ Svechin (1992), p. 128.

¹⁵⁹⁵ Leonhard (1998), pp. 122-123.

¹⁵⁹⁶ Kagan (2006), p. 41 argues that the expression "*system of systems*" coined in the 1990s to describe the interlinked surveillance, target-acquisition and tracking, and attack system - but the concept was not new in itself. ¹⁵⁹⁷ Leonhard (1998), p. 187.

¹⁵⁹⁸ Fuller (1926), p. 273.

the battlefield. Mental ability is not so much a natural gift, save in the case of very few, as the product of scientific study -a close reasoning out of the values of conditions and an intelligent application of the principles of war³¹⁵⁹⁹

To seize initiative and affect surprise to save time in operational art one must combine the tested and true with the new and unexpected. The old traditions of the army need to be upheld and maintained for creating inner cohesion, but these should not be allowed to permeate the entire military system. "*However praiseworthy it may be to uphold tradition in the field of soldierly ethics, it is to be resisted in the field of military command*."¹⁶⁰⁰ Ethics and *espirit de corps* are the field where the tested and true remain a constant source of motivation. In commanding a battle and executing tasks more effectively they rather cause problems. Only if the new and unorthodox cease to be effective, then the traditional and orthodox must be employed to stabilize the situation at least until some other extraordinary scheme is developed. Herein lays a pitfall for the military minds. Liddell Hart stated that the

> "danger to the professional soldier is that he inevitably tends to base his tactical thought on the methods which prevail at the moment, and with which he is in constant contact. He concentrates upon the attainment of mechanical perfection in the executive acts with which he is familiar."¹⁶⁰¹

The attempt to hone to perfection the mechanical execution of existing dogmas does not create operational art but only processes and procedures. As long as familiar methods are practiced and employed there will be no surprise, no initiative, no sudden shock for the enemy. Even if every action of the troops is flawless, they are also predictable and easily curbed by counter-measures. Military genius has another way of working. Fuller wrote that a genius "transcends mere copying; he refuses to swim with the stream; he strikes out in a direction of his own; and, what appears almost a miracle to the crowd, he frequently succeeds in diverting the stream from its course by compelling it to swirl forward in his own direction."¹⁶⁰² The genius produces something new and often in war the new is also the unexpected and thus likely to astound the enemy.

Unfortunately, all too often in the course of our careers we are confronted with an unpleasant surprise, which according to Fuller, happens in war as well. "On the battlefield itself a general is frequently surprised by his own stupidity, his lack of being able to appreciate conditions or apply to them the principles of war."1603 Perhaps it is a direct consequence of the thoroughness of military planning. If there has been enough time to plan in advance the meticulous nature of the contemporary planning processes creates the illusion that every eventuality has been considered and a counter-measure developed for any attempt of the enemy to affect a surprise. If and when things develop in a direction unforeseen in the plan, a surprise results and in these circumstances answering to the demands of the situation takes longer just because of the high level of detail in the original planned course of action that the enemy has managed to derail. Fuller argued that "the main causes of surprise are lack of foresight, loss in sensing the reality of war, lack in appreciating tactical values, and, above all, the standing grip of tradition which is ever choking our intelligence."1604 Not many commanders admit to any of these faults with themselves and this self-denial is the reason why one tends to get surprised. By imagining that one has used foresight to prepare for everything and that one truly grasps the reality of the battlefield one offers the victory to his enemy.

Why have we spent so long in discussion of surprise and its role in winning time? Because it is the most effective way of forcing discord into the enemy rhythm to gain more time to act and to create surprise one must be able to manage time. To have created a successful surprise has robbed the enemy of his time. In the words of Bülow, "I call war the science of robbery, and not that of murder, as it has been hitherto denominated; because, to rob is its object,

¹⁵⁹⁹ Ibid.

¹⁶⁰⁰ Rommel (1953), p. 204.

¹⁶⁰¹ Liddell Hart (1927), p. 191.

¹⁶⁰² Fuller (1926), pp. 98-99.

¹⁶⁰³ Fuller (1926), p. 282 or Fuller (1923), p. 38.

¹⁶⁰⁴ Fuller (1926), p. 281.

and to kill is only a means.²¹⁶⁰⁵ One is able to use the time 'robbed' from the enemy to benefit his operations and grow the relative advantage he has over the enemy. Surprise is instantaneous, but its effect echo and accumulate over time. As Leonhard wrote, "the condition of surprise cannot exist apart from the dimension of time. Surprise is defined in temporal terms, not physical. Fish live in water; surprise lives in time."¹⁶⁰⁶

In this chapter we have burrowed deeper into how time and temporality relates to the physical activity within the battlespace. We discussed how the objective of time management is different whether one chooses to partake in defensive or offensive action. One either needs to win time by robbing the enemy of the time at his disposal or save and gain time by making the enemy waste his time. Fighting should either be very rapid or very prolonged. Should one choose either of these two options, defending or attacking, there must be a seed of the other involved. Since defense is passive, there must be a chance of taking the offensive stand at a favorable moment. Attacking and defending are not two isolated postures but intimately connected to each other. In addition to them exists irregular or asymmetric way of warfare that combines elements from both approaches and transitions from one mode to another are made rapidly once the moment is judged as ripe.

Along similar veins we looked at attrition and maneuver and argued that there is a time and a place for choosing each option and that often the choice is not freely made. Between maneuver and attrition the timing is essential. One can bleed one's own troops dry if attrition is continued needlessly and elegantly executed maneuvers may end up useless is they focus solely on movement and not searching for decisive battles. The purpose of fighting needs to be clear and means of conducting battle should be chosen accordingly. We found out that success hinges on finding the right moment for action and using it to switch from defense to attack or maneuver to annihilation - or vice versa. The cycle turns and auspicious times have to be continuously sought for. This is one of the primary tasks of the operational artist. He must be able to follow the internal rhythm of battles and operations to manipulate it.

We noted that increased velocity may end up in speedy movements just for the sake of movement and if the maneuvers become too fast to be effectively controlled, they are mere idiocy. Speed is a way of mastering time and overcoming space but one might end up a victim of uncontrollable speed when the decision-making cycle spins out of control and command of movement evaporates. Thus we argued that instead of striving for maximum speed of action one should work towards attaining an optimum speed.

We argued that there is a rhythm in the pulsation of violence of war, in the progress of both battles and operations, and in the activities of troops and staffs alike. The right pace of all action is the pace that feels natural. In addition to getting inside the enemy's decision-making cycle by being faster and faster other means can be used to force the enemy off his rhythm and into discord. There are, naturally, numerous occasions in warfare when a slow and natural rhythm is not sufficient because the actions of the enemy have imposed a quickened rhythm one must follow. On these occasions the operational artist and the troops under his command must be able to function under the pressure of time, but simultaneously search for a decisive moment in which the enemy rhythm can be broken and by seizing the initiative in turn set the pace of operations and rhythm the enemy must follow.

Rhythm is also about orchestration and synchronization of different types of activity into a harmonious operation. Proper and suitable rhythm can be forced on the operation by the commander acting as a conductor and synchronizing different speeds of different units and activities so that their operations and especially their effects conjoin in time and place without forced pauses or jerky movements. There is a profound difference between sequential and simultaneous activities in their efficiency and one of the highest

¹⁶⁰⁵ Bülow (2013), p. 226.

¹⁶⁰⁶ Leonhard (1998), p. 184-185.

goals of synchronization is that different components of operational art should in their effects and timings be undistinguishable from each other. Nevertheless, there will always be pauses in operations and uninterrupted flow is only an ideal in operational art. Thus pauses have to be effectively planned and managed so that they support the operation instead of derail its smooth progress. A pause can be beneficial when it is self-imposed to recreate momentum or set a new rhythm and excessively harmful when the enemy dictates its time and place and causes operations to culminate at least temporarily.

We discovered in terms of mobility that highest possible constant speed is not the best option in time management because it makes one predictable and calculable in one's maneuvers. Having variability in pace is an important quality in rhythm of operations and even further in operational art in general. We approached this idea through asymmetry as an old principle of countering the enemy in those spheres of action where he is weak and denying him the chance in challenging one directly with his strengths. We discussed asymmetry and irregular means mostly through guerrilla warfare since it is the best known version of asymmetric warfare but argued that asymmetry is an element that should be used more in regular warfare to throw the enemy off his balance and to drag him outside his comfort zone. It is not asymmetry of weapons, tactics, or specific methods that an operational artist should strive for, but an asymmetry of perspective in thinking about operational art. Force, place and time can all be viewed asymmetrically and choosing the opposite viewpoint from the enemy makes it difficult for him to master operations. Even time itself can be treated asymmetrically and in those cases the idea of being quicker simply does not work for the enemy since the entire basis of operational art is so vastly different.

We argued that through asymmetry and variability in speed, rhythm, tactics, timings and all assets of operational art we could increase the possibilities of affecting surprises on the enemy as surprise is the best way to rob the enemy of his time. By discussing different means of creating conditions of surprise we noted that surprise is an element that should be omnipresent in all planning because surprise acts in two different "dimensions." Surprise has its physical manifestation when the actual response time of the enemy is reduced to a minimum and his reaction is less powerful. Similarly, surprise has an even more powerful impact on the mind of the enemy commanders and by attacking the mind directing the practice of operational art the effects can lead to a temporary paralysis of activity which would be an important Kairos-moment to take advantage of.

To sum up, this chapter has focused its intention of physical activities within the battlespace and especially the rhythmic pulsation from defensive to offensive stances and choosing the right moments to affect the rhythm of the operation and the actions it consists of. While many ideas discussed here, such as asymmetry, is a mental process, nevertheless the ultimate result of these ideas are manifested in concrete activities occurring within the battlespace. Time can be won and controlled either through concrete action or intellectual activity. Thus, in the next chapter we will take a look and how time can be won outside but alongside the physical activity by using one's own mind, energy and imagination and attacking and using them as the means of mastery of time. The next chapter will discuss ways of thinking instead of modes of action and focus on the processes, personal traits and perceptions involved in operational art.

WINNING TIME INTELLECTUALLY

"If I decry professional soldiers, it is not for personal dislike of an honest and modest body of men, but because their work is fatuous; they are not preparing for the next war but for the last war but one, and are consequently a danger rather than a security."⁶⁰⁷

7.1. THE COMMANDER'S STAFF AS A TIMESAVER

"Time lost or wasted in conducting daily routine activities can sometimes indirectly influence, to a great degree, the outcome of a combat action."¹⁶⁰⁸

The commander-in-chief has a different function from other generals. His task today is on the strategic level and he confers with his political masters and takes a detached stance from the battles and provides the objective and the resources for the operational artists under his command.¹⁶⁰⁹ The operational commander in turn must analyze the big picture and focus on combining battles into operations to fulfil his part in attaining strategic objectives by completing the operational tasks given to him. The generals commanding the troops in battle function on a tactical level where rapidity of decision and action play a different role in time management. De Saxe wrote concerning leadership of battle that,

> "when he sees an occasion, he should unleash his energies, hasten to the critical point at top speed, seize the first troops available, advance them rapidly, and lead them in person. These are the strokes that decide battles and gain victories. The important thing is to see the opportunity and to know how to use it."¹⁶¹⁰

Even if war in the agrarian age of de Saxe was far removed from its indust-real outlook and the general does seldom lead the troops in person at the front, the essence of tactical and even operational success for the Third Wave as well is to be found in this quotation. It is still good advice to keep the general's mental capacity focused entirely on the conduct of operations. He should be able to search for the advantageous time and place at which to take action to turn the course of battle or an operation.

Napoleon was the ultimate commander-in-chief and statesman who was able to dictate everything from battles to grand strategy. But in order to do this, more and more subordinates were involved in the process. The society and the military alike emerged from the revolution not only changed but also more complicated. This required alterations.

> "This task of the commander becomes an immense one where modern numbers are concerned. It is, indeed, seldom possible for a single man to fulfill it; several men are needed. This is the new conception which the French Revolution brought into war, by making the personal initiative of subordinate chiefs (all working in the same direction and complying with the same doctrine) concur in setting up a complete direction of armies. It became, at any rate, a fully developed reality with the German armies of 1870."¹⁶¹¹

Staffs were invented as a means of controlling this complexity. Even such an undisputed genius as Napoleon was not able to administer to every detail in handling his armies. Some

¹⁶⁰⁷ Fuller (1932), p. vii.

¹⁶⁰⁸ Vego (2009), p. III-19.

¹⁶⁰⁹ Smith (2008), p. x. In addition, Schwarzkopf (1993), Clark (2001), Franks (2004), and McChrystal (2013) all give evidence on this.

¹⁶¹⁰ De Saxe (1987), p. 296.

¹⁶¹¹ Foch (1920), p. 290.

responsibilities were delegated. Simultaneously the first prototype-stages of *Auftragstaktik* were introduced with the very same purpose of controlling the increased complexity. Yet even Foch was not as bold as to claim that Napoleon or other French commanders-inchief would have employed this by giving their subordinates more freedom of action and responsibility to make autonomous decisions. Even if the ideas originated in the aftermath of the French Revolution, they blossomed among the German army.

One of the benefits of the creation of the staff is distribution of time to those functions that need it the most and where saving time is most beneficial for the overall objective of the operation. Often this can be found at the top of the hierarchy. As von der Goltz wrote, "*that commander-in-chief who insists upon the writing and revision of his own orders, robs his mind of the leisure necessary for the conception of fresh ideas. He ought to think rather than wield the pen.*"¹⁶¹² If the commander gets tied down to repetitive and menial tasks, his intellect lacks the luxury of freedom for creative thought. There is no doubt that the orders must be checked and double-checked, but this is a task best dedicated to staff officers. As a military historian, Delbrück describes the role of the staff thus;

> "in order for the commander to operate amid the unending complications and rapidity of modern war, he needs good subordinates. They support him not only with the preparation of the mass of war planning materials but also with counsel, advice, and suggestions. Under certain circumstances this assistance can be decisive. Without capable general staff officers a modern general is like an artist without arms."¹⁰¹³

Discarding the importance of technology, certain theorists like Matheny or Michael Howard argued that greatest military innovation of the nineteenth century was the general staff.¹⁶¹⁴ It is the duty of the staff not only to be arms of the general but especially to free his arms to practice his operational art. All preparatory work belongs to members of the staff. They are required to provide the commander with all the necessary information he requires. This is also a matter of saving time where it is most important to conserve and spend it elsewhere. Efficient staff work provides the commander the time required for his operational art.

At least until the times of modern and efficient staff formations perhaps one of the best advises as to how to best utilize every hour at the disposal of the commander comes from the Tactics of Leo VI. His argument was that, "*in time of war, during the night, plan what you have to do and, during the day, carry out what you have decided. For the same time is not suitable both for planning and taking action.*"¹⁶¹⁵ Any soldier, not even a general, should not be forced to plan ahead at the same time as he is in charge of the execution of the current plan. This would be a too schizophrenic task to handle. To be employed optimally, the commander should focus on the single most important task at any given moment.

As efficient as the Germans are in their military planning and execution, the idea to use different parts of the staff to handle planning and execution came relatively late and was a product of the 20th century. Even Ludendorff still complained about the lack of rest and difficulties he had to face since he had to fight one battle to the end and simultaneously prepare the commencement of the next battle.¹⁶¹⁶ The creation of modern massive staffs has enabled a part of the staff to plan the next phase of the battle or the campaign while another part supports the commander in the conduct of the battle at hand. All in all, it is a constant factor in war that battles tend to take place far too soon for at least one of the combatants and as De Saxe claims, not every general is up to his task and its demands.

"Unless a man is born with talent for war, he will never be other than a mediocre general. It is the same with all talents; in painting, or in music, or in poetry, talent must be inherent

¹⁶¹² von der Goltz (1906), p. 46.

¹⁶¹³ Delbrück (1997), p. 54.

¹⁶¹⁴ Matheny (2012), p. 19.

¹⁶¹⁵ Leo VI (2010), p. 571.

¹⁶¹⁶ Ludendorff (1919), p. 45.

for excellence. All sublime arts are alike in this respect. That is why we see so few outstanding men in any science. Centuries pass without producing one."¹⁶¹⁷

An efficient staff is a necessity for the commander to carry out his tasks. Even if the commander is not an original genius and an operational artist, a professional staff can help the him to perfect the process of conducting battles and campaigns. As Jomini wrote,

"the difficulty of always selecting a good general has led to the formation of a good general staff, which being near the general may advise him, and thus exercise a beneficial influence over the operations. A well-instructed general staff is one of the most useful of organizations."¹⁶¹⁸

Even if Napoleon himself kept a tight leash of his staff and reserved the responsibility for all major decisions on himself, with the inner structure and hierarchy of today's armies and especially the political structure of governance above the even the commander-in-chief, things are no longer so clear-cut. The commander's hand is not able to reach everywhere. Not a single great captain of the past could sovereignly handle the issues that arise with the employment of the armed forces of today. They need their headquarters on different levels to assist them in planning and execution alike.

Often the only thing bureaucracy can effectively produce is more bureaucracy. Therefore the staffs on all levels need to be big and efficient enough so as not to waste one single moment of the time at the disposal of the commander. Simultaneously the same staffs must be small enough so that their internal friction doesn't cause any more delay to planning and decision-making than is absolutely necessary. Liddell Hart argued that

> "It is not only in reduced speed and increased friction that we pay for additional links in the chain of command. [... A shortening of the chain of command and a broadening of the commander's "hand" are desirable. In the light of experience the dual reform is clearly practicable. It offers the simplest and cheapest way of quickening the operational tempo and increasing operative efficiency."¹⁶¹⁹

The answer is beautifully simple and effective. Of course shortening the chain of command by itself is not able to account for all time that needs to be won in a war, but it is a good start because of its simplicity and cost-efficiency. When there are fewer headquarters with lighter internal structures filtering, disseminating, and issuing their orders based on the orders they have in turn received the amount of dead time between the issuing of the order to its execution can be drastically shortened and every minute can be considered as won. The most formidable opposition to this plan comes from the bureaucratic structures of the armed forces. A streamlining of the chain of command to minimum is something to be given serious thought to. As Svechin wrote, "every extra echelon is an unconditional evil."¹⁶²⁰ This restructuring of the hierarchy all along the chain of command has to commence in peace-time so that the organization is able to function efficiently from the initial stages of the war and to ensure that all levels of command are thoroughly familiar with their tasks.

"Military situations change rapidly. Very often a commander has taken a decision in view of a given situation. But when he begins to execute his plan, the situation has developed further and he is already confronted by a totally different set of circumstances. Unless he has self-confidence and liberates himself from the impressions of momentary conditions, he will become undecided and hesitate."¹⁶²¹

Amidst the ever-changing circumstances the commander has to be able to understand their impacts on the attainment of his objectives. Each and every minor surprise and change has to be evaluated according to how they affect the entire plan of operations. If they have no significant impact, the execution of the plan can continue unaltered. If they have a more profound significance, the required alterations have to be inserted into the overall plan.

¹⁶¹⁷ De Saxe (1944), pp. 119-120.

¹⁶¹⁸ Jomini (2007), p. 41.

¹⁶¹⁹ Liddell Hart (1950), pp. 297-298.

¹⁶²⁰ Svechin (1992), p. 334.

¹⁶²¹ Ehrfurth (1991), p. 418.

This means that the staff has to closely follow everything that happens and changes regarding the battle and be prepared to amend the operational plan accordingly.

When the staff deems that something with sufficient importance has occurred, or they are not able to determine the importance of an event, they bring the issue to the commander for decision. The commander has to be somewhat detached from aforementioned "impressions of momentary conditions" so that he can remain above the minuscule details of the battle and make distanced but informed operational decisions. This is a challenge of command in battle and operations that has remained unchanged through the three Waves. The devil is in the details and they should not be allowed to clutter the mind of the commander. On the day a battle is planned the commander has to focus and take on too many diverse tasks so that we will not overlook matters essential to the battle itself¹⁶²². De Saxe claimed that "on the day of the battle, I should want the general to do nothing. His observations will be better for it, his judgment will be more sane, and he will be in better state to profit from the situations in which the enemy finds himself during the engagement."¹⁶²³

In the agrarian age there should have been no other considerations in his mind, only an inspection of the troops and issuing quick orders for the battle formations and how and when to carry out the attack.¹⁶²⁴ This freedom from being preoccupied and overwhelmed with details would optimally release his intellect to make better observations and judgements of situations during the engagement itself. Fuller attributed much of the success of Caesar to such an ability to detach himself not only from the moment itself but also intellectually and emotionally from anything else than the battle itself.

"His clear-sightedness, which amounted to intuition, was largely due to his mind being undisturbed either by recollections or by expectations, and to the fact that he was seldom led away by illusions concerning the abilities of men or the appearance of events. He was a supreme opportunist, whose self-confidence, combined with his faith in his fortune, his audacity and his subtlety, enabled his to take chances unimagined by others."¹⁶²⁵

The commander needs to be free to lead and direct the conduct of operations and make the biggest and most important decisions. Administrative issues should not bother him. "The general must devote his best efforts to the resolution of the main questions, to subduing inevitable doubts, and to assuring absolute clearness of view. It is not wise to take upon himself too much of the details of execution, a fault to which small minds are very much inclined."¹⁶²⁶ This does not require a military genius, but a mind of strong resolution. It is only natural for a mind to start to ramble since the big decisions are complex and intangible. Therefore to descend mentally to the level of details is often almost automatic for the Third Wave commanders as well because they can be comprehended and managed easily.

There is no doubt that the commander-centric method of decision-making will prevail in the future in some degree. The shape of the staff structure is less certain. The Napoleonic staff was relatively small and nimble, allowing for quick action. The current staffs of Western coalition forces are bloated to the utmost and the friction their sheer size inserts into the decision-making cycle makes them inefficient. The heavy hierarchy and bureaucracy was an offspring of the indust-reality that needed its hordes of coordinators and managers. Bureaucracy was an answer to how "the flow of decisions could be accelerated to keep up with the faster pace of life brought by industrialism."¹⁶²⁷ In discussions of network-centric warfare there seems to be a tendency to lean to favor less hierarchic and rather parallel command structures that signifies a mental gearshift towards the Third Wave.¹⁶²⁸ Some theorists advocate growing the size and complexity of headquarters in the future in accord-

¹⁶²² Leo VI (2010), p. 291.

¹⁶²³ De Saxe (1944), p. 118.

¹⁶²⁴ De Saxe (1987), p. 295.

¹⁶²⁵ Fuller (1965), p. 50.

 ¹⁶²⁶ von der Goltz (1906), p. 46.
 ¹⁶²⁷ Toffler (1990b), p. 143.

¹⁶²⁸ Alberts et. al. (2000).

ance with the supposed requirements of the Information Age – since there is more information available, more people are required for information management with increasingly complex technological tools. One of these is Leonhard who argued that "*technology will serve to harness information and arrange it to be of use to the commanders. But as technology of war becomes even more complex, military staffs need to adapt - and sometimes grow - in order to accommodate it.*"¹⁶²⁹

Bureaucratic command structures are ideal to solving routine problems and churning out administrative decisions at a preset pace according to the principles of industreality. The acceleration of pace and corresponding compression of time coupled with nonroutine problems are likely to push a bureaucratic system into at best a halt, or, at worst, utter chaos.¹⁶³⁰ The problem is that rapid change brings about the need to make more decisions. Every situation is more complex than the one preceding it and requires more information in order to solve the problem. A novel problem is far more difficult to resolve than one that has been encountered numerous times before, but altered duration alters the situations and their problems as well. The demand for more information and the necessity to analyze it in shorter time than ever coupled with emergent problems create a vicious cycle that spins out of control and finally jerks to a stop when its metaphorical ball-bearings cannot handle the speed of rotation. "It is this combined demand for more information at faster speeds that is now undermining the great vertical hierarchies so typical of bureaucracy."¹⁶³¹

It becomes necessary at a certain point to slow the acceleration of the decision-making cycle. Since it is fed by compression in duration and the need for more data input and output in form of refined information, the speed is self-accelerating. Either many information-related processes, such as analysis, have to be automated or computerized or a completely new way to manage the decision-making cycle invented. Toffler proposed the adoption of a new organizational system for the Third Wave to supplant bureaucracy and called it "*ad-bocracy*".¹⁶³² He meant this to be "*the fast-moving, information-rich, kinetic organization of the future, filled with transient cells and extremely mobile individuals*."¹⁶³³

Such an organizational command-structure may be demanding to create within the military. Besides, while it would bypass much of the bureaucracy and streamline the chain on command, it would not release the burden from the commanders themselves. No matter how well the staff prepares briefings and possible courses of action and proposes ready-made options for the commander to choose from, the responsibility for the decision ultimately rests on his shoulders. No matter how simplified the choice is, it still has to be made, and if it becomes too simplified, the realm where the *coup d'oeil* of the commander can be employed diminishes and the reason why the commander has been designated the command in the first place becomes meaningless. Be the task we discuss mental or physical, there is always a speed above which it cannot be humanly accomplished. This "top speed is often imposed by mental rather than muscular limitations. (...) the greater the number of alternative courses of action open to the subject, the longer it takes him to reach a decision and carry it out."¹⁶³⁴ We seem to be currently attempting to push the barrier of speed further and further lingering to the spirit of indust-reality and in the process inadvertently end up severely decimating the quality of the decisions that our decision-making cycle can produce.

Having arrived at the limits of what is humanly possible it is logical to discuss the aides of planning that the information age offers to operational artists. The first and foremost one is the computer both as a tool and as something to which certain and strictly specified parts of the process can be 'outsourced' to. We can use an analogy and argue that for Napoleon the staff officers of his day were what computers are to us today. They were more or less reduced to machines that created the output required from them on com-

¹⁶²⁹ Leonhard (1998), p. 199.

¹⁶³⁰ Toffler (1990b), p. 139.

¹⁶³¹ Ibid.

¹⁶³² Toffler (1990b), p. 125.

¹⁶³³ Toffler (1990b), p. 144.

¹⁶³⁴ Toffler (1990b), p. 353.

mand. Napoleon's idea of centralized decision-making in practice limited the freedom of staff officers to use their powers of reasoning. However, in time more and more responsibility and even demand for taking the initiative and making decisions was delegated to staff officers. What is the role of the unthinking computers of the Third Wave? Vego argues that

"today's trend of increasing reliance on computers as aids to planning is fraught with potential dangers. While the network of computers can considerably reduce the time needed to carry out routine planning tasks, it cannot replace the human mind and the skills and experience of operational commanders and their staffs."¹⁶³⁵

Expressions such as "routine planning tasks" sound very much like those tasks that Napoleon seemed to consider to be beyond the scope of his staff officers. While I fundamentally agree with Vego that overt reliance on computers in planning tasks of today is a dangerous fallacy, the advances in their computing capacity, ability to solve more complex dilemmas and, perhaps, one day, even acquired artificial intelligence might yet raise the future computers into the roles of some of the staff officers today. Instead of staff officers using the computers, the latter might one day turn out to be the co-workers of the former. No matter how well a computer can calculate all eventualities in the future warfare, the human commander will always have the chance to provide the game-changer of intuition into the equations while retaining the importance of operational art.

7.2. AUFTRAGSTAKTIK AS ACCELERATED DECISION-MAKING

"If there is one assertion in this book that my whole experience, research and reason tell me is beyond dispute, it is that manoeuvre theory can only be exploited to the full by the practice of directive control (Auftragstaktik) in the full German meaning of the that word."⁶³⁶

As we have progressed from agrarian warfare into what the outlook of war is today through every change in tactics and weapons technology one thing becomes clear. In achieving victory the importance of time grows and more and more intellectual effort is required from many more members of the troops and staffs. If we look at the citizenarmies of ancient Greece, the citizen-soldier basically mindlessly did what he was told to do. Much of the decision-making rested on the shoulders of the commander-in-chief. In the agrarian age occasionally all even he had to do was to determine the battle formation and order the attack. If he had cavalry at his disposal, another decision was where and when to employ it. Once the use of reserves became part of the operational art, another decision-making point emerged. Napoleon claimed that in every battle there is moment when its tide can be turned and victory stolen. As warfare has evolved I argue that the number of such points has grown while perhaps the relative importance of each individual point has waned in turn. Liddell Hart argued that

"battle has become a serial process composed of momentary minor opportunities, and the exploitation of these naturally tends to turn even more on a general superiority in minor tactics among the junior leaders than on the major tactics of the generals – except on the highest levels, where strategy is called for, and where a bad strategical decision can undo a tactical advantage.

In other words, a battle has become a team-game on the largest scale, in which the junior leaders are players, not pawns. 'Theirs not to reason why, Theirs but to do and die', is an out-of-date conception, and it is time that we gave full recognition to the implications of the change. The junior leaders have always borne the brunt of war, and do so still; but their intelligent initiative, and its cultivation, have now become vital factors in determining the issue.''¹⁶³⁷

¹⁶³⁵ Vego (2009), p. III-25.

¹⁶³⁶ Simpkin (1985), p. 53.

¹⁶³⁷ Liddell Hart (1950), p. 315.

Battles are no longer clashes of two phalanxes that can last a maximum of a few hours before exhaustion sets in. Now they last for days, perhaps weeks and in this longer timeperiod more *kairos*-moments can be found. Simultaneously the growth of the battlespace and dispersion of the troops with the requirement on concentrated fires has made it impossible for the commander-in-chief to control it. As battles may occur throughout the theatre the boundary of tactical and operational space and time are blurred. Therefore, lower-level commanders have to make decisions that influence the result of both the battle and the operation. Numerous choices made at different times create a more complicated form of battle and more of the praise or blame for victory belongs to junior leaders. The operational commanders are somewhat expelled from battles and their leadership should focus on operations. Junior leaders win or lose battles and hopefully offer victories for the operational level commander to be combined into an operation.

The German invention of *Auftragstaktik* and the increased responsibilities of junior commanders did not emerge from nowhere to suddenly revolutionize warfare. In one of his predictions of the character of future warfare Bloch claimed that it was normal evolution of the art of war that "of necessity the directing power must pass from the hands of the older commanders, not to speak of generals—from the hands of colonels and even commanders of battalions—into the hands of captains."¹⁶³⁸ This was a logical phase in evolutionary process that had started in the antiquity. As soon as the rigid phalanx formations and their intellectual offspring in any form of closed formation became obsolete, soldiers were required to use their initiative and make decisions themselves.¹⁶³⁹ Ardant du Picq wrote that battles,

"now more than ever, are battles of men, of captains. They always have been in fact, since in the last analysis the execution belongs to the man in ranks. But the influence of the latter on the final result is greater than formerly. From that comes the maxim of to-day: The battles of men."¹⁶⁴⁰

Even if soldiers and lower rank of officers bear more of the burden for decisions and actions in contemporary battles and to a larger degree play a role in their outcomes, the one who is still seen as responsible for winning or losing the battles and operations is their commander. One must not conceive of Auftragstaktik as a method of command specific to the tactical level. Indeed, the lower down the military hierarchy we descent, the less room there is for applying it. A company commander has to give highly detailed tasks to his platoon leaders. The commander-in-chief hopes to get only the order to win the war and freedom to choose how to do it. The operational level commanders "must always be fully acquainted with the strategic situation from which the action develops, the general and guiding plan of action must be briefly communicated to them. They must have learnt to understand from a few tersely coined words the idea and the will of the supreme commander. They must, however, not receive this will in the form of an order, but as a task, leaving them full liberty in the choice of the means for its execution."¹⁶⁴¹ In operational art Auftragstaktik is a huge asset, since freeing the tactical commanders to do what they deem best in order to play their part in attaining the operational objective is likely to create a flexible operational plan. Yet there is no doubt who is responsible for a victory or loss. Napoleon claimed that the general

> "is the head, he is the all of an army. The Gauls were not conquered by the Roman legions, but by Caesar. It was not before the Carthaginian soldiers that Rome was made to tremble, but before Hannibal. It was not the Macedonian phalanx which penetrated to India, but Alexander."¹⁶⁴²

¹⁶³⁸ Bloch (1914), p. 38.

¹⁶³⁹ It actually seems like another cycle within warfare is whether one should fight in an organized manner in formations or in a disorganized manner. There have been periods, most notably the Middle Ages during which formations practically disappeared from the battlefields. See e.g. Delbrück (1990c), p. 240.
¹⁶⁴⁰ du Picq (1987), p. 128.

¹⁶⁴¹ Bernhardi (1914), p. 107. Initially this quotation concerned cavalry, but as the mechanized troops who further developed the practice of *Auftragstaktik* were direct descendants of the cavalry formations, they abided partially to the same ways of thought.

¹⁶⁴² Napoleon, cited in Fuller (1960), pp. 281-282.

This idea was echoed by Foch who agreed that "*history is therefore right in making generals re-sponsible for victories - in which case they are glorified; and for defeats - in which case they are disgraced.* Without a commander, no battle, no victory is possible."¹⁶⁴³ The responsibility delegated to junior commanders is always temporary. It is offered when they are trusted and accepted when they trust themselves. In all their initiatives they execute the will of their commander by attempting to fulfill their commander's intent to the best of their abilities. It is the commander who ultimately bears the burden or wears the laurel. This is why his intent is the heart and soul of every military plan.

The required end-state in time and space is the focal point from which all planning begins. Therefore, in planning how an operation is to be conducted the end sets all time limits and planning moves regressively toward the present to determine the intermediate objectives to be reached within determined time limit to fulfill the final objectives. Even in those situations when a plan has not been finalized in advance and one is forced to react to an utterly new situation while time is of essence, as von der Goltz wrote, "though the time before the beginning of decisive movements preceding a battle is often very short, there will always be a few spare minutes in which to express the intention of the commander-in-chief in a sentence or two with clearness and precision."¹⁶⁴⁴ Time can be spent wisely just as well as it can be saved stupidly. No matter how little time is available, the commander's intent must be made clear so that the subordinate commanders can fathom his objectives and let these guide their own battle plans. The primary temporal focal point in operational art thus stems from the commander and the expression of what he wants to accomplish and when. This is a prerequisite for adoption of any form of *Auftragstaktik*. Subordinate commanders are given freedom of action and responsibility for their part in the fulfillment of the objectives.

To help subordinate commanders understand their role and tasks and yet allow them free hands in deciding how the tasks should be carried out, the objectives must be given them as guidance. As von der Goltz wrote, "the intention of the commander-in-chief is the only guide regarding the conduct of subordinate commanders, if an order cannot be carried out in the way intended. It must therefore be made known to them with unmistakable clearness."¹⁶⁴⁵ Auftragstaktik is not so much an innovative idea of dispersing command and responsibility but rather something that grew out of necessity to counter the chaos and complexity of the battlefield where it may be impossible to contact the subordinate commanders during the battle. Bernhardi wrote how "troops have to rely, as long as the action lasts, solely on what they knew about the object of the action and the co-operation of the various units before the battle began. This is overlooked too often."¹⁶⁴⁶ Foch argued that

> "to command, in the sense implied by the extension of modern battle, can only consist, for the commander-in-chief, in clearly determining the result to be aimed at, the general function ascribed to each subordinate unit in the operation undertaken by the whole of the forces; at the same time such a determination must leave the subordinate chief entirely free to choose the means which have to be used in order to reach, in any particular case, the result demanded, and that in spite of adverse circumstances which cannot be foreseen in advance."¹⁶⁴⁷

The essence of *Auftragstaktik* is written here in its entirety even prior to the experiences of WW I. The commanders did not have the time to be in every place in time to make all the necessary decisions. They delegated their authority to make decisions. There are two distinct ways to do this. Svechin illustrated the difference between them when he argued that

"a commander may indicate his decision to his subordinates either in the categorical form of a battle order, which indicates the situation in which it will be carried out, or in the form of a directive limited to a statement of the goals of operations for the next few days, which pro-

¹⁶⁴³ Foch (1920), p. 288.

¹⁶⁴⁴ von der Goltz (1906), p. 61.

¹⁶⁴⁵ Ibid.

¹⁶⁴⁶ Bernhardi (1914), p. 104.

¹⁶⁴⁷ Foch (1920), p. 172.

vides the executor with a great deal of freedom in choosing methods of achieving them."¹⁶⁴⁸

Needless to say, the idea inbuilt into *Auftragstaktik* is evidenced by the latter option that endows the subordinate commanders with freedom in contrast to the binding battle orders. Expressions change, but the essence of this particular method of command remains. The commander voices his intentions for the outcome of the battle, telling his subordinates what he wants to achieve with his operation. Then he describes the role each unit plays in the whole and assigns to them the task they are required to perform. With the goal thus given, the subordinate unit commanders are given free rein to reach their objectives. True speed of action and mobility can only be gained by creating a command structure and a method of leadership that supports them. If even relatively minor decisions have to come from high up the command chain and only slowly dribble down to the tactical level, there can be no continuous flexible and above all adaptive movement of troops according to situational demands. Von der Goltz argued that

"if an army cultivates the habit of only doing what is ordered, its movements are bound to be somewhat jerky and intermittent. It will experience an interruption on each occasion of unforeseen circumstances occurring, because all concerned will first await the orders of the higher commanders."¹⁶⁴⁹

Auftragstaktik was designed to answer to just this particular need to enable mobility and onthe-spot decision-making. It is impossible to say which came first, the full blooming of the idea of Auftragstaktik or the new motorized and mechanized mobility. Both are dependent on the other and act as both a cause and a result of the other. Mobility led to development of a new way of command and control out of the existing practices and this in turn enabled better exploitation of mobility. To highlight the interconnectedness of mobility and Auftragstaktik it has to be stated that tactics, technology, and materiel have to support each other. Svechin noted that different forms of command suit different tactics.

> "Positional warfare allows for much greater centralization of command than does maneuver warfare. Hence it is not surprising that as a result of the four-year Sitzkrieg there was a definite trend in favor of command by order, which before the war seemed to be a completely obsolete method of strategic or even operational leadership."¹⁶⁵⁰

In WW I with its rigid fronts command could be just as rigid. Since movements of the troops were minimal, it was easier to write orders that remained valid for longer periods of time. As we saw earlier, the development from this aptly named "*Sitzkrieg*" to *Blitzkrieg* was rapid and the mobility of the troops placed different and increasing demands on the commanders. Mobility was the result of new technology and as Freytag-Loringhoven wrote,

"Combat is always dependent upon the material of the time, and hence methods used by the German Army leaders in 1870 would be inapplicable today (1911). The policy of allowing maximum initiative to subordinates which they established, however, should always be kept in mind."¹⁶⁵¹

Seen from this perspective, it becomes clear that the form and actual shape of the command and control depends to a large extent on the equipment available. Wireless communications enabled relaying orders in a different manner than having to use soldiers as messengers did. The pace of mobility of mechanized armies made it impossible for the commander-in-chief to be physically present everywhere at the right time. The essential result of applying *Auftragstaktik*, however, almost amounts to the same. Wherever the commander may be at any given time, if he is not at the place where action needs to be undertaken, the decision rests on the subordinate commander on spot. The idea of providing "maximum initiative to subordinates" is the omnipresent facet of *Auftragstaktik* and it is much older than *Blitzkrieg* itself. As Manstein described the meaning and especially the outcome of accepting *Auftragstaktik* and a means of command and control,

¹⁶⁴⁸ Svechin (1992), p. 317.

¹⁶⁴⁹ von der Goltz (1906), p. 226.

¹⁶⁵⁰ Svechin (1992), p. 328.

¹⁶⁵¹ Freytag-Loringhoven (1991), p. 216.

"in the German Wehrmacht it had been found possible, with the help of the new means of warfare, to reacquire the true art of leadership in mobile operations. Individual leadership was fostered on a scale unrivalled in any other army, right down to the most junior N.C.O. or infantryman, and in this lay the secret of our success."¹⁶⁵²

All commanders abiding to *Auftragstaktik* must be given freedom of choice on how to attain their objectives. There are always alternative means of action and one should be able to choose the most effective for his purposes. To properly use armored troops, Guderian argued, was to give them the ticket to the final destination at once. In the case of attack on France the very last 'railway station' for Guderian's troops should have been the coast of the Channel. Even if the chain of command gets severed, everyone knows the penultimate destination and can work independently to reach that goal.¹⁶⁵³ The somewhat forgotten lesson of WW II was simply that the speed of mechanized forces created tactical and operational conditions,

> "in which time is fleeting because movements are rapid, command must be far more decentralized than it has been in the past, in order that the actions of subordinate commanders may be immediate. Therefore co-ordination should be sought through general idea rather than through rigid adherence to plan, velocity largely replacing method; but, nevertheless, velocity regulated by a common aim, which is clearly understood by all concerned."¹⁶⁵⁴

Directly after WW II the winners were not ashamed of learning from the Germans the principles of the tactics they had had to counter. Simpkin described how officers of the Bundeswehr attempted to explain the meaning of Auftragstaktik and lamented that it was translated as "mission type control."1655 This led to certain amount of confusion mostly due to the Anglophones' inability to grasp the subtleties of German and discover the deeper meaning. The 'mission' of the German officers was not a detailed task but closer to what is called 'commander's intent' today. The subordinates were to understand that their mission was to "take immediate action in accordance with the superior commander's thinking' in the absence of a set task."1656 Since there was no clear order of all the tasks the subordinate was supposed to take, but only directive of what was to be accomplished Simpkin re-translated Auftragstaktik as "directive control", arguing that the contrast of directive against an order reflects the spirit of Auftragstaktik.¹⁶⁵⁷ This difference is no longer as clear in established military jargon, since for example Vego defined directive as "an overarching term for all the plans, orders, and instructions."1658 The task of the directive is, indeed, to be "the means by which the commander's will or intent is made known to others"²¹⁶⁵⁹ but by definition it encompasses so many different methods of relaying the commander's intent ranging from oral to written orders that I will rather use the original expression for the purposes of clarity. Along these pages unless specified differently the expression 'Auftragstaktik' does not necessarily refer to the German version of it, but a more generalized application. As Simpkin described the gist of Auftragstaktik,

> "a commander must regard his superior's intention as sacrosanct, and make its attainment the underlying purpose of everything he does. He will be given a task of his own, and be told the resources he has to carry it out and any constraints on how he does so. Within this framework his plan will be a matter for discussion upwards, sideways and downwards if time allows; but it will not be made for him."¹⁶⁶⁰

This argument of the commander's will as sacrosanct to his subordinates just stands as further justification that the 'mission' of the first translation is quite descriptive. A subordi-

¹⁶⁵² Manstein (1982), p. 63.

¹⁶⁵³ Guderian (1956), p. 88.

¹⁶⁵⁴ Fuller (1948), p. 55.

¹⁶⁵⁵ Simpkin (1985), p. 228.

¹⁶⁵⁶ Ibid.

¹⁶⁵⁷ Simpkin (1985), p. 229. Other expressions include "mission command" and "flexible command." See e.g. Finkel (2011), pp. 101-102.

¹⁶⁵⁸ Vego (2009), p. IX-11.

¹⁶⁵⁹ Ibid.

¹⁶⁶⁰ Simpkin (1985), p. 231.

nate commander is given a task and a time frame in which it has to be accomplished and the resources at his command. These are his constraints and simultaneously his enablers to carry out the given mission. Just as long as the will of the commander concerning the eventual outcome is taken care of and additional constraints adhered to, the subordinate has free hands to define the task for himself. He can even modify the task he received "without referring back, if he is satisfied that further pursuit of that aim would not represent the best use of his resources in furtherance of his superior's intention."¹⁶⁶¹ The most important aspect of *Auftragstaktik* is freedom of thought. This requires mutual trust and respect among the officers, leaving the subordinate free to act even against directives, if he is sure that his actions will support the intent of the commander. Svechin noted that

> "directives decentralize commands to a great extent; this will do no harm if there are no centrifugal tendencies in a high command and if there is a general staff which has been indoctrinated to understand the art of war in the same way and is prepared to do battle against parochial interests everywhere."¹⁶⁶²

To be able to give freedom to another requires a high level of mutual trust. Trust cannot be built up without respect. Respect can only exist among an officer corps that at the same time thinks alike and has full independence of mind and thought with a willingness to harmonize thinking through the entire chain of command. This trust is meticulously built during a time of peace, but is evidenced in time of war. When everyone is able to act according to his relatively unrestricted free will for a common purpose coherence of action can only be maintained through communication of information. This took two forms, immediate and full reporting of actions up the chain of command and free, active discussion of the task down the chain of command and horizontally among the same level commanders. Only then can commanders unify their activity and aim for harmonization. Discussion between levels is crucial and has to be abundant between five levels in the chain of command; two levels up and two down.¹⁶⁶³ The only restrictive factor to the amount of this communication is time. The commanders should use all the time at their disposal to discuss and share ideas, intentions and information. However, no extra time is provided for this. There has to be discussion and it has to be continuous but the main limit for its extent and scope is temporal. If the intention of the commander calls for rapid action, time for discussion between levels is drastically shortened. Patton instructed that

"army orders should not exceed a page and a half of typewritten text and it was practice not to issue orders longer than this. Usually they can be done on one page, and the back of the page used for a sketch map. [...] Orders must be issued early enough to permit time to disseminate them. Never tell people how to do things. Tell them what to do and they will surprise you with their ingenuity."¹⁶⁶⁴

In order to save time more emphasis should be laid on the formulation of orders. Our orders today span hundreds of pages and thus take longer to write, and even longer to be properly interpreted and understood. This lost time could have been spent elsewhere. That is, the ones actually about to carry out the orders should have sufficient time for planning the details of execution. The lower down the hierarchical ladder we go, the more detailed problems emerge.

> "In the future much more must be left to the initiative of the individual than in the past. Though the central idea must be maintained, actions should be as flexible as possible. Reports must be as brief as possible and should always, when possible, suggest actions. [...] Time, time, and the saving of it, should be the soul of every order and instruction, of every report and of every message."¹⁶⁵

¹⁶⁶¹ Simpkin (1985), p. 232.

¹⁶⁶² Svechin (1992), p. 328.

¹⁶⁶³ Simpkin (1985), pp. 233-239.

¹⁶⁶⁴ Patton (1947), p. 357.

¹⁶⁶⁵ Fuller (1943), pp. 158-159.

The longer an order is the more time has been spent in its formulation. Every literary product of an army has to be reduced to its bare minimum so that they convey only the necessary message and no more. Once the orders, instructions, and communiqués are shortened, time is saved in their formulation, assimilation and execution. By creating these 'compressed' orders, one saves time by reallocating saved time within his own process of leadership to be used where it is likely to be more productive. Ultimately Fuller argued for the same goals when he wanted to save time in the drafting and issuing of orders.

"All orders will have to be as brief as possible, and not as formal as possible. They should be based on a profound appreciation of possibilities and probabilities, which, as I have explained, will generally lead to a series of alternatives. Therefore an order should not be suited to one operation but to several possible phases of this operation. It should possess a central idea and several radii working out towards the final circumference – victory to you and defeat to the other-man."

While the commander-in-chief is still the axis war revolves around, the requirements of timely action force the necessity of making bigger and bigger decisions on his subordinates. Nevertheless, the principle of unity of command and the ideas and practice of *Auftragstak*-*tik* have to be effectively combined and I agree with Vego in his claim that

"the main requirements for the sound functioning of a command organization are centralized direction and decentralized execution, a high degree of jointness, and interoperability. Centralized direction and decentralized execution are two of the principal prerequisites of successful command and control of one's combat forces. Centralized direction is the key prerequisite for ensuring unity of command. Optimally, it should be applied at all levels of command, from the national-strategic level to the theater and tactical levels."¹⁶⁶⁷

Auftragstaktik should not be misinterpreted as giving totally free hands for the subordinate commanders to do whatever they want and however they want. They are given freedom to use their intellect and initiative but they must abide strictly by the commander's intent. Simultaneously they are robbed of that blessing of simple minds to just obey orders. Freedom is actually more demanding of them than traditional method of detailed orders. As Svechin observed, "command by directives offers great advantages but also poses great dangers if the commanders are unsuitable."¹⁶⁶⁸

The smooth operability of the system of command can be ensured only when command is interpreted as direction given in a centralized manner to the subordinates among whom execution is decentralized. After all, this follows the idea of the unity of command being in the hands of one person and still allows wider range of tools in execution. Centralized direction is an essential element for proper coordination of the efforts and objectives of command forces. It requires making a decision concerning division of responsibilities. My argument is that centralized direction does not have to decrease the freedom of subordinate commanders to take independent action if decentralized execution is carried out by the best practices of *Auftragstaktik*. Vego wrote that

> "to enhance coordination and control over subordinate forces, it is necessary to centralize information gathering and decision making. Centralized direction limits to some extent subordinate tactical commanders' freedom of action, but the result is improved command performance. Highly centralized command and control allows the operational commander to make decisions that are better—based on more complete information, obtained from more sources—than those made in a decentralized system."¹⁶⁰⁹

The point I wish to make in contradiction to Vego is that the freedom of action of subordinate commanders does not have to diminish at all with centralized direction. Always throughout history the commander-in-chief has been responsible for everything and this does not change. As Svechin described command by directives, "*a military leader cannot hold*

¹⁶⁶⁶ Ibid.

¹⁶⁶⁷ Vego (2009), p. VIII-8.

¹⁶⁶⁸ Svechin (1992), p. 327.

¹⁶⁶⁹ Vego (2009), p. VIII-8.

*back in a crisis on the front; a directive should in no way be a form of silence or avoiding responsibility.*²¹⁶⁷⁰ In this system he (and every other commander in relation to their own subordinates) still keeps the responsibility and the power of control but does it through directives giving guidance and his intent, which the subordinates have to perceive of as almost holy writ. Everyone is compelled to work toward fulfilling that intent. *Auftragstaktik* follows the principle that the one who carries the responsibility to fulfill the task must be allowed to choose freely the methods he wishes to use.¹⁶⁷¹

Vego fully understands the potential of combining centralized command and decentralized execution and, even more importantly, understands the opposition likely to arise from senior ranks toward such an idea. As Strachan noted with the case of the Britain in the World Wars, "the army preached decentralization but practiced control."1672 The natural anproach of most military leaders is to wish to remain directly in charge of everything and not to allow his juniors free hands just in case they might make mistakes. This seems to be a way of thought ground deeply in the military subconscious. Therefore, Vego makes propositions intended to make adopting such ideas easier. Unfortunately his logic is occasionally contradictory with the principles of Auftragstaktik. As an example is the argument that "in such an arrangement the operational commander possesses a much greater ability to supervise the actions of subordinate tactical commanders, ensuring that their actions are in consonance with his intentions and directives."¹⁶⁷³ If Auftragstaktik is properly employed the "ability to supervise" is unnecessary. Officers can understand orders, even when they are called 'directives' and 'intent.' It is clear to everyone in the chain of command that if a subordinate does not perform on the level his commander wants to attain what the commander's intent dictates, he is relieved of his command and replaced by a better officer.

Of course employing *Auftragstaktik* is not always an option open to the commanders. To quote Svechin again, "*command is a matter for tact and an understanding of human psychology. Some subordinates need and deserve freedom, while others need to be on a tight leash, while still others, who may be great and necessary people, will fly off the handle and have to be persuaded*."¹⁶⁷⁴ It requires skill from the commander to find the proper limits of what must and must not be ordered to subordinate and the character of the latter has to be considered.¹⁶⁷⁵ First one needs suitable people as links in the chain of command and then the chain itself must be made flexible. While metaphors about the chain of command seem to refer to an iron chain which is just as strong as its weakest link, the demand of situational adaptiveness calls for qualities of a rubber band. In the words of Vego,

> "command organization is flexible when it can expand or contract with changing conditions without serious loss of effectiveness. Organizational flexibility is achieved by decentralizing command and control, delegating specific and well-defined functions and responsibilities, and rapidly deploying forces to meet specific situations."¹⁶⁷⁶

Decentralization of command and delegating authority seem to be at odds with each other on conceptual level in the minds of many military thinkers. Command should always be centralized and follow the organizational hierarchy in terms of responsibility, but authority to make decisions can and should be delegated to trusted subordinates when they are in a better position to decide. Leonhard is absolutely right when he writes that "for command to operate effectively, the levels of decision making and information flow must be coordinate. That is, the movement of battlefield information should determine who makes the decisions."¹⁶⁷⁷ This is in harmony with the tenets of Auftragstakitik. While Leonhard fails utterly is in his further argument

¹⁶⁷⁰ Svechin (1992), p. 328.

¹⁶⁷¹ Seeckt (1930), p. 45.

¹⁶⁷² Strachan (2011), p. 117.

¹⁶⁷³ Vego (2009), p. VIII-8.

¹⁶⁷⁴ Svechin (1992), p. 330.

¹⁶⁷⁵ Bernhardi (1914), p. 113.

¹⁶⁷⁶ Vego (2009), p. VIII-13.

¹⁶⁷⁷ Leonhard (1998), p. 201.

that "*authority must follow information*"¹⁶⁷⁸, there is no denying that information flows and their management is one of the most important and demanding tasks on the Third Wave battlespaces. The relationship of information and command has to be well defined. In contrast to Leonhard, I suggest that information must be directed towards authority and command. According to Leonhard, what enabled *Auftragstaktik* to function, while he questioned its universal applicability, was that it

"adjusted authority to bring it in line with the state of information flow. When the tempo of information flow gives subordinates a more accurate and timely view of the battlefield, then they should have decision-making authority that is commensurate with that information. When, on the other hand, the higher headquarters has the information faster, decision-making authority should be centralized."¹⁶⁷⁹

This goes against the most basic principles of military leadership. The bloated staffs and the plethora of C3 technicians and knowledge managers involved in Information Age warfare must be able to control and redirect the information flows so that they converge in a manner most suitable for the commanders. If the flow of information concerning tactical level is channeled first to the strategic level the danger of micro-managing war is a real threat. Information must reach the ones who are expected to make the decisions based on it and not disseminated to everyone in the chain of command.

This is not to say that there would be no chain of responsibility and no guidance from above. Yet the guidance should not even remotely resemble what Foch ordered, namely that "*The day's programme remains unchanged: attack everywhere, push forward everywhere.*"^{A680} Orders and guidance should have clear goals. All the way up the chain of command every commander is responsible for his actions and even the commander-in-chief has his master; the statesman. Each and every person in the chain of command from the squad leader all the way to the political masters of war has to understand properly their role in making decisions. Even if Leonhard claims that "*the greater the knowledge of the higher headquarters, the more it can and should effectively employ command*,"¹⁶⁸¹ everyone in the chain of command should make only the decisions expected of him and not trespass into the responsibilities of his subordinates. Everyone has his allocated responsibilities and should be concerned with them.

7.3. BRAIN AND BRAWN - INTELLECT VERSUS ENERGY IN WIN-NING TIME

"So, as a prince is forced to know how to act like a beast, he must learn from the fox and the lion; because the lion is defenceless against traps and a fox is defenceless against wolves."¹⁶⁸²

It is suitable here, after a discussion on German *Auftragstaktik*, to introduce the idea of competition in operational art between intellect and imagination on one hand and energy and determination in in the other hand by comparing the Germans to the Soviets who had a completely different perspective on the flexibility of the chain of command. "*The Red Army must be strictly brought up in the spirit of firm control, not independent command.*"^{A683} In Soviet art of war the emphasis was on carrying out orders unflinchingly. As Leonhard put it, "*initiative is neither called for nor permitted. Execution is everything, the hallmark of a great Soviet command-er.*"¹⁶⁸⁴ Both countries were effective with their respective forms of maneuver warfare, but

¹⁶⁷⁸ Ibid.

¹⁶⁷⁹ Ibid.

¹⁶⁸⁰ Foch (1931), p. 91.

¹⁶⁸¹ Leonhard (1998), p. 260.

¹⁶⁸² Machiavelli (2003), p. 57

¹⁶⁸³ Tukhachevsky, cited in Simpkin (1987), p. 98.

¹⁶⁸⁴ Leonhard (1991), p. 53.

the perspective of command and control was completely different. While Germany decentralized authority to make decisions, the Soviets centralized it to the extreme. Soviet maneuver warfare did not depend, then, "upon opportunity and the initiative of subordinates, but rather upon the ability of the commander to impose his will violently and relentlessly upon the enemy regardless of the opposition."¹⁶⁸⁵ We cannot justifiably claim that one method would use intelligence more than the other or that one would be more energetic than the other. Both approaches to command and control of maneuver warfare require intellect, imagination, energy and stubborn determination to triumph over the enemy. What they differ in is the moment in time when these qualities exhibit themselves and the level of warfare. In the words of Tukhachevsky, "any suggestion of the exercise of independent command by junior commanders is unacceptable. Not knowing the general situation, junior commanders are always liable to take decisions incompatible with it; and this may engender a catastrophe."¹⁶⁸⁶ In the Soviet version of detailed control intellect is employed prior to the battle in painstaking planning of operations. The peak of intellectual activity for the Soviets is

"preparation before the fight begins, as discussed earlier. It is precisely at the same time (i.e. before the fight begins) that they show their imagination, flexibility, and dash. Their system of in-depth reconnaissance, massing of assets, rehearsals, security operations, and deception techniques all reveal energetic, innovative leadership. But after the operation begins, the Soviets are typically married to the plan. After they cross the line of departure, there is great pressure upon the Soviet commanders to conform to the plan. Opportunity recedes into less significance than momentum and tempo."¹⁶⁸⁷

The Germans, on the other hand, initiated their operations with short and general orders and directives and relied on the commanders' ability to be innovative and energetically search for opportunity to be exploited. In other words, there are two places where one can win time in command. One is planning and the other is in decision-making. Likewise, there seem to be two types of soldiers with their characteristic approaches. One uses the intellect, like Moltke, Suvorov or Napoleon, and the other inexhaustible energy like Patton, Rommel or Guderian.

Von Seeckt argued that at the heart of warfare is the concept of action. It is divisible into three stages; the decision to act which had been given birth by thought and analysis, the preparation of the actual act and the execution of the chosen action. In all stages action is subordinate to the will. The will is born out of character and it is in turn more crucial than the spirit. The spirit without the will is worthless and the will without the spirit outright dangerous.¹⁶⁸⁸ To win time requires people who can combine will, spirit, intellect, thought, analysis and energetic execution into one. We need not only thinkers or doers but people capable of both and acting without any loss of time. This dual nature of the need to simultaneously plan with perseverance and intellect and then to execute the plan with will, energy, and determination is summarized by Jomini who argued that

"two very different things must exist in a man to make him a general: he must know how to arrange a good plan of operations, and how to carry it to a successful termination. The first of these talents may be a natural gift, but it may also be acquired and developed by study. The second depends more on individual character, is rather a personal attribute, and cannot be created by study, although it may be improved."¹⁶⁸⁹

Simultaneously with Jomini his archrival Clausewitz argued that "among all the military virtues, the energetic conduct of war has always contributed the most to glory and success."¹⁶⁹⁰ There is a dualistic

¹⁶⁸⁵ Leonhard (1991), p. 54.

¹⁶⁸⁶ Tukhachevsky, cited in Simpkin (1987), p. 97. However, Tukhachevsky was predisposed towards *Auftrag-staktik* and this is evident in the text of "*PU-36*", a temporary Red Army field doctrine he produced. See Lalu (2014), pp. 115-116. Perhaps the reason lie in the words "*not knowing the general situation.*" If the junior commanders knew it, they could make decisions based on it.

¹⁶⁸⁷ Leonhard (1991), pp. 54-55.

¹⁶⁸⁸ Seeckt (1930), p. 103.

¹⁶⁸⁹ Jomini (2007), p. 247.

¹⁶⁹⁰ Clausewitz (1989), p. 229.

relationship between thinkers and doers or the intellectual and the energetic types. Even if certain military thinkers tend to favor one and discard the other based on their personal traits and what they excel in, both are essential qualities in a commander. Meticulous study and rigorous training are required to perfect the general in both the mental and the physical sphere of activity, but they do not always coincide in the same person no matter how great the effort dedicated to it. Patton was an educated and a well-read man, but his knowledge of the theories of war, including the most recent ones, did not deprive him of his reliance in bold methods and superimposing his will on the enemy through very direct means. As he wrote, "I have never given a damn what the enemy was going to do or where he was. What I have known is what I intended to do and then have done it. By acting in this manner, I have always gotten to the place he expected me to come about three days before he got there."¹⁶⁹¹ Patton's energy and willpower in pushing his troops onwards relentlessly at almost inhuman speeds made it possible for him to win a temporal superiority over the enemy and master time in his battles but this was harsh on the troops.

As Rommel saw it, "a commander's drive and energy often count for more than his intellectual powers – a fact that is not generally understood by academic soldiers, although for a practical man it is self-evident."¹⁶⁹² The energetic approach has its benefits. Yet, before the battle or operation the academic soldier may through his meticulous planning be able to save time by creating such a surprise for the energy that the victory is not long in coming on the battlefield. In the heat of the combat, however, anything that requires time to do often has to be cast away and the energy and drive of the commander often triumphs. Energetic commanders often drive their troops onwards and maintain the momentum, which falters unless it is constantly revived. In a sense Rommel was right, but typically he only focused on the requirements of the tactical level and the time perspective of a battle or a campaign. On the strategic level the intellectual powers of commanders gain dominance over their drive and energy. An operational artist must combine both to manage and win time. Rommel was not a strategist of renown, but on the operational level and tactics he serves as an example of maneuver and mastery of the time factor. He was an intelligent, but a practical and dynamic commander. According to Rommel,

> "one of the first lessons I had drawn from my experience of motorized warfare was that speed of manouevre in operations and quick reaction in command are decisive. Troops must be able to carry out operations at top speed and in complete co-ordination. To be satisfied with norms is fatal. One must constantly demand and strive for maximum performance, for the side which makes the greater effort is the faster – and the faster wins the battle."¹⁶⁹³

Such an approach is, because of its energetic nature, demanding for the troops and the commander alike. There is no denying that speed in movement and quick reaction in leadership are important, but striving for maximum performance requires careful planning of how to set the tempo and rhythm of operations. What needs doing must be done with great effort and speed, but when there is a lapse in action or the energy of the troops is spent, there must be a period for recuperation during which other units must take over the continuation of the battle. As to the temporal length of one continuous push before a rest is required Patton wrote, *"infantry troops can attack continuously for sixty hours. Frequently much time and suffering are saved if they will do so. Beyond sixty hours, it is rather a waste of time, as the men become too fatigued from lack of sleep."*¹⁶⁰⁴ The commander must be aware of where the point of maximum bearable strain is for his troops and push them to the limit – if there are other troops at his disposal to take over when the tempo slackens. In tactics one wins time by squeezing the last drop of energy out of his troops, but operationally the actions need to be synchronized so, that a fresh unit can take responsibility of upholding the tempo and momentum when energy of the first one is spent. Operationally the bold and energetic drive

¹⁶⁹¹ Carver (1979), pp. 82-83.

¹⁶⁹² Rommel (1953), p. 119.

¹⁶⁹³ Rommel (1953), p. 225.

¹⁶⁹⁴ Patton (1947), p. 353.

that works to win time in tactics has to take second place to preservation of the troops and setting a rhythm for the entire operation.

Increased mobility enabled by mechanization and air mechanization in the late stages of the Second Wave brought about heightened unpredictability. There were too many options and different courses of action open to make any binding plans to counter every eventuality. Rigidity of mind and battle plan alike had to give way for flexibility and a reactive stance. Battlespace is the playground of the unexpected. Rommel's wrote that,

> "because of the great variety of tactical possibilities which motorization offers it will in future be impossible to make more than a rough forecast of the course of battle. This being so, the issue will be decided by flexibility of mind, eager acceptance of responsibility, a fitting mixture of caution and audacity, and the greater control over the fighting troops."¹⁰⁹⁵

Even if the mind had to flexible to master operational art with its sweeping movements in terms of execution of tactical tasks the commanders of the mechanized age had to be strict and unyielding. As Rommel put it, "*mental conception must be followed by immediate execution. This is a matter of energy and initiative. What the soldier needs is a combination of realist intellect and energy. Whatever is attempted must be carried through.*"¹⁶⁹⁶ Another illustration of Rommel's boasted ability to plan quickly and in a short time to create a simple yet an imaginative plan is found in a letter to his wife from Africa.

"I'm full of plans that I daren't say anything about round here. They'd think me crazy. But I'm not; I simply see a bit farther than they do. But you know me. I work out my plans early each morning, and how often, during the past year and in France, have they been put into effect within a matter of hours? That's how it should be and is going to be, in the future."¹⁶⁹⁷

It is imperative that not only the creation of the plan happens in a short time, but that it can be executed rapidly. This demands from the commander the gift of imagination, picturing in his mind several alternative future courses of development and choosing the most likely one based on what happens. This is partially what Rommel meant by "seeing farther." But once forethought had been employed to draft the outline for an operation, the execution had to be immediate and energetic. In the words of Liddell Hart, Rommel "*had a real touch of genius in the tactical field, combined with dynamic power. He had a flair for the vital spot and the critical moment.*"¹⁶⁹⁸ Rommel had a profound sense of how to relate time and space to each other and with his dynamism to create a spatio-temporal force concentration that assured him many victories in Africa. Nevertheless, it was his ability to grasp the grand scheme of strategy and to some degree operational art in the longer time-perspective that proved insufficient. In temporal terms he was too short-sighted to evaluate the outcomes of his operations.

"One of the most important factors – not only in military matters, but in life as a whole – is the power of execution, the ability to direct one's whole energies towards the fulfillment of a particular task. The officer of purely intellectual attainments is usually only fitted for work as an assistant on the staff; he can criticise and provide the material for discussion. But a conclusion intellectually arrived at needs the executive power of the commander to follow it up and force it to realization."¹⁶⁹⁹

Time is consumed in different things on different levels of warfare. The grand strategist does not worry about execution and even strategists do so to only a limited degree. Their task is not in most cases to look at a watch but at a calendar. Their jobs should concentrate on the intellectual side of soldiering and planning. This demands different qualities than the level of tactics. Rommel, like many of the famous commanders of the mechanized age, had a flair and considerable power of tactical execution. They were the type of men of action,

¹⁶⁹⁵ Rommel (1953), p. 517.

¹⁶⁹⁶ Rommel (1953), p. 518.

¹⁶⁹⁷ Rommel (1953), p. 179. Excerpt from a letter to his wife.

¹⁶⁹⁸ Liddell Hart (1948), p. 61.

¹⁶⁹⁹ Rommel (1953), p. 288.

willing to lead from the front line, that mechanized war demanded¹⁷⁰⁰. The strategist, the operational artist and the tactician need each other for the fulfillment of their tasks. Energy and ability for rapid action is important in tactics while understanding the flow of time as a combination of different currents or waves and exploiting them is a demand placed upon the strategist. These somewhat contradictory qualities should be manifested equally in the operational artist. Many generals belong to the class of energetic 'strong commanders' that military men tend to value. The strong commander has an iron will and determination but difficulties may arise due to the fog and friction in the battlespace. As Simpkin phrased it,

"the 'strong' commander is apt to 'impose his will on the situation' to the extent of ignoring it. He fights the battle according to the picture of it he wants to see. This works rather well as long as things are going more or less according to plan, his incisiveness accelerating the tempo. But it compounds setback when the things begin to go awry."¹⁷⁰¹

This selfsame iron will often causes the inability of a strong commander to correctly perceive situations and their development as they unfold and stubbornly keep insisting that their perception is correct. Strong commanders necessarily do not grasp the effect and need for changes on those occasions when the operation or a battle does not proceed according to the plan they have created. They rather attempt to use their will to make the reality correspond to the plan. If this happens, the battle or operations that the strong leader thinks he is conducting is totally divorced from the situation on the ground.

Strong mental character can in some unfortunate instances be a hindrance to the military development in the peacetime as well. When the commander is stuck to preserving the old tactics and old doctrines because he masters them, new ideas are adopted and employed later than they could optimally have been. The stubborn nature of the commanders may often stand in the way of long-awaited reforms. Svechin admitted that "people are very obstinate, but among the most obstinate are great military leaders."¹⁷⁰² Liddell Hart phrased this same idea in a less polite tone; "in the Army itself it is observable that the stoutest obstacle to progress is the alpha minus, cleverly orthodox, rather than the beta plus, more aware of his own limitations and so more ready to pause for reflection."¹⁷⁰³

Simpkin joins Svechin, Liddell Hart, Fuller and many others in his almost heretic argument that "*the military men who rise to the top in peace are very often incapable of conducting a war*."¹⁷⁰⁴ There was a reason why Rommel was kept in charge of operations and not the entire war. But in the time of peace the situation is different. As we have emphasized, war as a phenomenon has become so complex that the commander and his staff must work together to manage the issues that arise suddenly and in rapid succession. During peacetime career management the aspiring generals learn different patterns of problem solving. In other words, "*they have learnt not to delegate because, in the intense competition for promotion, a single error by a subordinate could wreck their career.*"¹⁷⁰⁵

Choosing the safest roads after careful analysis seldom leads to victories, but unthinking action can be hazardous for any unit. Endless contemplation may provide the perfect plan but it is likely to come too late. The commander should be able to combine stamina and intelligence and favor one over the other based on each situation. As Brian Holden Reid wrote, *"soldiers need brawn as well as brains."*¹⁷⁰⁶ Seizing the initiative should be

¹⁷⁰⁰ This tendency to lead from the front was part of the style of most of the successful mechanized commanders of WW II. See for example Hart (2006) p. 10, who calls it Guderian's own command style or Stein (2007), p, 35 on Manstein's views. We can deduct that it was not particular to him nor a reason of preference for a certain place, but a tactical and perhaps even operational demand understood by many commanders because in order to save time, decisions had to be made in close contact with the actions that necessitated making them.

¹⁷⁰¹ Simpkin (1985), p. 223.

¹⁷⁰² Svechin (1992), p. 330.

¹⁷⁰³ Liddell Hart (1937), p. 179.

¹⁷⁰⁴ Simpkin (1985), p. 212.

¹⁷⁰⁵ Simpkin (1985), p. 219.

¹⁷⁰⁶ Reid (1998), p. 2.

the crux of every military plan on every level. To seize it one has to have the permission to act as he sees best in the situation and to be the first to act. Reacting to an altered situation, no matter how automated the reaction is, means losing time since the enemy has the initiative. The importance of initiative increases in operational and strategic levels. According to Fuller, strategy should be based on "action adapted to circumstances, and, consequently, concentration in strategy may be defined as making the most of opportunity and also of forecasting and foreseeing the possibility of opportunity before it arises."1707 This requires the supreme command to consist of "military clairvoyants" who foresee the development of circumstances. This, naturally, is not possible and thus what the commander-in-chief requires is enough of the intellect that enables him to evaluate the current moment and make predictions based on causality as to what will occur. The ability to deduct and estimate how the enemy will act in the near future and seizing initiative to counter those actions before they have actualized determine one's success. Now that we have established that the energy of the tactical commander is as invaluable an asset for winning time as the intelligence of the strategic commander, we need to look closer at the intellectual support mere raw energy requires from the operational commander in using time to his advantage and setting the rhythm for operations.

7.4. MANAGING TIME BY BALANCING IMAGINATION AND INTEL-LECT

"For Third Wave civilization, the most basic raw material of all – and one that can never be exhausted – is information, including imagination."¹⁷⁰⁸

While certain writers of the Second Wave, like Fuller and Triandafillov or Jomini before them, have attempted to turn the art of war into science many still consider it to be an art or a combination of both. The art of war has to receive the same treatment as other arts. There are those who create the masterpieces, those who criticize and evaluate them and those who make the art their lifetime academic study. For those who wish to understand art some of the ways of thinking of the artists are frustrating because they may be so eccentric. Vincent van Gogh produced masterpieces but also severed his own ear. Likewise some military men are rather original thinkers. It is ironic that among a select society of military men that abhors the esoteric intellect of Fuller¹⁷⁰⁹ a personality like Montgomery's is valued.

"I hold that the C.-in-C. of great armies in the field must have an inner conviction which, though founded closely on reason, transcends reason. It is this which will enable him at a certain moment in the battle – the right moment – to take a short cut which will take him to his objective more swiftly and more surely than equally careful but less inspired commanders."¹⁷¹⁰

Somehow supposedly inner conviction transcends reason and allows an edge on the less inspired. For Montgomery, everything is founded on reason and then reason is discarded

¹⁷⁰⁷ Fuller (1923), p. 34.

¹⁷⁰⁸ Toffler 1990, p. 351.

¹⁷⁰⁹ Fuller had an affection for the occult in the widest meaning of the word. Early on he was a disciple of Aleister Crowley, the notorious mystic and Satanist of his time. Fuller even wrote his autobiography "The Star in the West." Even after discontinuing his friendship with Crowley Fuller later kept writing on various occult topics like the Qabalah. On Fuller and Crowley see e.g. Reid (1987), pp. 19-20. Some of these texts are interesting reading, to say the least, but they do not diminish the quality of his works on the art of war. An exception to the rule may be his article "Magic and War." See Fuller (1942). A similar, earlier example is Montecuccoli who was regarded in the 18th century as a very influential military thinker and simultaneously an enthusiastic student of occult, alchemy and natural magic. Gat (2001), p. 15. Some military minds to do conform to moving in straight lines. Fuller certainly was an unconventional officer both in his thinking and in expressing his ideas. This is exemplified by his admission that "*it is this question of sexual freedom which at the present moment interests me more than any other.*" Fuller, cited in Reid (1987), p. 13.

¹⁷¹⁰ Montgomery (1961), p. 51.

because the inner conviction, be it religious or some other inspiration, surpasses it. This leads to empty jargon out of which it is impossible to draw logical conclusions. The argument states that a successful commander and operational artist must transgress the boundaries of reason. To quote Patton, "*in forty hours I shall be in battle, with little information, and on the spur of the moment will have to make most momentous decisions, but I believe that one's spirit enlarges with responsibility and that, with God's help, I shall make them and make them right.*"¹⁷¹¹ A certain conviction, like belief in God, may help the general to cope with the pressure of these momentous decisions and even in the relatively secularized western world of the 21st century at least some commanders rely on their faith if not for inspiration then at least as a source of strength.¹⁷¹² Earlier this was even more common and occasionally the origin of such personal faith was obscure¹⁷¹³.

Perhaps due to his satanist leanings Fuller chose another approach into how a man could surpass what could be expected of him.¹⁷¹⁴ The commander must perceive the status quo, estimate what will happen, and make decisions in accordance with the objectives even when he is ill-informed. The applicability of these decisions in the very circumstances they have been made in and the quickness with which they have been reached is the pinnacle of generalship. All of the tasks that require almost a superhuman personality from the general demand what Fuller called genius. Since I write about military philosophy, it would not do to omit from the discussion the baffling and almost inexplicable concept of military genius that elevates generals into great captains and turns them into legends.¹⁷¹⁵ Fuller was intrigued by the idea of genius and struggled to describe it. For him genius

> "is neither high talent, nor outstanding intelligence, nor is it a product of learning, or of discipline or training. It is, so it would seem, a creative gift, intuitive and spontaneous in its manifestations, that endows its possessor with a god-like power to achieve end which reason can seldom fathom."¹⁷¹⁶

Behind the façade of Fuller's fancy for grandiose expressions such as "god-like" we can get a glimpse of the crucial elements of this elusive concept. Genius is not related to extraordinary powers of intellect but rather a certain mind-set and a mode of thinking. Creative, intuitive and spontaneous; these three are characteristics of a mind that can aspire to genius. It is not about being the most gifted in intelligence but about achieving things through intuition and imagination that exceed the limits of where reason can take the commander. A mediocre man can handle the duties required, but sudden and appropriate improvisation, being prepared for all eventualities in all situations and making the right decisions presuppose a man with exceptional mental alertness and understanding of temporality. It is not only that he must be able to manage time but also to know "*how to profit from that favorable moment which occurs in all battles and which decides their success*."¹⁷¹⁷ Imagination and an intuitive mind are required from the operational artists to achieve greatness. The military theorists are, nevertheless, divided on this. The ones who are not imaginative emphasize the importance of rational calculations. One of these was Foch, who argued that

"in strategy, as in any other business, a leap in the dark is the reverse of sound action; no-

¹⁷¹¹ Patton (1947), p. 8.

¹⁷¹² Franks (2004), p. 430 is an example of this.

¹⁷¹³ Goodspeed (1966), pp. 246-247, 258 provides a suitable example in the case of Ludendorff. He studied a prayer-book of the Moravian Brethren, a group of German evangelicals who were in the habit of consulting the texts for each day of the year in this book for advice.

¹⁷¹⁴ Fuller was a Satanist because he emphasized the primacy of man. He assuredly was not a Satanworshipper.

¹⁷¹⁵ If at this point the Reader is frustrated with the heroic treatment of generals and commanders s/he should allow for a certain amount of self-glorification and remember that many of the texts used as primary sources come from high military officers who tend to exaggerate their own abilities and the demands of their tasks. For a more critical approach among the classic texts please refer to Fuller (1933). Not surprisingly, even with its many merits, this book did not become popular among the British military elite. See Reid (1987), pp. 123-127.

¹⁷¹⁶ Fuller (1960), p. 82.

¹⁷¹⁷ De Saxe (1944), p. 118.

body has the right to substitute for actual facts, which must always be sought, the productions of imagination, mere suppositions. On facts alone can a rational manoeuvre be founded.²¹⁷¹⁸

Foch is both right and wrong, as he often was. Indeed, every military action and not only maneuver should be based on rational and intellectual grounds. But this is not yet operational art. It is just a course of practicable action. Imagination paired with intellect has the potential to turn the praxis of war into an art form and together they allow the operational commander to aspire for operational level surprises. When the tactical commander makes his decisions in the heat of battle, they must be based on facts and not his fancy. In operational art facts are not to be discarded, but on their foundation imaginative ideas must be erected¹⁷¹⁹. It is especially when time to decide is in short supply that imagination should be used to save time and to produce something original. One must keep searching for 'the right moment' to act and cut corners on one's path to victory. To seize the moment requires a certain degree of what Fuller had in mind when he wrote of genius as

"one of those apparently inexplicable powers which differentiates the truly great man from the normal. It is not an instinct, for otherwise it would be common property; it is not the reason, as we usually understand it; but as it accomplishes in an incredibly short time a purpose which the faculty of reason would attain by a slow and no more certain progress, it, I think, may be considered as the highest dimension of this faculty."¹⁷²⁰

Possessing genius provides the commanders the capability to take the "short cuts" Montgomery emphasized. Genius is not instinct, since while instinctive action saves time, to act on instinct is to act based on one's emotions alone. Genius combines instinct and reason to produce the ability to act in an informed manner on the spur of the moment. To possess genius is to employ time in a manner that is separated from the normal revolving speed of the decision-making cycles and so distort the rhythm of the enemy. It is often through imagination that instinct and intellect shape the course of war. As Fuller described the issue,

> "what the man of genius does is to imagine automatically, and so produce original relationships which, metaphorically, are born patented, since others can seldom copy them. If I may hazard to set down the qualifications of the great captain, then I should say that they are:

- (i.) Imagination operating through reason
- (ii.) Reason operating through audacity.
- (iii.) And audacity operating through rapidity of movement.

The first creates unsuspected forms of though; the second establishes original forms of action; and the third impels the human means at the disposal of the commander to accomplish his purpose with the force and rapidity of a thunderbolt."¹⁷²¹

This formula of Fuller's illustrates how the foundation of operational art is imagination that manifests itself through reason. We tend to treat these as binary concepts and divorce imaginative from rational thought. The combination of these two creates audacity for the actions of the commander and audacity combines with rapidity to produce results. Imagination or certain inventiveness of mind is a prerequisite to originality. An operational artist should not attempt to re-enact old victorious battles. Original ways of addressing problems may create situations where the enemy is not able to predict one's future action.

"To copy is not to originate, and originality of thought is the mental co-efficient of the principle of surprise, and, when determination to win is accentuated by this principle, frequently an objective can be created by one side which is totally unrealized by the other. Such a creation is what I call tactical forethought – seeing an action before it is fought. Foresight is the fruit of the scientific method, and it must not be confounded with imagination. Imagination

¹⁷²⁰ Fuller (1926), p. 98.

¹⁷¹⁸ Foch (1920), p. 250.

¹⁷¹⁹ Joffre praised Foch by saying that "*bis force of resolution is mistress of his imagination. And when it is a question not simply of wishing, but also of improvising, when matters are desperate, be is incomparable.*" Joffre, cited in Greenhalgh (2011), p. 79.

¹⁷²¹ Fuller (1926), p. 100.

presents to us a possibility, reason analyses it and stamps it with a value; these two are the parents of foresight, which is nothing more than mentally standing on tiptoe."¹⁷²²

Imagination married to intellect enables one to win time since he becomes able to 'foresee' the future. However, tactical or operational foresight and forethought cannot be achieved by merely an imaginative mind. They require reasoning, deduction, and analysis. Speed of both decision and maneuver is something we are traditionally accustomed with, but the foundation of imagination requires more analysis. Von der Goltz argued that while imagination is not often appreciated, it is an indispensable quality in a high commander. Imagination is not manifested in visions of glory since these may lead to overestimation of one's abilities. Instead the general requires the gift of imagination is the ability

"to clearly picture to himself, at any moment during long and intricate marches and operations, the position of his own troops and the probable situation of those of the enemy. And more than this, he must foresee the situation as it will be at the expiration of two, three, or even more days. Jomini extols this quality in Napoleon, and attributes to it the rapidity and ease of all his arrangements. The positions of his corps, division, and brigades at any given moment were always present to his mind. He therefore forgot nothing, and never failed to notice chance means to the end in view; he thought of things which everyone else would have forgotten, and was rich in inspirations. Such is principally the work of imagination."¹⁷²³

Due to the fog of war it is impossible to calculate how events are likely to proceed over a time-span of even a few days. Here imagination steps into play. The operational artist, like Napoleon in his time, must be able to visualize not only the likely and unlikely outcomes, but the intricacies of the moment itself. Unless he possesses imagination, the troops are bound to remain only arrows drawn on a map to him. The troops become 'alive' in the mind of the imaginative commander. Vision of possible courses of development in any given situation saves time, since then the operational artist consumes considerably less time to appreciate any eventuality, since he has already imagined how he would respond. Napoleon gave credit for his preparedness to imagination, albeit he called it by another name.

"If I appear to be always ready to reply to everything, it is because before undertaking anything I have meditated for a long time – I have foreseen what might happen. It is not a spirit which suddenly reveals to me what I have to say or do in a circumstance unexpected by others; it is reflection, meditation."¹⁷²⁴

Imagination as a free play of thought also offers the general a better chance to do something unexpected, since he has been able to envision numerous options of action in a given situation in his mind. Yet, imagination uncurtailed by intellect is a severe threat since while it provides rapidity and ease for action it may produce fantasies that are in no way connected with the reality. *"The power of imagination must know how to conjure up a picture that shall serve us as a basis for subsequent action; and in order to prevent distortions and dislocations, the commander must not fail to exercise his fancy and to keep it working."*¹⁷²⁵ Imagination is a two-edged sword that needs to be wielded with caution. One could say that the optimal way to save time with imagination to allow it free play in auguring further developments in the course of operations, but the imagined operations must be planned and executed with somber realism driven by intellect.

Patton was not a general often blamed for being too imaginative. Yet, despite his very realist stance toward war as a phenomenon and a certain robust boastfulness typical to American thought in his writings, he also reserved a role for imagination. He wrote that he once awoke in the morning with a complete plan of attack for two corps very detailed in his head. "Whether these tactical thoughts of mine are the result of inspiration or insomnia, I have never been able to determine, but nearly every tactical idea I have ever had has come to my head full-

¹⁷²² Fuller (1926), p. 281.

¹⁷²³ von der Goltz (1906), pp. 36-37.

¹⁷²⁴ Napoleon, cited in Fuller (1926), p. 42.

¹⁷²⁵ von der Goltz (1906), p. 37.

born, much after the manner of Minerva from the head of Jupiter."¹⁷²⁶ Whatever the source of his inspiration and the quality of the resulting plans is outside the discussion here. The capability to imagine and not to rely only on rationalizing allowed Patton to formulate his plans with rapidity - and resulted in huge savings in time. Patton was not only a great general but also a braggart on comparable scale. Probably this boasted ability to create detailed plans off-hand is an exaggeration. Another great general, Manstein wrote that

"naturally I did not immediately find myself presented with a cut-and-dried operation plan in that October of 1939. Hard work and endeavour must always confront the ordinary mortal before he attains his goal. No ready-made works of art can spring from his brain as did Pallas Athene from the head of Zeus."¹⁷²⁷

Even if there is considerably more perspiration than inspiration in Manstein's approach the end result for both men showed that considerable amounts of imagination were used in their labors to produce efficient plans. Imagination as a timesaving characteristic of a general is connected to a view of war as an art form instead of a science. While history cherishes its Napoleons as truly imaginative artists there are the famous butchers who waded to victory through seas of blood by the sheer numbers of their armies. Generation after generation of aspiring military writers has lamented how soldiers do not take pains to study war. It has become a meaningless war-cry of the military intellectuals¹⁷²⁸. Whether we choose to join the choir or form an opinion of our own is ours to make. As Fuller put it,

"Science is by definition worth studying. But when it comes to art, there are those who study it and they more often become critics than artists. What the true artiste needs, is inspiration and vision and from these sources springs the perspiration that creates the actual masterpiece – or spoils the canvas. Art and science are not commonly practices by the same person and indeed, the psychological composition of a person who excels in one, commonly fails in the other. If we want our commanders to be scientists, we are likely to make no mistakes and use our forces in a manner dictated by logic and reason. If we want them to be artistes, we need to accept the fact that many failures are often needed as one produces the sketches of his future masterpiece. The great work of military art may be preceded but by shedding a huge quantity of blood."^{NT29}

Highly populated countries theoretically have the possibility of letting their artistes spend all the material they want in the creation of their blood-soaked masterpieces of operational art. Small nations do not have the possibility of squandering lives and time in educating their generals. No sketches can be scribbled. It is thus natural to turn to educating the generals to be scientific in their worldview. Simultaneously they become highly predictable tacticians or even technicians of war who may not suffer devastating losses in battles, but neither will gain immense victories. As T.E. Lawrence argued, "*nine tenths of tactics were certain enough to be teachable in schools; but the irrational tenth was like a kingfisher flashing across the pool, and in it lay the test of generals.*"¹⁷³⁰ Inspiration and vision often end up causing surprises because their realm is the unexpected and the spur of the moment, but the risk is enormous.

A scientific soldier is able to temporize better in the formulation of an operational plan. He can trim and hone his military machine to perfection so that not a second is lost in all of its actions. He is an exemplary specimen of the indust-reality type of thought. The artiste, however, relying on his inspiration and his grasp of the rhythm of battle, can possibly work on a completely different timetable to break the harmony of the enemy. He was grown out of the fertile agrarian age. One can either treat time as a quantifiable resource that is measured in seconds and minutes, or as a flow of *kronos*-time into which the artiste of war dives at the precisely right moment of *kairos*-time and uses this

¹⁷²⁶ Patton (1947), p. 238. Neither was he commonly blamed for excessive modesty.

¹⁷²⁷ Manstein (1982), p. 105.

¹⁷²⁸ One should not treat "*military intellectual*" as a purely derogatory term. For Reid (1998), p. 3 uses it to refer to a "*thinking, serving soldier, interested in ideas and fully imbued with the ethos of the profession of arms*."

¹⁷²⁹ Fuller (1926), p. 20.

¹⁷³⁰ Lawrence (1935), p. 193.

specially endowed moment to subdue his enemy. Perhaps Third Wave warfare requires a combination of the two types. It is very seldom that both qualities, that of measuring scientific time and that of auguring the perfect moment and acting on it, are found in the same operational commander. Indeed,

"armies are not composed of philosophers, either at the top or at the bottom. In no activity is optimism so necessary to success, for it deals so largely with the unknown – even unto death. The margin that separates optimism from blind folly is narrow. There is no cause for surprise that soldiers so often overstep it and become victims of their faith."¹⁷³¹

How do we then cultivate a genius suitable for operational art of Third Wave warfare? For Fuller as a thinker of the indust-reality the answer would perhaps be obtained by creating a scientific method of understanding and disseminating the essence of warfare and treating the art of war as a science. But still he remained doubtful. No matter how much time and energy we pour into the attempt to train our future commanders to be geniuses, it is likely not to produce the desired results. Other traits, however, can be cultivated, Fuller argued that "the first master of the art of war is experience, the second is reason, and the third, and greatest, is genius. Experience can be bought at its price; reason can be obtained by study and by reflection; but genius would appear to be God's gift."¹⁷³² To combine the artistry of war with the rational and intellectual demands that successful command poses one must create a practical outlook. Freytag-Loringhoven argued that

"intellectual power makes up a large part of what we term 'great military genius,' and for this reason the officer who is training for high position in war should endeavour to develop his reasoning powers. But he must do this through constant, critical examination of the past and present, rather than through forms of metaphysical speculation."¹⁷³³

Metaphysics of life or war are not a highly recommended or respected realm of interest in an officer. It is commonly thought that he should focus on the past and present military knowledge and reason through logic, but at the same time the demand for originality of thought would require an imaginative mind. When it comes to the debate between the suitability of an organized and rational mind compared to an imaginative one perhaps neither side is right. Visionaries tend not to be great organizers and executors. The organizers seldom create anything truly original. The military writers who belong to either end of this spectrum speak on behalf on talents similar to what they possess themselves. Perhaps the right combination is to be found somewhere in between. As already we stated before, intelligence does not equal genius and something more artistic has to be added to the equation.

> "An inner understanding, his own intuition, usually provides the only means for penetrating the fog of war and controlling events properly. The instinctive feeling of the proper action to take at the moment has always been present in every great leader."¹⁷³⁴

One can enhance his genius by experience and training, but if it is not an inborn personality trait, it can't be created out of thin air either. Fuller openly admired Alexander as a military genius par excellent and emphasized the spontaneous aspect of his genius. Concerning what made him a world conqueror Fuller wrote,

> "it is the startling rapidity with which he always acted: no situation caused him to pause; all difficulties were immediately stormed; though risks were immense, to him success seemed foreordained. Time was his constant ally; he capitalized every movement, never pondered on it, and thereby achieved his end before others had settled in their means."¹⁷³⁵

This illustrates why we discuss genius when we should focus on time in warfare. Spontaneity, intuition and energetic action combine to make all the actions of a genius rapid and enable him to win time from the less gifted enemy and save time for his troops by capitalizing every moment. Time is the ally of the genius, because his intuitive skills allow him to act

¹⁷³¹ Liddell Hart (1936), p. 69.

¹⁷³² Fuller (1926), p. 99.

¹⁷³³ Freytag-Loringhoven (1991), p. 184.

¹⁷³⁴ Freytag-Loringhoven (1991), p. 262.

¹⁷³⁵ Fuller (1960), p. 82.
faster than his enemy. No extra time is wasted on pondering on any single decision. Genius is the first to act and both his mind and plan remain agile and flexible in execution.

7.5. ORIGINAL AND RAPID OR TRADITIONAL AND SLOW

"Yet originality is the most vital of all military virtues, as two thousand years of war attest. In peace it is at a discount, for it causes the disturbance of civil life. But in war originality bears a higher premium than it can ever do in a civil profession. For its application can overthrow a nation and change the course of history in the proverbial twinkling of an eye."¹⁷³⁶

Concerning the level of strategy Thucydides wrote that *"it is just as true in politics as it is in any art or craft: new methods must drive out the old ones. When a city can live in peace and quiet, no doubt the old-established ways are best: but when one is constantly being faced by new problems, one has also to be capable of approaching them in an original way.*^{MT37} On the level of operational art there is no peace and quiet, but constant movement and emerging problems. There is a dichotomy between the challenges command in war places upon the officer and the training he receives. Liddell Hart praised the Napoleonic system of 'read and re-read' for if one is to be creative the library of military history "is still the only sure foundation for command in war, and study and reflection are the almost essential complement to the natural gifts of leadership – will and originality."¹⁷³⁸ Studious learning would give the aspiring operational artist the keys to the treasure trove of will and originality. To be original he needs to know what has been done before. He needs to know the dogma and canon in order to be able to work differently than the past masters, but yet adhere to the same basic principles and draft original masterpieces of operational art.¹⁷³⁹

It is easy to join De Gaulle in claiming "all artists, and particularly those in the military sphere, derive much benefit in their training from studying the masters and masterpieces, for there is something contagious about magnificence. Yet this conformity must neither become exclusive, nor this imitation servile."¹⁷⁴⁰ All of us in the military hope that magnificence would be a contagious and acquired condition and we strive for it often by failing to differentiate between the rewards of inspiration and perspiration. Yet, as Turpin had already declared, both study and genius are required since "nothing but a mind enlightened by a diligent study can make a due application of rules to circumstances."¹⁷⁴¹ Perhaps the key to originality can be found outside the traditions of the military and by study of a wide range of different topics and subjects. A wide learning can't be harmful to an aspiring commander. Especially in employing asymmetric operational art the commander's viewpoint and understanding depend upon

> "contemplation of matters other than the swords. It has been posited that creativity is essentially the ability to mentally connect two ideas that were previously unconnected. If so, then the potential for creative military thought lies in the officer who cultivates an appreciation

¹⁷³⁶ Liddell Hart (1932), p. 323.

¹⁷³⁷ Thucydides (1971), p. 52.

¹⁷³⁸ Liddell Hart (1927), p. 195.

¹⁷³⁹ Liddell Hart's own originality has been questioned many times in the recent decades mostly because of the scant credit he gave to his predecessors for the inspiration he derived and even thoughts he borrowed from them and also because of his tendency to overplay his pre-war importance on the thoughts of the German panzer theorists and commanders. For all his shortcomings, Liddell Hart indeed added a lot to the existing body of the art of war. Seemingly Rommel's pupilage was moot but Guderian's authentic. On how he sought and gained tributes from German generals see e.g. Danchev (1998), pp. 234-240. On the other hand, Fuller had an impact on Guderian as well through his writings and in 1939 the two men met in London for a long talk. See Trythall (1977), pp. 203, 211.

¹⁷⁴⁰ De Gaulle (1976), p. 125.

¹⁷⁴¹ Turpin, cited in Gat (2001), p. 38.

for non-military things. The ability to imagine an innovative solution to problems in war rests not only upon military competence, but also upon a wide interest in other areas of life.³¹⁷⁴²

The requirement of innovation and originality is at odds with the inoculation of a young officer into his duties in the armed forces. It is quite a task to adopt, and even more importantly, adapt, the existing ideas, traditions, and practices and utilize them in an original manner. Furthermore, the professional officer should attempt to remain mentally fresh and open to unorthodox ideas throughout his career in order to save the originality of approach to such a time late in his career when he is in a position to employ it. As Wavell instructed a younger officer, "never let yourself be trammelled by the bonds of orthodoxy; always think for yourself; get as much experience outside the ordinary run as you possibly can; and remember that the herd is usually wrong."¹⁷⁴³ When it comes to being promoted to the leadership positions, to run independently of the herd and remain unorthodox is a challenge. Liddell Hart claimed that

"miraculously blessed is he whose mental horizon, when he has reached a position of command, remains unclouded by the traditions, social and professional, he has imbibed; whose experience has not been bought at the price of some measure of his imagination, mental independence, and receptiveness to new ideas."¹⁷⁴⁴

The demands for originality and functioning in a manner consistent with the traditions, procedures, and forms of military action stand in stark contrast. Any system of military education has to teach a unified way of acting and decision-making in order to create an army and not isolated individual thinkers. This creates foundations of Auftragstaktik and provides the armed forces with efficient staffs and tactical commanders. Yet, out of the mass of trained officers a few talented ones rise to the highest ranks and they need to be original thinkers. There is a problem, since these operational artists follow the same path through the military education system as others. As Liddell Hart claimed, "no system of Staff College training, however far developed, can escape the danger, because of its very nature, that it may become a factory for the mass production of stereotyped brains."¹⁷⁴⁵ The brain behind the actions of the army needs to be a prototype in order to be unorthodox and surprise the enemy. Surprise is the ultimate method one can use to gain an edge on the enemy in terms of time. As Liddell Hart wrote, "surprise is the supreme virtue of warfare, originality of mind the quality which breeds it."¹⁷⁴⁶ Unless the commander possesses an original way of thinking about war, he is not able to perform any feat that would be truly surprise for the enemy and rob him of his time. All military minds attempt to expect the unexpected.

In the planning an upcoming operation a mistake often made is to strive for a perfect plan laboring under the illusion that is could somehow lead to perfected execution. Von der Goltz wrote that "*clever men usually look too far afield for the best method, and fail to perceive the paramount importance of the timely adoption of a practical method.*"¹⁷⁴⁷ This is the "mechanical" aspect Wavell wrote about¹⁷⁴⁸, but von der Goltz adds another, even more important factor. The most detailed plan, fit to please any perfectionist is useless unless it can be formulated within the time limits each situation allows for it. A most shoddy plan, but one that is ready to be executed in time is always better that the intricate one that takes everything into account but is finalized only after the window of opportunity has closed.

The perfected plan and the skeleton of one are of course the opposite ends of the temporal spectrum. An operational artist is to time the planning process so, that the

¹⁷⁴² Leonhard (1998), pp. 238-239.

¹⁷⁴³ Wavell, cited in Fergusson (1961), p. 41. In his memoir Fergusson paints a very colorful and admiring portrait of Wavell, but while the book is occasionally amusing, it does not offer many insights.

¹⁷⁴⁴ Liddell Hart (1927), p. 177.

¹⁷⁴⁵ Liddell Hart (1927), p. 182. No matter how efficient for example the German general staff training was, it had its critics among distinguished commanders. For example Guderian called the training he received too narrow, because it did not consider the impact of technology on the modern battlefield. Hart (2006), p. 12. ¹⁷⁴⁶ Liddell Hart (1927), p. 174.

¹⁷⁴⁷ von der Goltz (1906), p. 31.

¹⁷⁴⁸ Wavell (1953), pp. 41-42.

quality of the outcome of the plan and the moment in time when it is ready is converge optimally. This is an easy maxim to write, but horrendously difficult to adhere to. Indeed, no set rules can be formulated. As always in war, everything is situation-dependent. More guidance comes from Patton who warns the reader from wasting time while striving for perfection of plans.

"Don't Delay: The best is the enemy of the good. By this I mean that a good plan violently executed now is better than a perfect plan next week. War is a very simple thing, and the determining characteristics are self-confidence, speed, and audacity. None of these things can ever be perfect, but they can be good."¹⁷⁴⁹

Operational artists must attempt to strive for good and cast aside hopes of attaining the best. The best is the enemy of the good just because it always takes more time to get the very best. Yet, the plan should not be hasty and shoddy. Just *enough* time has to be used to plan properly, but no more than that. The operational artist cannot be a perfectionist since he would waste time. The trinity of self-confidence, speed and audacity is important.

The operational artist should estimate what will occur in the near future. Then he weighs in his mind whether the most promising outcome is likely to be reached by being quicker or be being better prepared. If he chooses the first option, then the time reserved for the planning should be reduced. If the enemy has forced one to merely react, there might be no time to plan at all. If the enemy plan is already in motion, but will not affect one for a certain time, it might be more advantageous to utilize all of this time to plan one's response. The most crucial issue is the decision on how to use the time at one's disposal. Since every second of indecision is a wasted second, the operational artist must grasp the essence of the moment and produce a decision. As Fuller put it, the admittedly rare military genius is able to

> "produce original combinations out of the forces of war; he is the man who can take all these forces and so attune them to the conditions which confront him that he can produce startling and, frequently, incomprehensible results. As an animal cannot explain the instincts which control it, neither can a man of genius explain the powers which control him. He acts on the spur of the moment, and he acts rightly, because this power is in control."¹⁷⁵⁰

Proper and extensive training and planning, unless coupled with inventiveness and performed under pressure and within strict time limits can just as well be harmful. Practice makes perfect, but perfection is an enemy of good in tactics and operational art which are more time-sensitive than strategy. As Liddell Hart noted, this is due to the fact that "*long training tends to make a man more expert in execution, but such expertness is apt to be gained at the expense of fertility of ideas, originality, and elasticity. War is the realm of the unexpected; and adaptation to the unexpected comes more naturally to youth.*"¹⁷⁵¹ In this as well as many other things, Fuller saw eye to eye with him. For Fuller war was a young man's business¹⁷⁵².

Originality and elasticity recede with age and accumulated professional experience. A mind absolutely ignorant of military traditions might be able to formulate a truly original way to use the troops. However, originality must be wedded with practicability. No matter how fertile some ideas are, they might be incapable of blooming into executable plans. In many cases those most suited for command are not the ones who come up with original ideas. Similarly some of the original thinkers must be kept clear of positions of command. The commanders tend to stick with what they know from experience to be practicable. Sometimes doing something efficiently to win time is not the correct answer and the battle will be lost. Therefore, the commanders have staffs to produce raw ideas for

¹⁷⁴⁹ Patton (1947), p. 354.

¹⁷⁵⁰ Fuller (1926), pp. 98-99.

¹⁷⁵¹ Liddell Hart (1950), p. 314.

¹⁷⁵² Reid (1987), p. 125. Fuller (1933) included in his book an appendix in which he listed the ages of 100 generals including diagrams of average ages and numbers of British generals making a point that the British generals after WWI were too old and that the greatest generals of history had been young men.

them. This is a task of a younger, fresher mind that can incorporate original ideas into the planning process. Ultimately they are realized in execution through the unbending will and energy of the commander.

Again using Napoleon as an example we must recognize that the man who scored great victories early in his career through his audacity, willpower, and energy and who after a long march rushed forward upon the enemy continuously rallying his generals with "*activité, activité, vitessé*" was not the same man who suffered a defeat in Waterloo. In Ceva, for example, Napoleon's youth was a relative edge on his enemy¹⁷⁵³. Later on age became a hindrance. As von Schlieffen wrote, Napoleon himself had admitted that

"'one ages rapidly on battlefields.' And at the time he said it he was in the second year of his career as a general. Since then in the course of 17 years, many things had happened, bound to shake even this giant. The accumulation of many sins was gnawing at the marrow of this Titan. Halting or turning back was impossible. He was driven forward, ever forward, against ever-increasing obstacles. To oppose them he lacked the strength. His fall was imminent, if not on 18 June, then later. It was inevitable."

Napoleon lost his mental youthfulness on the battlefield. Alexander was also a young man when he conquered the world. In the words of Quintus, "*his age gave added luster to all his achievements for, though hardly old enough for undertakings of such magnitude, he was well up to them.*"¹⁷⁵⁵ Alexander died young and avoided the fate of Napoleon. More than anything, it was the flow of time that led to Napoleon's ultimate demise. The energy of young age is quickly spent in war. The freshness of novel ideas is temporary. With time these ideas ripen and ultimately rot. To remain able to surprise and reinvent his methods, an operational artist has to recreate himself time after time and not allow any of his ideas to solidify. This is an impossible feat to perform endlessly and 17 years drained Napoleon. The same is bound to happen for any general who is forced to fight continuously throughout his career. Through inevitable aging a commander is bound to become a casualty of time.

We should, however be wary of designating all older military men as mental dinosaurs of a bygone era. Throughout history there have existed late bloomers among the great captains. While Napoleon was at his best when he was youngest, for example Suvorov developed with age. His 1793 war plan against the Turks shows he was still

"capable of daring thoughts, and refutes those who claim that he was no planner but a man who acted impulsively without ever reckoning the complex factors that influence war. In its freshness and economy it confirms that, like Turenne, Suvorov was one of the few generals who actually improved with age."¹⁷⁵⁶

As we can see, the question is not of physical age but rather mental youth that manifests itself as originality and flexibility of thought. Some people are born as reactionaries and conservatives. Some keep an open and agile mind even in their advanced years. Yet, there exists one problem concerning the older generals that is often overlooked when and even if Suvorov, Marlborough, Cromwell, and other mentally virile older commanders-in-chief are evoked as examples of the suitability of experienced professionals in contrast to agile minds like Napoleon or Frederick the Great who aged badly on the battlefield¹⁷⁵⁷. This problem is characterized, on one hand by the increased pace of warfare and the highly advanced technology on the other. In the words of Liddell Hart, "the most important need that remains to be faced is a reduction in the age of general officers, which is dangerously high in view of the quickened tempo of modern operations and their increased strain on mental as well as on physical resilience."¹⁷⁵⁸

¹⁷⁵³ See Colby (1943), pp. 114-116.

¹⁷⁵⁴ von Schileffen (1936), pp. 59-60.

¹⁷⁵⁵ Quintus (1988), p. 36.

¹⁷⁵⁶ Longworth (1965), p. 184.

¹⁷⁵⁷ On older and successful commanders see Wavell (1941). On Frederick see e.g. Bond (2006), p.27. As Frederick wrote, "*my last days are poisoned, and the evening of my life is as horrible as its morning.*"

¹⁷⁵⁸ Liddell Hart (1932), p. 255.

True, many officers in the older cadre may remain in top physical form and even better than their younger counterparts, but much of the strain on the battlespaces of the Third Wave is likely to be mental and psychological instead of merely physical. Tempo is problematic. Advances in technology have enabled faster movement and creation of desired effects in fractions of the time that was spent even decades ago. Mechanization brought about a new surge in mobility and the older generals were simply unable to comprehend it thus providing fresher minds like Guderian's or Rommel's with a clear advantage. Rotary wing movement, airborne troops and especially automated weapons such as drones combined with long-distance precision weapons have further accelerated that speed and as of today, it is still unclear just what kind of compression of time information age and network centric war doctrines and operational art may create during the high tide of the Third Wave.

It is possible that the mental agility of the older generation is simply not sufficient to fully adjust to the speed of the Third Wave technologies. Even if Jomini did not have any idea of the upcoming technological advances and the difficulties it would bring upon the operational artists, he was able to ask a question that is just as relevant today as it was in his time. "*Those who have served long in peace will be at the head of their arms or corps, and will have the rank appropriate for this position; but will they always be the most capable of filling it?*"¹⁷⁵⁹ Seniority of age and rank does not equal the ability to command effectively in war. Seniority may as well equal senility.

We cannot resort to having only youngsters in positions of high command and yet we should imbue the people in those positions with a mental elasticity characteristic of youth and antagonistic to perfected procedures. Martel wrote how a young officer is supposed to remain silent and wait for his eventual rise to a high position before making the changes he has advocated for ten years of more. At the end of his long wait he has become "so used to suppressing change that he is converted into the way of thinking of the senior officers who went before him. A man who cheats his conscience in this way for a number of years can never regain his freedom of thought."4760 While traditionalistic thinkers like Foch praised the audacity of young commanders, he still argued that because of their youth and resulting mental immaturity they had to be "commanded and guided" since "they lacked experience which alone can develop judgment, and the habit of authority, which alone can ensure to an officer the calm confidence which leads to wise as well as vigorous decisions."¹⁷⁶¹ This clearly works only to intellectually ossify the young officers.¹⁷⁶² The answer may lie in continuous training of the highest ranks by putting them into unfamiliar situations and forcing them to make decisions that are not in unison with the prevailing military dogma. In order to save time and still remain original the operational artists should not be allowed to perfect their methods so that they would be suitable to employ in each and every situation, but force them instead to perfect their processes of decision-making so that they would be able to function in the most varying conditions. For Fuller as well the gateway to originality lies in flexibility of both the commander's mind and his plan. For maneuvers to

> "be effected with rapidity, the framework of every plan must be extremely elastic, since conditions are always changing, and our knowledge of them is generally so limited that a large margin must be left over for the unexpected; consequently concentration of force is closely related, not only to distribution and direction of force, but to endurance and surprise."¹⁷⁶³

Yet originality and elasticity have never been the traditional strengths of the British army system that thrives of conformity. On the contrary, it advanced along pre-set tracks like a

¹⁷⁵⁹ Jomini (2007), p. 40.

¹⁷⁶⁰ Martel (1945), p. 81.

¹⁷⁶¹ Foch (1931), p. lxi.

¹⁷⁶² There are naturally exceptions. General Albert Wedemayer along with his whole West Point class of 1919 spent seventeen years of service as lieutenants, but managed to develop his professional skills throughout his career. See Matheny (2012), p. 46.

¹⁷⁶³ Fuller (1926), p. 261.

train, accumulating speed only slowly. Field Marshal Montgomery wrote very suitably about the British army and its characteristics that, "we British always start our wars with a series of appalling disasters; this is because the armed forces are neglected in peace, and when war breaks out we have neither the trained man-power nor the equipment necessary for the task. It takes us a year or two to get going."¹⁷⁶⁴ A military man of Montgomery's stature should not be this careless about the primary misgiving of British forces. In both World Wars the only salvation of Britain was that it was an island power. In continental Europe, during the indust-reality, no country could afford the luxury of taking "a year and two to get going". During the Third Wave the pressure for time is even greater. Fuller argued that

> "it is time we broke away from existing conventions, substituting common-sense for ritual. A methodical soldier may be able to find everything, like a tidy person. This is excellent, but what is infinitely better is being able to make use of things instantaneously [...] the fighting soldier requires is not a brain which works by rules, but a brain which rules by work – that is, immediate action."¹⁷⁶⁵

Whenever the tempo of war has grown during the Second and Third Waves soldiers have reacted differently to the requirements of speed and full utilization of time. The younger ones generally have more mental elasticity to rebound better from the future shock accelerated speed creates. In our Third Wave the speed keeps accelerating almost exponentially. As Liddell Hart argued, the main difficulty in executing mechanized war was that it was

> "hard for most senior officers, who have spent their lives in handling 3 m.p.h. forces, to adapt themselves and their habits of thought to the pace of 30 m.p.h. forces. It only comes naturally to those who have grown up in the mechanized arms. We ought to be making the fullest possible use of these younger men and quicker minds, regardless of seniority."¹⁷⁶⁶

It is not my purpose to speak on behalf of junior commanders getting the highest responsibilities, but to point out the problem that each and every human being, generals included, adapt to their circumstances and develop certain behavioral patterns in unison with the cultural surroundings they have been brought up in. A certain concept of tempo concerning all activities in life gets coded into the ways of thinking and it is difficult to adjust this inner tempo. Future shock is a reality for everyone but some adapt better than others. And as the tempo of the battle gets altered anew in Third Wave warfare, one must be able to readjust one's methods to fit to new circumstances.

War as an art form certainly fits into the old adage of *ars longa, vita brevis*. A complete comprehension and mastery of such a multifaceted phenomenon is impossible to attain. This led Patton to regretfully state on the brevity of human life and especially its professional period that, *"it is sad to remember that, when anyone has fairly mastered the art of command, the necessity for that art usually expires – either through the termination of the war or through the advantaged age of the commander.*"¹⁷⁶⁷ It is only during active warfare when commanders can experiment and develop their skills in tactics and hope that they get a chance to become operational artists. As Strachan wrote, *"it is in the exercise of operational art that today's senior generals … hope to reach the acme of their professional careers.*"¹⁷⁶⁸ Commanders have but fleeting moments to hone their art to perfection and the period of their lives that they spend in high commander positions are short. All they can do is set their ideas on paper so that consecutive generations and their aspiring operational artists can peruse on these thoughts and experiences and not attempt to build their art from scratch. Because

"knowledge of the art and science of war is not necessarily conferred by years of routine soldiering, that the book of military knowledge is open to all, and that those few who have

¹⁷⁶⁴ Montgomery (1961), p. 37.

¹⁷⁶⁵ Fuller (1923), p. 171.

¹⁷⁶⁶ Liddell Hart (1940), pp. 49-50.

¹⁷⁶⁷ Patton (1947), p. 366.

¹⁷⁶⁸ Strachan (2013), p. 210.

mastered its contents by intensive study may include representatives both of the professional and also of the amateur soldier:"¹⁷⁶⁹

Just as in other forms of art, it is not always a necessity to attend an art school. If the passion to learn, study, and create burns bright, the art of war can be mastered by a civilian as well as a soldier. Despite the controversy surrounding Liddell Hart, he can be considered to be proof of this point. Despite his experience in WW I and resulting rank of captain he never was a professional soldier. As Danchev described it, "*it was the art, perhaps the artifice, and not the article that fascinated him.*"¹⁷⁷⁰ Despite his artistic leanings, or perhaps because of them, Liddell Hart managed to make an impact on the development of the art or war. It might in certain occasions be a benefit not to be too familiar with the traditional military thought in order to be able to affect tactical, operational and even strategic surprises by doing something unorthodox. Indeed, as Fuller wrote, when we

> "glance through military history, we find that most new ideas, which eventually materialize into theories or concrete form, originate in piratical exploits outside the existing military organization, and that only after a period of virulent abuse do they become adjuncts or undesirable fosterchildren in the military family. "¹⁷¹

With youth or with experts from non-military background the army can gain new ways of addressing old problems. These minds are not cluttered with excessive dogma and tradition but free to roam and invent new and unorthodox measures and to carry them out with the boldness that does not go well with age and experience. Antonio Gramsci wrote that most of the original thinkers of the world are institutionalized and while he meant something entirely different, the military institution is in desperate need of original ideas. Fuller expressed his yearning by writing that

> "one of the most important talents of a general we would call that of a "creative mind"; because to term it "inventive faculty" appears to us too shallow. There are but few men who have original thoughts. Ben Akiba's saying, "Nothing new under the sun!" is as true of the world of ideas as that of phenomena. Most people in these days only make use of what they have inherited or acquired. But in war situations are of such nature that they appear similar without ever being quite the same. The number of causes and forces is too great to admit of absolute similarity. The general cannot, accordingly, employ the exact means that have been already adopted on a previous occasion. At any rate, there will be something entirely new in the manner of their application. Some slight addition of personal invention is always necessary, and that requires the aid of the ever productive power of the creative mind, as well as the will to employ it."¹⁷⁷²

No operational artist is able to endlessly come up with completely original ideas. If everything is old under the sun, the general must be able to combine old ideas and in each of his plans add a touch of originality. This requires creativity and nonconformity. By adhering to the principles of war and spicing up the mixture by adding factors that have proved their effectiveness on earlier occasions and taking into account the characteristics of the present moment the general may concoct an unorthodox plan flexible enough to adapt to the demands of each fleeting moment during its execution. Very often traditional and tested methods equal slowness and the commander would be better of making unorthodox and original plans if that method of working is faster. As Strachan argued one of the distinctions "between operational art and doctrine: the former can be an individual matter, whereas the latter is collective."¹⁷⁷³ To rise above the doctrine is not for the stereotyped brain, because at the moment he chooses to do it a gulf opens between him and the established collective perception of the outlook of warfare. Yet, for the gifted, it may just be the breach needed to gain an advantage over his enemy and the move that turns the conduct of operations into operational art.

¹⁷⁶⁹ Liddell Hart (1927), p. 175.

¹⁷⁷⁰ Danchev (1998), p. 31.

¹⁷⁷¹ Fuller (1923), p. 73.

¹⁷⁷² von der Goltz (1906), p. 38.

¹⁷⁷³ Strachan (2011), p. 98.

"The danger of a doctrine per se is that it is apt to ossify into a dogma and to be seized upon by mental emasculates who lack the power of analytic criticism and synthetic thought, and who are only too grateful to rest assured that their actions, however inept, find justification in a book which, if they think at all, is, in their opinion, written in order to exonerate them from doing so. In the past, many armies have been destroyed by internal discord, and some have been destroyed by the weapons of their antagonists, but the majority have perished through adhering to dogmas springing from their past successes, that is selfdestruction, or suicide, through inertia of mind."¹⁷⁷⁴

7.6. FLEXIBILITY OF MIND AND PLAN

"And so we come to the plan – which is not a detailed programme of specific steps matched with equally specific tolls, or in the case of the military, materiel and units. Rather, in the new approach the plan should be a broad outline, an intended pattern of events, based on the information and analysis to achieve the desired outcome, enumerating the objectives to be achieved; and allocating responsibility, authority and resources accordingly – so that effects achieved are coherent, focused and networked"¹⁷⁷⁵.

We can argue, following Bucholz, that Prussian army was the first one in Europe that planned its wars thoroughly beforehand. Moltke was the predecessor of modern planning processes and validated his plans in three wars over six years.¹⁷⁷⁶ It was a huge leap forward. However, his times were different from our contemporary conjunction. It is not sufficient today to plan in detail if the plan is not adaptive to the requirements that arise from every moment. Independent, analytic and occasionally unorthodox action is required from the commander if he is to win time from the enemy and use it to his benefit. An operational artist cannot rely completely on established military dogma, but has to invent. At least in theory most military minds agree. According to Svechin, "theory is capable of benefitting only those who have raised themselves above the fray and have become completely dispassionate $[\ldots] A$ narrow doctrine would probably confuse us more than guide us."1777 To win time the commander should be able to extrapolate from the doctrine. There is a temporal discontinuity between the doctrine and its execution and the demand for flexibility derives from the increased complexity of the battlespace. MacArthur wrote that the type of officer before the World Wars was not suitable to fight mechanized wars. They had "developed to handle a more or less recalcitrant element along definite and simple lines, and a fixed psychology resulted."¹⁷⁷⁸ Fuller, for one, argued that

> "the rapidity with which action should unfold itself may be taken at between five and ten times that of present-day fighting; therefore each hour we have to-day to plan in, modify a plan in and issue orders and instructions in, will be reduced to from twelve to six minutes. A fixed idea is out of the question, the idea of the plan must be flexible - that is, it must embrace a number of alternative actions."¹⁷⁷⁹

While the numbers may already have been faulty before WW II and they are likely to be even further off their mark today, the idea that the pace of movement of the troops sets directly the pace that decision-making must reach is unquestionable. The quicker the troops move the less time there is to control and direct this movement. Since there is less time to plan and command, time has to be relocated for these purposes from other spheres of action. Planning has to commence even earlier and in must create several different potential courses of action to be taken should the need arise.

¹⁷⁷⁴ Fuller (1923), pp. 33-34.

¹⁷⁷⁵ Smith (2008), p. 391.

¹⁷⁷⁶ Bucholz (2001), p. 10.

¹⁷⁷⁷ Svechin (1992), p. 62.

¹⁷⁷⁸ MacArthur (1964), p. 79.

¹⁷⁷⁹ Fuller (1943), p. 48.

We could say that there are fundamentally two different approaches to planning. One emphasized the plan should be of very detailed nature but temporally extend only to the initial contact. This type of thought is exemplified by Moltke, for whom the first contact between enemies made the rest of the plan useless. After that Simpkin described the continuation of the battle as "*matter of responsiveness and opportunism*" and "*the right of the commander on the spot to react to situation as he found it.*"¹⁷⁸⁰ This is more or less the type of though the Germans revitalized for WW II while adhering to some degree to the other type of thinking that Schlieffen propagated. He sought to, according to Simpkin, "*make an operational plan carrying out from mobilization right through to the strategic decision.*"¹⁷⁸¹ Neither one of these ideas is applicable. We can see that Simpkn exaggerated the rigidity of thinking behind in each option.

Originally Moltke had argued that one must "avoid planning beyond the situations one can foresee. These change very rapidly in war. Seldom will orders that anticipate far in advance and in detail succeed completely to execution."¹⁷⁸² Jomini made essentially the same point even earlier. For him meticulous planning was a prerequisite of success in battle, but he conceded that things change and so must plans. Everything must be done to ensure that the commencement of a battle occurs according to plan. "Up to this point everything relates to a first plan of operations; but no plan can provide with certainty for that which is uncertain always - the character and the issue of the first conflict."¹⁷⁸³

Jomini and Moltke were too wise not to ensure that there would be at least a mental outline of the plan how war should progress to the strategic decision, if everything went fluently. Similarly the Schlieffen Plan was not detailed all the way to the end but rather a sketch. The plan aimed to reach a rapid strategic decision in France. Just because the strategic time frame for the victory over France was supposed to be very short, the plan out of necessity in this particular case had to extend to the end of the operation.¹⁷⁸⁴ Still, as it turned out, the Schlieffen Plan was not sufficient to win strategic victory by quickly collapsing France¹⁷⁸⁵. The plan lacked flexibility and did not provide enough alternatives and contingency plans to respond to the emerging situations that did not comply with it. The Schlieffen Plan lacked plasticity because it was based on well-established strategic principles that had long ago hardened into rigid doctrine in count Schlieffen's mind.¹⁷⁸⁶

Finkel has argued that flexibility is one of the keys of coping with surprises in warfare. Flexibility can be considered a combination of doctrinal, cognitive, command, organizational and technological elements.¹⁷⁸⁷ We have already discussed most of these in passing, but will now focus on cognitive and command elements. Flexibility of mind and plasticity of plan enable the commander to save time also when the plan and the reality start to drift apart. Franks wrote that no matter how carefully balanced and detailed a plan is, the reason why it is unlikely to survive the first clash is that "*in any war plan the enemy gets a vote*."¹⁷⁸⁸ When actions of the enemy derail the plan the commander causes unpredictable damage if he refuses to admit and accept the growing threat of the chasm between wishful thinking of the plan and the unfolding situation. As De Saxe wrote, "*sometimes these things which change the situation in question so greatly are overlooked until they are forced on your attention. Then it is too late, and you see yourself reduced to being ridiculous.*"¹⁷⁸⁹ As horrifying as the prospect of looking ridiculous is to a high-ranking military officer, such personal considerations are

¹⁷⁸⁰ Simpkin (1985), p. 14.

¹⁷⁸¹ Simpkin (1985), p. 15.

¹⁷⁸² Moltke (1993), p. 184.

¹⁷⁸³ Jomini (2007), p. 244.

¹⁷⁸⁴ For a very thorough discussion of the Schlieffen Plan see Ritter (1958).

¹⁷⁸⁵ Corum (1992), p. 2 states, however, that the Schlieffen Plan came very close to ending the war for Germany within two months.

¹⁷⁸⁶ Ritter (1958), p. 77.

¹⁷⁸⁷ Finkel (2911), p. 2.

¹⁷⁸⁸ Franks (2004), p. 379.

¹⁷⁸⁹ De Saxe (1944), p. 97.

inconsequential. If the commander is too set in his preconceived ideas and a detailed plan that does not allow for improvisation and alterations, the outcome of the battle and the operation are endangered. This worry led Freytag-Loringhoven to write that

"a mind that adheres rigidly and unalterably to original plans will never succeed in war, for success goes only to the flexible mind which can conform at the proper moment to a changing situation. This is what Napoleon meant when he said he never had a plan of operations."¹⁷⁹⁰

'Je n'ai jamais eu un plan d'operation'' should not be used as a guideline for any operational artist. Flexibility of mind is required for plasticity of plan to become reality and both can be attained only when the mind of the commander and his staff are finely tuned to detect changes in the course of the battle, seeking for the moment when the plan and the actual events start to diverge. This is a kairos-moment of quick decisions when time won increases in importance. Some military thinkers take Napoleon's words verbatim, but this is a false premise. Even if he confessed to having no plan, he constantly thought about all eventualities and never lost sight of his ultimate objectives. Napoleon constantly sought to imagine three or four months beforehand what could be the worst thing to happen.¹⁷⁹¹ He studied and thoroughly prepared the road that would lead to success. Napoleon claimed that "*it is my habit to take so many precautions, that nothing is left to chance.*"¹⁷⁹² He was thus not concerned only with what he should do but even more on how the enemy's designs could alter and hinder his operations. In this sense Napoleon acknowledged that because of the changing circumstances the means of securing the objective in the mind of the commander "*can never be sketched out with certainty long beforehand.*"¹⁷⁹³

Nevertheless, Napoleon did not conduct a war whimsically. In Napoleon's campaigns planning, marching, and the battle itself were parts of the whole.¹⁷⁹⁴ Furthermore, his every decision was based on intellectual evaluation *of any given moment*. He did not seek to divine the future beyond the foreseeable but after every engagement to calculate the losses and determine how to continue his strategic plan. The grand scheme was figured out but the plan of operations developed step-by-step, never seeking to peek beyond the next battle and quickly adapting to the changes of the situation. No fixed and immutable plans will remain functional for long into the future. Nevertheless, "*Certainly the commander in chief (Feldherr) will keep his great objective (Zweck) continuously in mind, undisturbed by the vicissitudes of events. But the path on which he hopes to reach it can never be firmly established in advance.*"¹⁷⁹⁵ One should enter every battle with a vision how to continue and a 'blueprint' for the next operation. Napoleon attempted to play all the possible scenarios of development in his mind and chose an active path to meeting the challenges that might come up in the course of his operations. He was a realistic military thinker and not an opportunist prone to the failure Ehrfurth pointed out in many commanders who

"suffer frequently from the tendency to be over-optimistic. The consequence usually is that the enemy is able to achieve a surprise, if not against the troops themselves, then against the commanders. A commander who fails to accept warnings, facilitates the winning of a great victory - for the enemy. An erroneous appreciation of the situation is an essential factor of defeat. In recent wars, many successful surprises were made possible by the incredulity of commanding officers:⁽¹⁷⁹⁶

Napoleon did not mentally chart the easiest way to success but rather the most difficult alternative routes that he might be forced to take because of the actions of the enemy. Of course one is not able to image every possible future development. The key issue is to fo-

¹⁷⁹⁰ Freytag-Loringhoven (1991), p. 273.

¹⁷⁹¹ Freytag-Loringhoven (1991), p. 287; Fuller (1961), p. 47; von der Goltz (1906), p. 103.

¹⁷⁹² Napoleon, cited in Fuller (1961), p. 47.

¹⁷⁹³ von der Goltz (1906), p. 103.

¹⁷⁹⁴ Smith (2008), p. 36.

¹⁷⁹⁵ Moltke (1993), pp. 45-46.

¹⁷⁹⁶ Ehrfurth (1991), p. 419.

cus on the probable ones since, as Moltke wrote, "*the most probable eventualities can be foreseen, however, because they depend on well-known and permanent conditions.*"¹⁷⁹⁷ Napoleon was not easily surprised but due to his realistic outlook of future eventualities able to effect surprises repeatedly on his enemies. Sikorski more or less found the way to combine the fact that Napoleon on one hand did not have a plan of operations and on the other planned his operations far ahead. He describes how a commander-in-chief in peacetime should have

"simply a general idea of the operations (and not a plan) in connection with which will be formulated the most flexible possible plan of concentration. He will study the principal hypotheses which could present themselves in case of a war and the manoeuvres which he could arrange in each of them, without, however, fixing his intentions a priori."¹⁷⁹⁸

To put it in other words, the plan should be so intangible and unformed that it is rather a mental sketch of possible circumstances that might occur and how to maneuver in each of them. The plan is so flexible that it rather consists of outlines of several plans each one of which can be filled with detail should the situation call for its use. In the words of von der Goltz, "*in the reality of war, things always turn out differently from what was originally expected and nothing is more natural.*"¹⁷⁹⁹

What Bernhardi wrote applies well to any operational artist regarding planning; "*He alone who has well thought out the art can practice it.*"¹⁸⁰⁰ One way to ensure the survival of the operational plan beyond the first clash is to create it so that it includes different options to choose from according to changed situations. This can be accomplished by creating what Pierre de Bourcet called a "*plan with branches.*" According to him every operational level plan should have several branches and all of them have to be so well thought out that one or another of the braches has to be viable to employ in every situation and allows for the adoption of the most suitable branch.¹⁸⁰¹ This is impossible to accomplish with certainty since too many unforeseen thing can occur in today's battlespace, but the idea itself is sound. Some situational changes and surprises can be discarded as inconsequential while some others have to be responded to. The ability to discern between these two requires a clear mind from the commander. As Liddell Hart wrote,

> "adaptability is the law which governs survival in war as in life – war being but a concentrated form of the human struggle against environment. While the commander may initially decide to seek alternative objectives, if the enemy concentrates to cover this he will be wise to strike the other, more exposed. A plan must have branches like a tree if it is to bear fruit." 1802

The mind and the plan of the commander alike need to be on one hand flexible and adaptable and on the other hand resolute and steadfast. Svechin warned us of walking a tight rope between making a plan that does not leave too much to chance but simultaneously does not "get bogged down in details and or delve too deeply into the various scenarios that may be encountered in carrying out the plan."¹⁸⁰³ Branches can be seen as responses to these scenarios. Vego sees branches as "options built into the basic operation plan for a campaign or major operation. They are, in fact, contingencies within a given phase" and their ultimate purpose is to "allow the operational commander to anticipate future enemy actions that might lead him to drastically modify his basic plan."¹⁸⁰⁴ The branches are pre-planned means of modifying the plan when something unexpected occurs. This type of mental preparedness for the worst instead of unshakeable belief in one's own plan is an insurance policy.

¹⁷⁹⁷ Moltke (1993), p. 100.

¹⁷⁹⁸ Sikorski (1943), p. 168.

¹⁷⁹⁹ von der Goltz (1906), p. 103.

¹⁸⁰⁰ Bernhardi (1914), p. 167.

¹⁸⁰¹ Vego (2009), p. IX-121.

¹⁸⁰² Liddell Hart (1932), p. 93. On the idea of alternative objects see Finkel (2011), pp. 73-74.

¹⁸⁰³ Svechin (1992), p. 279.

¹⁸⁰⁴ Vego (2009), p. IX-122.

Even if battles are victorious, this does not mean that the operation could be carried out just as planned. Every casualty, every minor victory and every changed circumstance resonates in future possibilities thus altering the activities and actions of the army.

"After the battle this also depends upon the circumstances of the moment, and upon the complications resulting from effect and counter-effect. These lead to fresh actions, and each battle changes the situation as completely as a twist does the coloured glass of a kaleido-scope. Thus the general is compelled every day, and often within a period of few hours, to modify his plans to suit fresh situations."¹⁸⁰⁵

The campaign plan must exist as a sketch to which details can be added when the effects of enemy actions and their influence upon the situation can be assessed. Thus, the campaign plan is never final but continuously evolving. Foch wrote about operational planning that

"you have no power to act at random. Each operation has a raison d'etre, that is, an object; that object, once determined, fixes the nature and the value of the means to be resorted to as well as the use which ought to be made of the forces.¹⁸⁰⁶

If an operational commander does not seek to focus his intellect beyond the battle at hand, his acts become randomized and he is carried helplessly in the torrents of the flow of time. An objective or an end-state has to be set and bound to a time-line to be the firm reference point in war when all other things change constantly¹⁸⁰⁷. However, for Foch too many additional things in plans were fixed and immutable. MacArthur wrote that while Foch was a great general he was also "*too inflexible once be had outlined a plan, and consequently misses opportunities.*"¹⁸⁰⁸ The ultimate goal expressed as the strategic commander's intent is the only permanent thing that can provide a rationale for planning and executing operations.

Setting the goal properly is challenging. This cannot be too abstract and too far in the future or else it becomes unattainable. It would be like the horizon; with every step one takes toward it, it moves in turn that one step further. If the sights are set into too near future, the anticipations are so thin and short-range that change always catches one surprised and confused. *Coup d'oeil* must conjoin with powers of imagination and intellect and only then the commander as "the adaptive individual appears to be able to project himself forward just the 'right' distance in time, to examine and evaluate alternative courses of action open to him before the need for final decision, and to make tentative decisions beforehand."¹⁸⁰⁹ Plasticity of the plan lies, furthermore, also in being flexible in relation to timings and temporality in general. Vego wrote that concerning operational art that

"an operation plan should be flexible enough to provide sufficient reserve time if something goes wrong or the action takes more time than anticipated. The more objectives or tasks assigned, the more time is required to accomplish them. Therefore, it is critical to focus on the most essential objectives, or tasks that will collectively ensure the accomplishment of the ultimate operational or strategic objective."¹⁸¹⁰

By endowing the plan with temporal flexibility, that is, the ability to still be usable even if timings are delayed, the life span of the plan may be extended. However, as Vego said, the more objectives are given, the more time is required to reach them and in every phase every moment of delay accumulates and is likely to be multiplied before the next objective is reached. Therefore, objectives need to be prioritized during the planning process so that if the operation proceeds slower than it was initially thought to do, the less important objectives can be discarded. As Tukhachevsky argued, "*battle must not be seen as some kind of smooth-running conveyor belt on which the various technical combat resources are merged. Battle is a complex and*

¹⁸⁰⁵ von der Goltz (1906), p. 105.

¹⁸⁰⁶ Foch (1920), pp. 13-14.

¹⁸⁰⁷ Svechin argued that strategy sets the operational level end-states as intermediate goals and shortest logical inks on the way to the strategic goal itself. Svechin (1992), p. 317. Nevertheless, the process is the same and starts by deciding the strategic end state that forms the basis for strategic level planning.

¹⁸⁰⁸ MacArthur (1964), p. 57.

¹⁸⁰⁹ Toffler (1990b), p. 420.

¹⁸¹⁰ Vego (2009), p. III-26.

*fickle thing. So command and control must be ready to deal with abrupt changes in the situation, and sometimes to reshape an earlier plan radically.*¹⁸¹¹ The same applies to operations that require even more flexibility. The plasticity of plan makes it possible for the operational artist to improvise when the time comes to do so. As Vego wrote,

> "operational planning is a tedious, complex, and time-consuming process. Yet it is critical for the successful execution of a campaign or major operation. The more detailed the planning and the more proficient the commanders and their staffs, the easier it is for them to improvise during the execution phase."¹⁸¹²

Occasionally, when everything goes according to plan but the enemy does something surprising, in order for the planned action to have maximized effect, the plan has to be modified in mid-stride. This is not restricted to the moments when the enemy has been able to hinder the execution but is even more important when progress is smoother than the plan assumed. If the operation proceeds favorably, the time won has to be maximized and every opportunity seized. As Svechin discussed the general case,

> "even a splendid plan cannot always be carried out successfully. A plan must be flexible and avoid the idea of adhering to certain schedules. In carrying out a plan we must be ready to take advantage of all the favorable opportunities presented to us and the enemy's mistakes at any moment."¹⁸¹³

Schwarzkopf explains that such a situation occurred in the Gulf War when the Iraqi units started to pull out of Kuwait City. Coalition operation proceeded smoothly, but this action of the Iraqis would allow them to suffer less damage. Thus, in the words of Schwarzkopf,

"at that point I knew I had to act. Timing is everything in battle, and unless we adjusted the plan, we stood to lose the momentum of the initial gains. I'd fought this campaign a thousand times in my mind, visualizing all the ways it might unfold, and from the fragmentary reports coming into the war room I could discern that the Iraqis were reeling. If we moved fast, we could force them to fight at a huge disadvantage; if we stayed with the original timetable, they might escape relatively intact."¹⁸¹⁴

Flexibility is a requirement of the plan and the planner alike. The latter must be prepared to reformulate the former should the need arise. If possible, in order not to waste time, one should only alter the plan and not create a new one. Even if the commander is intelligent enough to create a completely new plan in the spur of the moment, time is wasted in the process where his new plan is spread for the subordinates to peruse, understand and execute. Patton hailed for flexibility in a commander and told of his experiences that,

"in the space of two days I had evolved two plans, wholly distinct, both of which were equally feasible. The point I am trying to bring out is that one does not plan and then try to make circumstances fit those plans. One tries to make plans fit the circumstances. I think the difference between success and failure in high command depends upon the ability, or lack of it, to do just that."¹⁸¹⁵

The more elaborate the plan, the longer is the time required to draft it and consequently the more elevated the threshold of discarding that particular plan and writing a new one. If, however, some fundamentals between the plan and the reality collide, if it proves to be impossible to merely adjust the plan, there should be no hesitation to discarding it and planning anew. The egress from this loop is to be found in the initial drafting of the plan; it needs to be relatively general and simple so that it can be amended with more detail as circumstances clarify. Patton wished to further underline how the flexibility of command manifests itself, "*the lesson to be gained from this is that successful generals make plans to fit circumstances, but do not try to create circumstances to fit plans.*"¹⁸¹⁶ Attempting to create favorable circumstances compared to the plan and the successful general state favorable circumstances to fit plans."

¹⁸¹¹ Tukhachevsky, cited in Simpkin (1987), p. 149.

¹⁸¹² Vego (2009), p. IX-78.

¹⁸¹³ Svechin (1992), p. 279.

¹⁸¹⁴ Schwarzkopf (1993), p. 525.

¹⁸¹⁵ Patton (1947), p. 116.

¹⁸¹⁶ Patton (1947), p. 248.

cumstances is one of the tasks of the operational artist but in war circumstances must be taken as given and adapted to with a flexible approach. Flexibility of plan can be attained through simplification while flexibility of mind requires complex thinking. Svechin called eloquently for simplified plans by saying that,

"the form of an operation should be as simple as possible. Piling up layer upon layer of battles and maneuvers in an operation is unacceptable not only because it makes command more difficult but because any excess maneuver or any battle which is not unavoidably necessary for achieving the goal on an operation holds the grave danger of distracting us from the goal. Large vanguards, battles at forward positions, feint and local battles can do us a great deal of harm even when they are successful. Nothing should be superfluous in an operation because it should be the embodiment of purposefulness. In terms of its precision, clarity and symmetry the form of an operation should remind us of the straight lines of a Grecian temple rather than the swirls and whirls of Roccoco."¹⁸¹⁷

However the demands of simplification and comprehensiveness of the plan are balanced and the commander-in-chief conducts his leadership in executing it, one thing was certain in the mechanized age and still remains true. As Fuller wrote, "*his plan must never crystallize, for the energy of the battle front is always fluid.*"¹⁸¹⁸ This is a crucial factor to be kept in mind. Since in battle both armies constantly alter their course of action in reacting to what the enemy does, even the most piercing intellect cannot lift the fog of war to chart the course very far into the future. Thus the plan that he and his subordinates follow must rely only on the general idea of the desired development. Fuller used the expression "*plasticity*" to refer to the necessity of a plan being adaptable. According to him,

> "as every policy must be plastic enough to admit of fluctuations in national conditions, so must each plan be plastic -enough to receive the impressions of war, that is power to change its shape without changing or cracking its substance. This plasticity is determined psychologically by the condition of mentality in the two opposing forces."¹⁸¹⁹

7.7. FLUIDITY IN OPERATIONAL ART

"The Iraqis had fielded more men, more tanks, and more artillery pieces than the coalition. What defeated them was the combination of superior technology, realistic training, and the fluid, flexible tactics of the coalition forces." ¹⁸²⁰

The great Sun Tzu with his ideas of armies operating like water has been rephrased over and over again and mostly by proponents of maneuver theory. The two most common metaphors used are either the fluidity of operations in what Liddell Hart termed indirect approach of finding openings in enemy defenses and seeping through them like water into the depth of the enemy or the idea that a superior force exerts pressure on the enemy line of defense and after a breakthrough is created, the attacking forces will flow irresistibly like through a busted dam into the depth of the enemy.¹⁸²¹ An example of the latter type is to be found in Guderian who described the early stages of WW I by saying that "*the finest army in the world had flooded like a wall of water across the Meuse and deep into the enemy country to the south. Two months later, when the leaves were falling in the autumn of 1914, the grey tide was ebbing.*"¹⁸²² As an example on the former type is how Liddell Hart argued that such a breakthrough can,

¹⁸¹⁷ Svechin (1992), pp. 280-281.

¹⁸¹⁸ Fuller (1923), p. 35.

¹⁸¹⁹ Fuller (1923), p. 44.

¹⁸²⁰ Franks (2004), p.165.

¹⁸²¹ On the development history of the indirect approach see Danchev (1998), pp. 155-163. Indirect approach as a method had an impact of development of Israeli doctrine but it should not be overemphasized, because IDF applied the idea to suit their situation as operational artists should do. See Kesseli (2001), pp. 67-72.
¹⁸²² Guderian (1992), p. 33,

with sufficient pace provide "a decisively deep penetration so long as it can be kept up by a torrent-like process of advance, either swerving round resistance or piercing it as a weakened spot – in which case the tank-torrent contracts in pouring through a narrow breach, and then expands again to its original breadth."¹⁸²³ Liddell Hart attempted to coin a new term to describe the possibilities provided by mechanization. Even if his idea is closely connected to the idea of dispersion of forces and concentrated attack with armor, it could just as well be used to describe the tenets of the AirLand Battle. For Liddell Hart an important characteristic of an attack was

"fluid, or distributed, concentration. To strike, by fire alone, at the greatest number of points in the shortest time over the widest area. And without ever making contact in the present tactical sense. Never giving the enemy a target, yet enticing him to waste his ammunition and keeping his nerves at an exhaustingly high tension."¹⁸²⁴

The idea of fluidity meant for Liddell Hart the possibility to concentrate forces, but the way he describes the idea of striking numerous targets from a distance could be from the texts of the NCW theorists. The essential idea is the same, but writing prior to WW II, there really was no other choice than tanks and air force and to some degree artillery to carry out such a task. Technological developments have since enabled long-range fighting in a totally different manner without troops even getting into contact with the enemy because precision weapons can inflict damage from much further than the German V-2 rockets with the additional capability to hit their targets and not only their vicinity. But for Liddell Hart tanks were the primary means to use this fluidity.

"Instead of risking armour in close combat, an armoured force might use this protective skin simply for a close approach, not for an attack; to move up to a 'fluid' position, whence, in comparative security, it can smother the enemy of cut his arteries of supply by a demoralizing fire."¹⁸²⁵

It is not much of a leap of imagination to give credit for the origin of these thoughts to Sun Tzu, whom Liddell Hart had read and who compared an army to water since "as water shapes its flow in accordance with the ground, so an army manages its victory in accordance with the situation of the enemy. And as water has no constant form, there are in war no constant conditions."¹⁸²⁶ It was just typical to Liddell Hart not to refer to his sources of inspiration and pay tribute to the original ideas. Liddell Hart used fluid as a metaphor for his original mental contribution of 'Expanding Torrent' tactics. He argued that it would be a natural way of attacking.

"If we watch a torrent bearing down on each successive bank or earthen dam in its path, we see that it first beats against the obstacle, feeling and testing it at all points. Eventually it finds a small crack at some point. Through this crack pour the first driblets of water and rush straight on. The pent-up water on each side is drawn towards the breach. It swirls through and around the flanks of the breach, wearing away the earth on each side and so widening the gap. Directly it has passed through it expands to widen once more the onrush of the torrent. ... Thus nature's forces carry out the ideal attack, automatically maintaining the speed, the breadth, and the continuity of the attack. Moreover, the torrent achieves economy of force by progressively exploiting the spots of the defence."

Characteristically Liddell Hart thought of the method first and then created a parable in the shape of a small narrative to make it alive in the minds of his audience¹⁸²⁸. He saw that a fluid concentration of force might provide an escape from the entrenched fronts of the WWI and its costly battles of attrition. He claimed that "fluidity of force may succeed where concentration of force merely entails a helpless rigidity. The sea is stronger than a steam-roller, and should re-

¹⁸²³ Liddell Hart (1950), p. 272.

¹⁸²⁴ Liddell Hart (1932), p. 212.

¹⁸²⁵ Liddell Hart (1932), p. 211.

¹⁸²⁶ Sun Tzu (1971), p. 101. Liddell Hart actually wrote the foreword for this edition of Sun Tzu's Art of War. On the relationship between Liddell Hart's and Sun-Tzu's thinking concerning the use of water metaphor and the former's theory of "expanding torrent" see Yuen (2014), pp. 128-138.

¹⁸²⁷ Liddell Hart, cited in Danchev (1998), p. 103.

¹⁸²⁸ Danchev (1998), p. 176.

*place it as our military ideal.*¹⁸²⁹ This is practically Sun Tzu put into a modern context of indust-real and highly mobile forces. Sun Tzu had long before argued that the army should resemble water in its movements because

> "the nature of water is that it avoids heights and hastens to the lowlands. When a dam is broken, the water cascades with irresistible force. Now the shape of an army resembles water. Take advantage of the enemy's unpreparedness; attack him when he does not expect it; avoid his strength and strike his emptiness, and like water, none can oppose you."¹⁸³⁰

Even if the army flows in fluid motion in its offensives, it does not lessen its power. Indeed, the striking force can be accumulated and unleashed in a simultaneous and preferably surprising attack and this wave will overwhelm the defender. Fluidity entails for both Sun Tzu and Liddell Hart that the dispersed formations coupled with mobility make it harder for the enemy to hit the army. You cannot punch a hole in water or hurt it, but water is able to will every hole, nook, and cranny in the defensive formations when the wave sweeps over them. The idea of fluidity of operations means, in the words of Leonhard, that

> "an attack in war should follow the pattern of flowing water. As water proceeds downhill, it naturally avoids strong surfaces. Instead, it flows about seeking weak points and gaps through which the water begins to trickle. When such gaps are found, the whole body of water rushes toward it, speeds through it, and then expands on the other side. So also an attack should avoid enemy strengths (the surfaces) and exploit the weak spots (the gaps). Once through the gaps, the attacking force expands to destroy critical enemy units and installations."¹⁸³¹

Even if Liddell Hart presented an original seeming idea in the West with his call of fluidity of force, others in the Orient had read their Sun-Tzu as well and perhaps even more thoroughly. As an example we can use Mao, for whom everything was fluid in warfare.

"Fluidity of battle lines leads to fluidity in the size of our base areas. Our base areas are constantly expanding and contracting, and often as one base area falls another rises. This fluidity of territory is entirely a result of the fluidity of the war."¹⁸³²

Viewing everything in operational art as fluid enables asymmetric forces to disperse in front on an upcoming blow from the enemy. They do not hold on to territory, but allow the enemy to take over and recede like water in front of it only to build up as if behind a dam somewhere else to cascade over the enemy at the time and place of their choosing. If Liddell Hart and Fuller promoted only flexibility of command and thought in the West, the Israeli army built a whole doctrine of "continuous flow" into their operational art¹⁸³³ and in the Orient Mao wanted everything concerning the leadership of troops and operations alike to be of fluid nature. Flexibility as an expression implies that there is a structure providing shape and support, but that it can bend and perhaps even distort its shape as a response to changed situations. No matter how flexible something is, it is still somewhat more structured internally than fluid. Fluidity allows for freer movement and even metamorphosis, but still contains stability and the option of solidifying, if necessary. As Mao wrote,

> "because of the fluidity of war, some people categorically deny that war plans or policies can be relatively stable, describing such plans or policies as 'mechanical'. This view is wrong (...), because the circumstances of war are only relatively certain and the flow (movement or change) of war is rapid, war plans or policies can be only relatively stable and have to be changed or revised in good time in accordance with changing circumstances and the flow of the war; otherwise we would become mechanists. But one must not deny the need for war

¹⁸²⁹ Liddell Hart (1937), p. 91.

¹⁸³⁰ Sun Tzu (1971), p. 89.

¹⁸³¹ Leonhard (1991), p. 50.

¹⁸³² Mao (1963), p. 136.

¹⁸³³ See Kesseli (2001) for a comprehensive discussion on development pattern of their distinctively nationalized version of mobile mechanical warfare with a focus on fluid nature of troop movement. Indeed, for most of the Cold War era Israel was the foremost proponent of mechanized maneuver warfare. See e.g. Bond (1998), pp. 10-11.

plans or policies that are relatively stable over given periods; to negate this is to negate everything, including the war itself as well as the negator himself:"¹⁸³⁴

While some of the Occidental writers occasionally allowed themselves to be carried away by their ideas, Mao managed to keep a level head. He argued that everything is fluid, but at the same time proposed that things have to be kept stable at least for a given duration in order to avoid total and unmanageable chaos. There must be a means to keep in control the free-flowing nature of fluid. The plan may be the thing providing the structure for the fluidity of war if we conceive of plan as the dam or some type of container that keeps the fluid from flowing freely for a pre-determined period of time. But how long is this period of relative stability that the plan provides? According to Mao,

> "the period of validity of a plan for a campaign is shorter than that of a strategic plan, and for a tactical plan it is shorter still, but each is stable over a given period. Anyone denying this point would have no way of handling warfare and would become a relativist in war with no settled views, for whom one course is just as wrong or just as right as another. No one denies that even a plan valid for a given period is fluid; otherwise, one plan would never be abandoned in favour of another. But it is fluid within limits, fluid within the bounds of the various war operations undertaken for carrying it out, but not fluid as to its essence; in other words, it is quantitatively but not qualitatively fluid. Within such a given period of time, this essence is definitely not fluid, which is what we mean by relative stability within a given period. In the great river of the war as a whole, in which fluidity is absolute, there are various stretches, each of which is relatively stable; this is our view regarding the essence of war plans or policies."¹⁸³⁵

As we can see, there are periods when the fluid nature is restricted to attain stability for a given time. This does not, however, occur by changing the fluidity into solidity but only by allowing the plan to act as a container for the fluid army and its operations. If such containment were not made, warfare would become an arbitrary business with nothing to rely upon. Mao wrote of relatively stable stretches in the river of war, but in any river there may be strange undercurrents. Therefore seeing the plan as a dam or a containing structure of some kind may prove a better metaphor. The fluid remains unchanging but it is temporarily brought into order. Mao also called for a certain flexibility of plans much in the manner of Sun-Tzu's original idea. He had used water as a metaphor to emphasize the idea that no general should follow a predetermined plan¹⁸³⁶. That is, plans were not supposed to be rigid and unchanging even if they provided for the temporal containment of the fluidity of war. We might, then, be better off by viewing the plan not as a glass or similar container but something more flexible like a water balloon filled with the fluid essence of war. Just because everything in war is fluid and stability only fleeting and transient, the structure provided by plans must change shape as well. This led Mao to argue that the plan

"must change with the movement (flow or change) of the war and vary in scope according to the scale of the war. Tactical plans, such as plans for attack or defence by small formations or units, often have to be changed several times a day. A plan of campaign, that is, of action by large formations, can generally stand till the conclusion of the campaign, in the course of which, however, it is often changed partially or even wholly."¹⁸³⁷

Just because only change is constant in the course of war, operations, battles and plans must abide to the changes. We would be fools to copy what worked for the great captains of the past, since when their methods have been analyzed as much in depth as those of, for example, Napoleon, what once was fluid and changing is solidified by military history into a certain form of waging war. As Liu An wrote,

"What has form and outline will be seen and praised by the world; what has chapter and verse will be transmitted and studied by the ages.

¹⁸³⁴ Mao (1963), p. 243.

¹⁸³⁵ Mao (1963), p. 244.

¹⁸³⁶ See Yuen (2014), pp. 80-81.

¹⁸³⁷ Mao (1963), p. 243.

These are all examples of forms overcoming one another. The one who is skilled at form does not use them as a model. What ennobles the Way is its formlessness. Having no form, it thus cannot be controlled or coerced;

it cannot be measured or ruled; it cannot be tricked or deceived; it cannot be schemed against or planned for. People will make plans for one whose wisdom is apparent; they will attack one whose form is apparent; they will ambush one whose numbers are apparent; they will defend against one whose weapons are apparent.²¹⁸³⁸

Fluidity is thus about being original and by not adhering rigidly to any preset form of tactics or operational art and just for that reason being able to employ the power to surprise the enemy by being unexpected. The requirement of fluidity extends to the fighters and the people who support them as well. One of Mao's most famous quotes tells us about the role of the people and their army that "*the people are to the army what water is to fish, as the saying goes.*"¹⁸³⁹ The army requires the people to survive and the support of the people is so essential to army because it constitutes the living conditions and surroundings for the army. At the same time, the fighter hides among the people from its enemies, since finding a single fish in the sea is almost impossible. The soldier in a people's war is at the same time compared to a fish swimming among the population and a man swimming in the sea. To be able to handle the fluid and ever-changing nature of the 'sea' of war, the soldier must be able to clearly determine how to get across it and do every necessary thing with deliberation. Directing and fighting a war is like swimming. To quote Mao, again, he argued,

"swimming in the ocean of war, he not only must not flounder but must make sure of reaching the opposite shore with measured strokes. The laws for directing war constitute the art of swimming in the ocean of war. So much for our methods."¹⁸⁴⁰

7.8. TIMELY INFORMATION AND TIME-LAG IN DECISION-MAKING

"A commander's correct dispositions stem from his correct decisions, his correct decisions stem from his correct judgements, and his correct judgements stem from a thorough and necessary reconnaissance and pondering on and piecing together the data of various kinds gathered through reconnaissance. He applies all possible and necessary methods of reconnaissance, and ponders on the information gathered about the enemy's situation, discarding the dross and selecting the essential, eliminating the false and retaining the true, proceeding from one thing to another and from the outside to the inside; then, he takes the conditions on his own side into account, and makes a comparative study of both sides and their interrelations, thereby forming his judgements, making up his mind and working out his plans. Such is the complete process of knowing a situation which a military man goes through before he formulates a strategic plan, a campaign plan, or a battle plan."¹⁸⁴¹

This planning and decision-making process Mao described that goes on in the head of the commander is comprehensive and thorough. If the commander is of sufficiently high intelligence, it is also likely to produce a feasible solution to the military dilemma. But this process takes time even in those rare cases when the commander in question is a genius. Time

¹⁸³⁸ Liu An (2012), p. 110.

¹⁸³⁹ Giap (1962), p. 56.

¹⁸⁴⁰ Mao (1963), p. 87.

¹⁸⁴¹ Mao (1963), p. 84.

is a scarce resource that one has to keep in mind and manage its use meticulously. To cite Fuller, one of the greatest problems of a general

"is how to utilize time to the best advantage, and this demands a perfectly organized instrument in which friction, which is the enemy of military time, is reduced to its lowest possible level. To understand the time limitations of one's own side and of the enemy's is to work from the surest of foundations, and if our organization will enable us to move more rapidly than the enemy, then from the start we possess an immense advantage over him, for indirectly this organization will enable us to increase the time at our disposal."¹⁸⁴²

Fog of war slows down commanders in their decision-making and friction of war the movement of their troops. Thus, friction truly is the "enemy of military time." Not only time is squandered but energy of movement is consumed in overcoming the friction. The interrelationship between fog and friction is important. Both are permanent elements of battlefield and even future battlespace. Friction makes movement in warfare resemble movement in water or other resistant element.¹⁸⁴³ Both are of Clausewitzian origin, but the fact that they remain in our vocabulary of the art of war testifies for their enduring nature. Friction is caused by effects of time, space and human nature and for Clausewitz it is the unavoidable force that makes actual war less than its ideal of absolute war. Events take time to unfold and friction increases the duration of that time.¹⁸⁴⁴ To define the Third Wave meanings of fog and friction NCW theorists provided are a suitable starting point. They argue that "the fog of battle is about the uncertainty associated with what is going on, while the friction of war is about the difficulty in translating the commander's intent into actions."¹⁸⁴⁵ As descriptive as this definition is, it, however, is only half of the concept. One is led to suspect that this onesidedness stems from the writers' focus on the particular characteristics of the information age. They refer to the mental, intellectual and immaterial aspects of fog and friction in issues related to information.

We would be wiser to include the mechanical and physical aspects into our definition as well, since the terms themselves have had their widest usage during the industreality¹⁸⁴⁶. This applies especially to friction since it is derived from physics. Therefore, the location of friction is not only in the mind of the commander and the immaterial actions that take place in the chain of command before an order transforms an intention into movement but even in the initiating and upholding movement itself within the battlespace. It must be understood that friction is an unavoidable element in war. It slows down the execution of plans, but it need not be fatal¹⁸⁴⁷. One must temporize his actions so, that the slowing effect of existing friction is part of the rhythm of operations.

In this study fog is the lack of inadequate information as the basis of decision-making and friction is every type of internally or externally caused glitch in the machine of war that causes delays whether they are of immaterial or material origin¹⁸⁴⁸. Alberts et. al. even wrote how "*large organizations have become ponderous and sluggish by today's Information Age standards. Information flow has slowed and is reduced to a trickle of its potential.*"¹⁸⁴⁹ Even if they use a fluid metaphor, this is friction, since the size of the organization and number of links in the chain of command not only slow the flow of information, but actually even diminish it.

¹⁸⁴² Fuller (1926), pp. 179-180.

¹⁸⁴³ Howard (1983), p. 26.

¹⁸⁴⁴ Bassford (1994), p. 25.

¹⁸⁴⁵ Alberts et. al. (2000), p. 71.

¹⁸⁴⁶ Clausewitz emphasized the moral factors over the physical ones. See Howard (1983), p. 26. However, during the heyday of mechanization the physical aspects of operational art regained importance.

¹⁸⁴⁷ See Gray (2007), pp. 74-75, who raised the idea of unavoidable but manageable nature of friction into one of his maxims.

¹⁸⁴⁸ Gray has defined friction as "a compound concept embracing all the harassments, great and small, man-made as well as those occasioned by nature, which impede the smooth and efficient execution of planned behavior." Gray (2007), p. 74.
¹⁸⁴⁹ Alberts et. al. (2000), p. 77.

It is true that the classic Clausewitzian friction in war does not so much bog down tactical or operational mobility in the physical battlespace as it causes time-lag in the mental conceptions of the battlespace and the intellectual activities therein. Perhaps one reason for this was Napoleon's mastery of logistics. Today limitations to speed are caused by both the physical restrictions imposed by the existing technologies and the actions of the enemy but also by the mental capacity of the soldiers. The cogwheels of the military machinery occasionally grind to a halt because of mental friction since, in the words of Liddell Hart, "every soldier feels that there is something clogging the mechanism of manoeuvre, even though he may be puzzled as to what it is. Missed opportunities remain very common, and operations often get stuck for some reason other than the enemy's opposition."¹⁸⁵⁰ Friction occurs on both physical and psychological levels and while in the former planning the movements of the units properly reduces friction in maneuvers, in the latter performing more and more in a shorter time is far more challenging to address.

Theoretically satellites and telecommunications in general create conditions that ought to clear the fog of war from the battlefields. Leonhard rejoiced the idea that acquiescence to the fog could somehow be over because in the Information Age "*twenty-first century holds out a new and exciting possibility: that future leaders can harness information to the advantage.*"¹⁸⁵¹ This, however, is overly optimistic and idealistic thinking and blind faith in technology. As Luttwak wrote, "*more advanced communication would not change matters greatly, as the evidence of recent wars has shown. As soon as movement begins, so does the fog of war.*"¹⁸⁵² Movement to some degree manages to negate the effects of better communications. The fog of war is dispersed in stasis but as soon as movement starts, the fog starts to condensate and obscure the vision. Yet efficient movement is a prerequisite of contemporary operational art and one must set priorities properly. To move and to move fast is often more important than perceiving clearly the conditions to the most minuscule detail. We can compare the effects of speed on detailed picture of war to the view through the side window of a moving car; the faster the speed, the more blurred the vision becomes.

NCW does not deny the omnipresence of fog and friction as elements and characteristics of war itself. It only attempts through sharing a "*better near real-time picture of what is happening*" to increase battlespace awareness to reduce their effects.¹⁸⁵³ Fog affects the commanders of all levels. When they cannot 'see' either with their own eyes or through intelligence data, battle reports, or other external sources what happens in the battlespace, they have a choice either to be quick to decide and produce erroneous decisions, or wait for enough information and lose indefinable amounts of time. Increased awareness helps not only to make better informed decisions, but also to produce them faster. But there is the risk of senior commanders on both operational and strategic levels to start to micromanage battles as the fog is lifted and this would only serve to increase friction¹⁸⁵⁴.

Friction permeates every activity undertaken in the battlespace from the physical to the mental such as the speed at which decisions can be made either because of chains of command, existing procedures or even the intelligence of the people who make them. NCW claims to be able to reduce friction as well as fog through increased battlespace awareness and especially the responsiveness inbuilt to the structure of the network. This, in theory should allow for selfsynchronization and autonomous responses that would save time since the mental aspect of decision-making is partially outsourced to the network itself. In other words, while friction remains an aspect of war, the network should be able to reduce human influenced friction with autonomous and knowledgeable entities in the network with their automated responses to specific and pre-determined stimuli. The capa-

¹⁸⁵⁰ Liddell Hart (1950), p. 290.

¹⁸⁵¹ Leonhard (1998), p. 49.

¹⁸⁵² Luttwak (1987), p. 106.

¹⁸⁵³ Alberts et. al. (2000), p. 11.

¹⁸⁵⁴ Kagan (2006), p. 209.

bilities of the network are used only to support decision-making, but as Alberts et. al claim, "there is definitely a place for automated tools and decision aids on the battlespaces of the future."¹⁸⁵⁵

There is still the need to properly define the place and the tasks of these automated tools. In the words of Vego, "new technologies offer both promise and a potential problem. Higher commanders and political military leaderships should not be tempted into believing that technology can or ever will satisfactorily resolve all the problems associated with operational command and control."¹⁸⁵⁶ Echevarria seems to agree, since he wrote about the U.S. attempting during the past decades to use high technology to gain knowledge and especially situational awareness but ultimately it is still impossible to clear the for so completely that the role of chance in war would be eradicated.¹⁸⁵⁷ The fog of war may be thinner on occasion and the Third Wave offers more effective tools to attempt to pierce it, but even with the aid of the latest information technology there is the risk that Smith noted, namely the "danger of knowing more and more about oneself and proportionally less and less about the enemy."1858 It is and it always has been excessively difficult to get precise information on the disposition of the enemy and, even more importantly, to get it in time. Were it not so, war would be easy even with inferior forces.¹⁸⁵⁹ It is thus not important to get the desired information as quickly as possible but to get it at the right time so that it can be analyzed and the results of the analysis can be incorporated into the operational plan. The important thing is then, to get information in time concerning one's own activities.

As Patton characteristically wrote, "In war nothing is ever as bad, or as good, as it is reported to higher headquarters."¹⁸⁶⁰ Information is like Guinness draught beer; it does not travel well. Wine and cheese mature with age, but information spoils very rapidly in transport. To get the most of it, one must be able to access it directly at its source. Rommel belonged to the school of generals who wished to get it themselves. If there was any means of obtaining information on the spot he chose to do so and not rely on second-hand information. This had the drawback that often he was out of reach of his headquarters when decisions had to be made. But Rommel prioritized things differently. As he wrote,

> "for the commander to have a good understanding on the battlefield of his own and the enemy's dispositions is of utmost importance. It is often more important to have an accurate overview of the actual battlefield than to be intellectually more qualified, or to have more experience. This is especially true of a situation where developments cannot be foreseen. A man must observe and learn for himself, since reports from second-hand sources cannot be relied upon as a base for important military decisions."1861

The proximity of command to the fighting troops is characteristic of German panzerofficers but this stemmed from a long tradition. As Bernhardi wrote, no matter how vast the battlefield had grown, there always was one single spot where "the plot laid by the strategic and tactical conditions will thicken to a crisis. That is the point where the director of battle must be also found in the future. Here his personal intervention may be of decisive importance."¹⁸⁶² Guderian claimed that he was always close to the action and his soldiers to ensure that he was able to make sound decisions. He even went so far to claim that no panzer-general made the mistake of staying too far from the front.¹⁸⁶³ By placing the commanders in the very front the Germans were able to reduce the time information took to be relayed from the front to the rear headquarters. This enabled the tactical and occasionally operational commanders, with a definitive personal risk, to survey the immediate conditions of the battle and to take time-

¹⁸⁵⁵ Alberts et. al. (2000), p. 12.

¹⁸⁵⁶ Vego (2009), p. VIII-21.

¹⁸⁵⁷ Echevarria (2013), p. vii.

¹⁸⁵⁸ Smith (2008), pp. 411-412. ¹⁸⁵⁹ Ludendorff (1919), p. 101.

¹⁸⁶⁰ Patton (1947), p. 354. 1861 Rommel (2003), pp. 68-69.

¹⁸⁶² Bernhardi (1914), p. 118.

¹⁸⁶³ Guderian (1956), p. 231.

ly action. The commander needs to do his utmost to diminish the amount on decisionmaking he has to perform based on unreliable information.

Von Schlieffen seemed to agree since he claimed that "in war there is, however, nothing more dangerous than 'reliable information.' It is overtaken by stark reality. What was applicable yesterday may be wrong tomorrow."¹⁸⁶⁴ It is not only that information itself needs to be fresh, but actions must be undertaken based on it without wasting a moment in its processing. A sufficient amount of information is always lacking and Ehrfurth even argued based on Clausewitz that "three quarters of the facts which one should know in order to make the right decision remain shrouded in uncertainty. He who waits too long for better information risks the loss of a good opportunity."¹⁸⁶⁵ Opportunities are fleeting and to make the best of them, the commander must rely on his coup d'oeil to produce a comprehensive picture of the situation based on inadequate information available. Naturally, only the outcome will tell if the foresight was shortsighted or not. Time waits for no man and decisions have to be made and often in the spur of a moment. It is the task of a commander to produce those decisions no matter what. To be a general, according to Franks, "meant gathering as much information – always in short supply – as possible, then making decisions. And living with those decisions. It meant using judgment."¹⁸⁶⁶

The greater the mobility of the enemy the more reduced is the time intelligence information remains accurate. As Fuller stated, it is not only that one is pressed to be able to report the movements of the enemy in time, but another challenge is "to be able to take advantage of this information; for as mobility increases so will the duration of its importance diminish."¹⁸⁶⁷ The ability to use aircraft for surveillance and reconnaissance provided one with more information than could be gained on the ground in earlier times and it was quicker to relay the information with the assistance of wireless communication. However, in Fuller's opinion it would not clear the fog of war from the battlefield, since "the bulk of the fog will remain just as dense, for increased mobility will cause situations to change rapidly."¹⁸⁶⁸ This tendency is evident still in our age of satellites. The quantity of data gathered grows exponentially to a degree when it becomes useless if it cannot be processed and analyzed in the time available before it is no longer current. Or, to put it in a simple maxim by Rommel, "report observations rapidly, for delay lessens the value of any information."¹⁸⁶⁹

In the best cases for the most advanced armies, if information is sent in time and rapidly processed, time and space do not effectively hamper inflicting damage on the enemy. It is almost inconsequential how far the enemy is, since contemporary weapons can hit their targets from afar with remarkable accuracy. Similarly, the time needed is drastically reduced, since the weapons used make possible very short intervals between the order to fire and the effect on the enemy. But there will be considerable time-lags, since time is consumed by the commander. The limit to velocity is derived from his reaction and decisionmaking time and as long as a human is responsible, they cannot be drastically shortened.

Ehrfurth picked up the inability to make rapid decisions as the major problem of generalship after the WW I. "*The often-discussed mediocrity of generalship in modern wars is to a large degree due to this time-lag between decision and execution which makes strategic surprise next to impossible*."¹⁸⁷⁰ As van Creveld noted, the corps of the Grande Armée of Napoleon took on average two hours from the moment orders were received to start their execution and this is something troops of comparable size in our contemporary armies with all their information technology tools cannot do better.¹⁸⁷¹ The most damaging time lag, however, is not between decision and its execution but between gaining sufficient information to make a

¹⁸⁶⁴ von Schileffen (1936), p. 91.

¹⁸⁶⁵ Ehrfurth (1991), p. 437.

¹⁸⁶⁶ Franks (2004), p. 148.

¹⁸⁶⁷ Fuller (1943) p. 55.

¹⁸⁶⁸ Ibid.

¹⁸⁶⁹ Rommel (2006), p. 6.

¹⁸⁷⁰ Ehrfurth (1991), p. 393.

¹⁸⁷¹ Creveld (2011), pp. 28-29.

decision and actually making it. Minimizing this time-lag requires training the commanders thoroughly to make their decisions faster and since this would demand more from their cognitive capabilities than can be offered, shortening this crucial time-lag may prove impossible in some cases.

The first Gulf War may be used to illustrate this time lag. A huge deal of information through all channels from satellites to operators on the ground was continuously streaming in, but since the analysis was slow and hand-delivery of information meant that in worst cases it took up to two weeks to get the results of the analysis to the units needing them. By the beginning of the air campaign the delay had been cut to thirteen hours.¹⁸⁷² But still the process of air sortie planning and targeting was considered too rigid and after the war the system was replaced. In the Gulf the land commanders got their feedback from the air components slowly and the idea that the targets they nominated and air commanders prioritized and decided which would be accomplished combined with 72-hour battle damage assessment cycle made it impossible for the land commanders to plan for the next iteration of targets without considerable losses in time.¹⁸⁷³

In the first Gulf War the surprise was affected on the Iraqi troops and commanders not by a particularly devious stratagem by Schwarzkopf or his subordinates but by the speed of movement with which the turning maneuver was executed. This was enabled not only by mobile forces, but computers, effective telecommunications and satellites provided the means to accelerate the velocity of warfare.¹⁸⁷⁴ The plan of operations was no feat of military genius, but a well-executed enveloping maneuver with overwhelming superiority and great speed¹⁸⁷⁵. In the words of the Tofflers,

"the issue in battle is not necessarily absolute speed, but speed relative to the enemy's pace. And here there was no doubt about the speed superiority of the victors. (Ironically, the intelligence time lags would have been less troublesome if U-S. forces were not themselves moving so quickly.)"¹⁸⁷⁶

This illustrates a point that needs to be considered by the military planners. Speeds of certain actions or maneuvers influence other activities. In this case the high mobility of the ground forces, certainly a worthy goal, decreased the amount of information at their disposal at a given time by lengthening the time-lag it took for the analyzed information to reach them. The speed of information flows would theoretically enable instantaneous responses, but still, as of today, humans must analyze the data and this slows down operations. Air power can storm targets in the depth of the enemy territory, but unless these are targets of strategic importance, it might be useless since the ground forces cannot reach them as rapidly as would be required for effects to be properly synchronized. In other words, all speeds of action, be they of planning, supplying, moving, analyzing, producing orders and executing them or even operations by different types of units, are different from each other and the most important thing is not necessarily accelerating each of them to its utmost limit, but synchronizing the multiple speeds so that activities conjoin in space and time in the most favorable manner.

This is the task of setting the rhythm for Third Wave warfare; synchronizing activities and creating the rhythm of battles and operations. If something can be produced so quickly that whatever it is supposed to support, say, an aerial bombardment or a drone strike to support the ground forces, is not ready, action should be delayed until the two can be properly synchronized in time and space. This is a simple example to illustrate how some parts of operations are synchronized automatically without us even noticing it. But this attitude of synchronized action has to be included in all activities. Let us say, for exam-

¹⁸⁷² Toffler (1995), p. 80.

¹⁸⁷³ Vego (2009), p. V-110.

¹⁸⁷⁴ Toffler (1995), p. 79.

¹⁸⁷⁵ One entire army corps was even assigned to perform as a ruse a false maneuver just to deceive the enemy where the attack would take place. This is enough evidence of superiority. See Schwarzkopf (1993).
¹⁸⁷⁶ Toffler (1995), p. 80.

ple, that the ground forces should attack a certain location at a certain time. Planning has to be conducted with the time of desired impact in mind. Then, intelligence has to be gathered at the last possible moment to ensure that it is up-to-date. This moment is in turn determined by the amount of time required for the analysis of the intelligence data so that the latest information reaches the units just when they need it for their own purposes.

By synchronizing these and other activities everyone in the chain of command is able to perform the tasks given to them in time and the information required at each stage is as accurate and up-to-date as possible. Orders should be issued when time calls for them instead of according to some pre-determined schedule. It is not the initiatives or actions that need to be synchronized but their effects and outcomes. The actions of different types of units that are part of a joint operation may be started according to a time scale of their own but the results expected from them are required to converge. Or, as Beaufre wrote,

"in the time scale zone of action the golden rule is so to arrange the sequence of initiatives that their effects converge both in time and space. Only on this basis can an action carried out in the various zones have the necessary coherence. This is in fact a wider application of the principle of economy of force."¹⁸⁷⁷

One of the great paradoxes of the Third Wave is that too much information only ultimately manages to create confusion. One should perhaps start to consider applying a principle of 'economy of information.' As we earlier discussed in the case of force, there must always be enough of it but excessive amounts cannot be employed in time. The flood of information not only our commanders but also everyone encounters is absolutely overwhelming. Many proponents of information warfare seem to confuse the concepts of information and knowledge¹⁸⁷⁸. Information is valuable as a source of power but only knowledge itself is power. Turning information into knowledge takes time. As Vego wrote,

"information and knowledge are not identical, although they are often believed to be the same thing. Knowledge is information after it has been subjected to analysis, generalization, and utilization by application and abstraction. Sometimes what is knowledge is not informative, and what is informative is not knowledge. The real danger is to focus on knowledge as a commodity instead of as a dynamic phenomenon to be improved."¹⁸⁷⁹

One must find the time and the people to process the information and perform the necessary filtering and analysis. Only when information has been analyzed, can it become truly useful for the commanders. Raw data is just something to be refined to produce the knowledge that gives a commander an edge on his opponent who may or may not be subjected to similar information flows. "*Both knowledge and ignorance have dominated warfare throughout history, but Information Age warfare has adjusted the balance toward knowledge.*"¹⁸⁸⁰ Operational artists of the past and present alike have had to make decisions based on relatively little information of dubious accuracy. They have had to rely on their intellect and intuition in disseminating the true from the false and to find the right time to initiate action on the basis of the little information at their disposal.

Even if information from every part of the battlespace reaches the commander faster than ever before, this excessive information flow may end up wasting instead of saving time. There can never be enough information about 'now' since every second that passes turns the 'nows' into the pasts. If we seek to control every bit of information about the moment we experience, that information is already about the past as it reaches us. Information keeps flowing in, actions in the battlespace keep unfolding and the commander may end up trying to endlessly master the 'now.' We tend to strive for complete information, but that expression is a paradox in itself. As Vego argued,

¹⁸⁷⁷ Beaufre (1967), p. 81.

¹⁸⁷⁸ See Smith (2008), pp. 327-328 who argues the same point but writes about the difference between information and intelligence.

¹⁸⁷⁹ Vego (2009), p. III-67.

¹⁸⁸⁰ Leonhard (1998), p. 251.

"having complete information does not necessarily mean being more informed; it can well lead to loss of orientation. What is needed is not more information but more orientation. One is often confused today, not necessarily ignorant. In the information era, new facts are constantly discovered⁷¹⁸⁸¹

We do not want our commanders confused. We require them to be determined and assertive. But as they struggle to create the perfect picture of the current moment in their mind's eyes, they always lag at least a few steps behind and confusion is allowed to reign. As more and more information is collected and processed, "the result will be too much information, integrated poorly or not at all. The more information, the less its acceptance. The veritable flood of information today increases one's uncertainty about one's own opinion."1882 This, in effect, means that as our commanders are subjected to the information flow without filters blocking out the white noise of what is not crucial to the task in hand and giving them analyzed and processed information their capability to make decisions will actually be diminished or, even in the best-case scenario, they end up consuming more time in decision-making process as before. Just because there is so much data or information available, effort must, according to Smith, focus on the specific items and issues necessary to the commander.¹⁸⁸³ Even if information should in theory lead to lifting the fog of war, unless there is a highly efficient analysis process taking raw data as input and rapidly providing knowledge as output, the fog of war tends to thicken around the commander. Having information but lacking knowledge leads to uncertainties and second-guessing decisions. In the words of Leonhard, "the acme of skill in the Information Age is to manage what we know and what we don't know, and to balance our knowledge with activity."1884

7.9. BOLDNESS AS TIME-WINNER AT UNCERTAIN TIMES

"There is one greater certainty – that there is more uncertainty than ever before about all the other factors with which the strategists and statesmen must reckon. Compared with the present state of flux, it was simple to make military calculations in the past. The elements of strength were to a great extent calculable. To embark on war then was no greater hazard than that of betting on the favourite – and yet the favourite has often lost. To-day, it is like backing a horse that has never run, and whose breeding even is unknown. Any professional gambler might think it wise to refrain; statesmen should be as wise."⁸⁸⁵

All of the Western armies wish to save time in decision-making. Officers of all ranks are encouraged to make lightning-fast decisions even with a certain disregard of the eventual outcomes. This type of energetic approach to problems with instant solutions is important to teach to officers, but it has the potential to become the most destructive element of the commander's mind-set at the same time. Freytag-Loringhoven was right to claim that

> "failure to act is worse than an error of judgment in selecting a course of action. Commanders in time of peace should therefore make it their duty to encourage initiative in their subordinates, instead of checking it, as is the case too often. Subordinates should be taken to task only where their action was taken thoughtlessly - without a good reason."¹⁸⁸⁶

Failure to initiate action and to make decisions is a dramatic failure of an operational artist. Rapid decisions and energetic execution enables one to win time by not wasting a minute of it pondering possible options needlessly. Every officer throughout his career should be encouraged to decide and act rapidly, but still the most important part of the quotation

¹⁸⁸¹ Vego (2009), p. III-65.

¹⁸⁸² Vego (2009), p. III-66.

¹⁸⁸³ Smith (2008), p. 327.

¹⁸⁸⁴ Leonhard (1998), pp. 252-253.

¹⁸⁸⁵ Liddell Hart (1937), p. 20.

¹⁸⁸⁶ Freytag-Loringhoven (1991), pp. 216-217.

above are the very last words; Every decision has to be made only when it has been given enough thought to and it is based on sound reasoning. If we let the original idea of consuming just as little time as is necessary in decision-making deteriorate into a fetish of applauding instantaneous decisions based not on sound reason but traditional demand for them, the risk of catastrophic blunders actualizes. The commander is exposed not as a great captain but an even greater buffoon. No matter how great the demand to act rapidly is, the military mind needs to be trained to produce informed instead of automated decisions.

Automation is allowed when and only when there is no other choice available and in those instances the planning of operations needs to seek to identify in advance such decision-making points as might lie ahead along the path and suggest proper courses of action. No matter how bad a decision made on a spur of the moment is, if a decision of some type is required, then "of all faults, one only is degrading, namely inaction."¹⁸⁸⁷ If inaction is chosen, the enemy is given time to execute his respective plans unhindered. Nevertheless, to fight effectively in any sense of the word demands making decisions in large quantities. As Franks described leadership of major operation, "once we committed the force to war, the challenges and decision-points never stopped."¹⁸⁸⁸

In the agrarian era Leo VI advised the general to "*take your time in making your plans, unless some necessity requires immediate action. But once you have decided on something, unless there is an obstacle, carry it out quickly. In like manner, as was said, select the time and place and make prepa- rations appropriate to the action.*"¹⁸⁸⁹ The good general chooses when and where he commits his troops into battle, thus seizing the initiative from the beginning. He shoulders the responsibility for action. In other words, "*it is incumbent on you, O general, to take advantage of times and places.*"¹⁸⁹⁰ To attempt to take the advantage is to play a high-risk game and it is often the burden of the one who wishes to seize the initiative and go on the offensive. This led Caesar to declare "*alea jacta est*" when he crossed the Rubicon. The die was cast and there was no turning back.

When one chooses to initiate an operation, there can be no denying that regardless of the force concentrations on both sides and number-crunching mathematics that 'prove' superiority and predict a victory, there are huge risks involved and they cannot be eliminated completely through any calculations and preparations. War is not for the timid and that is why accountants rarely lead armies to great victories. As Ehrfurth put it,

> "he who will win everything, must dare staking everything on one single card. By doing so, a military genius does not act like a gambler. He acts rather as a serenely self-confident and bold personality who is inspired by the 'sacred fire' of the will to win and who aspires to the highest success."¹⁸⁹¹

Whether we call this inspiration and inner conviction along the lines of Montgomery or discuss it with terminology such as audacity, boldness, gambling, luck or sheer genius, only the active one of the combatants can win a victory in war. One can only hope that the "sacred fire" he feels will not turn out to be heartburn. To quote Freytag-Loringhoven, "however tactics change, they will not reduce the need for skilled generals who can act boldly on sketchy information."¹⁸⁹² This, however, is not necessarily equal to gambling while it still is an admirable feat of audacity. As Franks put it, "in thirty-eight years as a soldier, I'd learned the difference between a risk and a gamble."¹⁸⁹³ Rommel wrote that,

"bold decisions are the best way to success. Strategic and tactical boldness must be distinguished from a military gamble. Bold is that operation which, while having the possibility of success, also leaves one with sufficient forces in had to cope with circumstances which might

¹⁸⁸⁷ Foch (1920), p. 45.

¹⁸⁸⁸ Franks (2004), p. 479.

¹⁸⁸⁹ Leo VI (2010), p. 43.

¹⁸⁹⁰ Leo VI (2010), p. 303.

¹⁸⁹¹ Ehrfurth (1991), p. 511.

¹⁸⁹² Freytag-Loringhoven (1991), p. 276.

¹⁸⁹³ Franks (2004), p. xiii.

arise in the event of failure. A gamble, on the other hand, is an operation which can bring either victory or the total annihilation of one's forces. There are situations in which a gamble is justified, such as when defeat is only a matter of time, so that gaining more time is pointless, and the only chance lies in a risky operation.²¹⁸⁹⁴

Boldness does not mean gambling, since while his friends and foes alike appreciated Rommel for the lack of timidity in his operations, he took into account the possibility of failure and left enough reserves to be able to cope with whatever would face him if success escaped his grasp. As Rommel himself claimed concerning the battles in Africa that he "*had never gambled; even in the most daring operation, I had always kept enough in hand to deal with any situation, and had never had to fear losing everything. But in the position as it was now, a rather greater risk had to be taken.*"¹⁸⁹⁵ Rommel, however, reserved a role for a gamble as well. This option should be taken when a defeat is immanent and one can only decide if it comes sooner or later. To win time by delaying is useless, if time will not alter the situation. Then and only then an uncalculated risk has to be accepted and a gamble initiated even against overwhelming odds. When facing the inevitable, one must take the million-to-one chance. Fuller generally condemned gambling, but acknowledged that,

> "by taking risks which are worth taking that, more often than not, the greatest economies are effected and the highest interest secured. In war, audacity is nearly always right and gambling is nearly always wrong, and the worst form of gambling in war is gambling with small stakes; for by this process an army is eventually bled white:"¹⁸⁹⁶

One must choose where to gamble. There is a time for boldness, perhaps even gambling, and a time for cautiousness in war. Rommel argued that "while tactical decisions tend to require a certain boldness, a strategic decision such as this should only be taken after meticulous examination of all possible consequences, and should, as a matter of principle, satisfy the need for 100 per cent security."¹⁸⁹⁷ In strategy the aspect of security has predominance. Often the stakes are so high that making the decision calls for extraordinary mental strength because of the weight of responsibility to be shouldered. Mostly boldness as a characteristic belongs to the level of tactics where, with the seizing of initiative, one is able to make it or break it and extends into operational art. Without a proper strategic level plan that combines battles into operations directed towards a singular end tactics can make no difference in the entire war. At the same time "the best strategic plan is useless if it cannot be executed tactically."¹⁸⁹⁸

Strategists and operational artists take different risks and when they gamble, the stakes differ greatly. But when it comes to whether the general wishes to gamble or play his cards safely it is a question of personality as well. Hitler is often seen retrospectively as a reckless gambler, but Manstein interestingly painted a different picture of him. Hitler's problem was that he wished to undertake too many different objectives at the same time, being active everywhere and not daring to gamble by being strong at one place at a time.

"The rule that one can never be too strong at the crucial spot, that one may even have to dispense with less vital fronts or accept the risk of radically weakening them in order to achieve a decisive aim, was something he never really grasped. As a result, in the offensives of 1942 and 1943 he could not bring himself to stake everything on success."¹⁸⁹⁹

If Hitler gambled, it was rather like an amateur attempting to play several tables simultaneously with insufficient stakes to bring in great winnings. For all the rashness he has been accused of, Hitler was too timid. On the other hand, Wavell, not often lauded as one of the greatest risk-takers, argued on behalf of taking them. For him the distinguishing hallmark between a great commander and an ordinary general was that the former had a

¹⁸⁹⁴ Rommel (2003), pp. 174-177.

¹⁸⁹⁵ Rommel (1953), p. 400.

¹⁸⁹⁶ Fuller (1923), p. 36.

¹⁸⁹⁷ Rommel (1953), p.348.

¹⁸⁹⁸ Rommel (1953), p. 389.

¹⁸⁹⁹ Manstein (1982), p. 276.

"spirit of adventure, a touch of gambler in him. As Napoleon said: If the art of war consisted merely in not taking risks glory would be at the mercy of very mediocre talent.' Napoleon always asked if a general was 'lucky'. What he really meant was, Is he bold?' A bold general may be lucky, but no general can be lucky unless he is bold."¹⁹⁰⁰

The British supreme command were generally more restricted in their actions and reluctant to give anything to chance while Americans often were more audacious. As Alexander wrote, "Patton was a thruster, prepared to take any risks [...] Patton should have lived during the Napoleonic wars – he would have been a splendid Marshal under Napoleon."¹⁹⁰¹ The idea of luck being on the side of the bold was characteristic to operational art prior to the World Wars despite the huge casualties inflicted by bold frontal attacks. In pre-war Germany this was echoed by Bernhardi who wrote that "there is one quality above all in man which is of the utmost importance in all warfare, and really benefits the attack exclusively - boldness. Fortune smiles upon the bold commanders before all others."¹⁹⁰²

In war nothing is certain, but having an overwhelming superiority in forces is likely to lead to a victory if one just plays it safe and avoids taking unnecessary risks. For the underdog in battle, boldness and audacity towards risk-taking is the only chance to tip the scales in one's favor. If one wishes to merely postpone or avoid being defeated timidity is not a mortal sin, but if one attempts to emerge from the battle victorious there must be a certain amount of risk-taking involved. Svechin put the idea of taking risks in perspective eloquently by claiming that "we must not condemn a risk in general, but we must study beforehand whether risk is appropriate in a given instance. Only if the risk in inappropriate can we talk about an adventurer."¹⁹⁰³ Risks need to be evaluated and embraced if the situation so dictates.

A choice between bold operations or playing it safe has to be done before an attack is initiated. The question to be answered is, to cite Giap, "How should we do it? Strike swiftly and win swiftly, or strike surely and advance surely! This was the problem of the direction of operations in the campaign."¹⁹⁰⁴ The operational artist "must be prepared to take a chance when the situation favours boldness. He will lose part of the fruits of victory if he is never prepared to soar from the known to seize the unknown."¹⁹⁰⁵ Again, his greatest challenge is in locating the most suitable moment to test his wings. Whether he soars high or plummets to the fate of Icarus depends upon his judgment and choice of the right time to act. Exceptional situations like having absolute superiority can fully justify taking the safe course. As Rommel described the methods of Montgomery in Africa, "his principle was to fight no battle unless he knew for certain that he would win it. Of course that is a method which will only work given material superiority; but that he had. He was cautious - to my mind, excessively so - but then he could afford to be."1906 Rommel discredited this method of fighting. According to him, even when unquestionably superior, one should never be timid. Nevertheless, Montgomery made full use of his material superiority and Fuller argued that in this and later battles he "*was pre-eminently a general of materiel*."¹⁹⁰⁷ The scales were so weighed in Montgomery's favor that he could proceed slowly and deliberately, step by step eroding the strength of Rommel's troops. Yet Rommel argued that,

"the only time a commander can be sure of the outcome of a battle is when he has forces so superior to those of his enemy hat a victory is self-evident. Then it is not so much how but when. But even in a situation like that, I believe it is better to pursue operations bold-ly."¹⁹⁰⁸

Boldness implies accepting certain risks and if the risks actualize there is a chance of losing the battle. Montgomery's great foe, Rommel, actually gave him credit for this by writing

¹⁹⁰⁰ Wavell (1953), pp. 19-20.

¹⁹⁰¹ Alexander (1962), p. 44.

¹⁹⁰² Bernhardi (1914), p. 141.

¹⁹⁰³ Svechin (1992), p. 265.

¹⁹⁰⁴ Giap (1962), pp. 169-170.

¹⁹⁰⁵ Montgomery (1961), pp. 49-50.

¹⁹⁰⁶ Rommel (1953), p. 521.

¹⁹⁰⁷ Fuller (1948), p. 235.

¹⁹⁰⁸ Rommel (2003), pp. 174-177.

that "command of a force in mobile battle was not his strong point [...] In the field of higher strategic planning he must be credited with outstanding achievements, not least during the invasion battle, which was fought under his command. It would be difficult to accuse Montgomery of ever having made a serious strategic mistake."¹⁹⁰⁹ Montgomery had a great track record and took no risks because he had no need to do so. He may have been deliberate and slow but he never lost a battle because he waged warfare in a thoroughly logistical manner, determined to give his forces every possible material advantage.¹⁹¹⁰ When one is vastly superior there is no need for audacity, no need to win time since the eventual victory is immanent. Similarly the Soviet offensives of WW II were carried out

"with deliberation and slowly, and risks were avoided. This is characteristic of a regime which allows the individual little scope for initiative. From this, also, derives the practice of carefully rehearsing every attack, a procedure which becomes impracticable in the case of fast moving troops which have to advance into unknown territory."¹⁹¹¹

The individual initiative of subordinate commanders was the exception rather than the rule. Before the war Isserson had lamented that "operational art seems intolerably conservative."¹⁹¹² Being conservative was the safe option since most of the progressive Soviet military thinkers did not survive Stalin's purges. War was started with less than qualified generals. But in the course of the war Soviets were able to adjust themselves to new situation and hone their methods to better suit maneuver warfare. Some commanders, like Rokossovsky argued that "for my part, the main thing in my system of command personnel training was the rule to foster in each and every officer an aptitude for independent, resolute and bold action."1913 Nevertheless. this may be a sugarcoated impression of Soviet freedom of action and one may justifiably echo Leonhard in his claim that "the Red Army has never been an organization that favored imaginative, aggressive young leaders, whatever its rhetoric may say."¹⁹¹⁴ However, on the top levels of command the Russian and Soviet officers have always been encouraged to be imaginative. Only on lower levels rigidity and conformity overpower imagination and initiative when not mainly directed at better accomplishment of assigned tasks.¹⁹¹⁵ Be it as it may, the idea of playing it safe remains a viable option in some instances. Neither the Soviets, nor Montgomery had to resort to boldness, because of their superiority. Bold or timid, in the eyes of history the number of casualties in any battle doesn't really matter. Only being victorious does. This led Moltke to claim that being successful

> "determines the reputation of a supreme commander. How much of this is really earned is extraordinarily difficult to determine. Even the best man fails against the irresistible power of circumstances, and even the average man must endure this power. Nevertheless, in the long run only the intelligent have good luck."¹⁹¹⁶

Luck has an important role to play in the practical side operational art. This is because so much of the canvas art of war is applied to is shrouded in the fog of war. Commanders make their decisions, win or lose, based on their limited grasp of the situation, their audacity and their intelligence. Sometimes luck favors them and sometimes the decisions turn out to be wrong ones. Even after a prolonged period of lost battles and misevaluations when a

¹⁹⁰⁹ Rommel (1953), p. 521.

¹⁹¹⁰ Gray (2007), p. 116.

¹⁹¹¹ Bayerlein (1956), p. 311. Further description pp. 307-312.

¹⁹¹² Isserson (2013), p. 12.

¹⁹¹³ Rokossovsky (1970), p. 9. Simpkin argued that there was a tendency among Tukhachevsky and his colleagues to view *Auftragstaktik* type of directive control as a necessary counterpart of the deep operation theory, but they dared not come out and explicitly state so in the face on military convention and tradition of centralism. See Simpkin (1987), p. 51.

¹⁹¹⁴ Leonhard (1991), p. 53. Sokolov (2015), p. 10 takes special care to point out that Rokossovsky's biographical work was penned by him and did not include "*substantial distortions of the facts, unlike many other Soviet military memoirs, such as Zhukov's own.*" Nevertheless, there were a lot on inaccuracies, but for the purpose they can be mostly cast aside since we are interested in Rokossovsky's thoughts and for the most part they are clear in his memoirs and Sokolov is eager to point out places where something akin to "pre-censorship" has occurred. ¹⁹¹⁵ See e.g. Dupuy (1987), p. 40.

¹⁹¹⁶ Moltke (1993), p. 46.

commander deemed to be a great leader becomes victorious again "we are always inclined to attribute the renewal of success to accurate calculations and clear insight, rather than to another turn in the wheel of fortune."¹⁹¹⁷ Luck is a necessary part of the set-up of an operational artist, but in the long run luck favors the genius because his gambles have been based on rational calculations. Luck alone would be extinguished quickly. As Frederick wrote, "a general should be skilful and lucky and that no one should believe so fully in his star that he abandons himself to it blindly. If you are lucky and trust in luck alone, even your success requires you to the defensive; if you are unlucky, you are already there."¹⁹¹⁸

Most of the successful gamblers do not make their living out of a game of luck by relying on remaining constantly lucky. They have to either cheat the opponents, which is a bad move at a card table but an acceptable stratagem in war, or use mathematics to increase their chance of winning. This does not mean reliance on complex theories but simple calculations of probabilities. The cards come in random order just like the intelligence information the commander has at his disposal. Thus the operational artist, just like the gambler, needs to base his "decision upon the confusing mass of incoming intelligence must, generally speaking, be guided by the law of probability, and in the case of the enemy, too, he must assume rational action."¹⁹¹⁹ Luck cannot be relied on, but a good deal of it is required if a plan is to be carried out on the battlefield. Therefore, the operational artist must learn to manipulate his luck. This may sound esoteric, but is quite logical. As Simpkin has written,

"nowadays luck only stays with the good general who has a good system of command and control. For even after we have separated out predictable chance of success and risk, it would be quite wrong to suppose that in talking of 'luck' one implies nothing more than Jomini's 'whims of destiny'. 'General's luck' surely comprehends three distinct through related elements – the creation of opportunity, the spotting of opportunity, and the exploitation of opportunity. Only in the second of these does pure chance, the unpredictable whim of destiny, play a part."¹⁹²⁰

Therefore, an operational artist is always on the lookout for a 'lucky' moment. Luck is just the ability to identify an opportune moment to act and to be able to exploit to the fullest the chances it offers. Occasionally in all gambling, be it poker or something more jingoistic, the probabilities need to be discarded and one must rely on his intuition and psychological ability to interpret the situation. War is the playground of the unexpected where strange things occur almost constantly. In a situation where there are practically no certainties, "*an inflexible clinging to intrinsic probability and persistent disregard of negative indications is apt to lead back to preconceived ideas, and may be the cause of fatal errors. How often does not the improbable occur in war*?"¹⁹²¹ We can view the Russian mastermind Suvorov as an example of a wise gambler. As Longworth wrote about him, "*battles exited Suvorov but did not carry him away. If he was more prepared to gamble than others were, he still knew when to stop*."¹⁹²² In the words of Jomini,

> "great generals have often been beaten by inferior ones; but an exception does not make a rule. An order misunderstood, a fortuitous event, may throw into the hands of the enemy all the chances of success which a skillful general had prepared for himself by his maneuvers."¹⁹²³

Luck may give the victory to the inferior but a general may not waste time waiting for luck to favor him. Neither can he just disregard its impact. He must actively seek to make his own luck. Simpkin wrote about "luck management" and its call "for awareness and flexibility – the one a fact of the art of generalship, the other a product of directive control."¹⁹²⁴ The probabilities of

¹⁹¹⁷ Clausewitz, Campaign of 1814, cited in Freytag-Loringhoven (1991), p. 197.

¹⁹¹⁸ Frederick (1985), p. 394.

¹⁹¹⁹ von der Goltz (1906), p. 127.

¹⁹²⁰ Simpkin (1985), p. 205.

¹⁹²¹ von der Goltz (1906), p. 127.

¹⁹²² Longworth (1965), p. 59.

¹⁹²³ Jomini (2007), p. 31.

¹⁹²⁴ Simpkin (1985), p. 198.

having favorable luck can be increased by being alert and active. Since there are special Kairos-moments in battles, acting rapidly when one occurs, is part of luck management just as well as using *Auftragstaktik* to create the same opportunities of direct action to subordinate commanders. Daring to act at these moments is not gambling but just making the best of the opportunities luck offers. As Jomini wrote, "*a proper calculation of time and distances, joined to great activity, may lead to the success of many adventures which may seem very imprudent.*"¹⁹²⁵

The bold gambler must step aside on occasion and be replaced by the calculator of probabilities. The art of command in war depends on the ability to judge the requirements of the moment and choose the correct stance to take. The operational artists need to use "*less daring here, more daring there. Boldness that wins battles if it is risked also loses battles if it is not.*"¹⁹²⁶ It requires flexibility of mind to be able to assume totally contradictory modes of behavior depending on the situation. No matter how much the forces differ from each other in terms of quality of quantity no one can claim that the outcome would be certain. Machiavelli in his time wrote how "*it is better to subdue an enemy by famine than by sword, for in battle, fortuna has often a much greater share than virtú.*"¹⁹²⁷ In warfare, it has always been necessary to try to eliminate the significance of *fortuna* for the outcome and to rely solely on one's virtú. As Quintus wrote of Alexander, "*his sound strategy however, was shattered by fortune, which is more powerful than any calculation.*"¹⁹²⁸ The art of war depends on so many interlinked factors that outcomes can only be estimated or predicted and not determined This led Mao to write that there is

"no absolute certainty in war, and yet it is not without some degree of relative certainty. We are comparatively certain about our own situation. We are very uncertain about the enemy's, but here too there are signs for us to read, clues to follow and sequences of phenomena to ponder. These form what we call a degree of relative certainty, which provides an objective basis for planning in war."¹⁹²⁹

Nevertheless, while one must be willing to embrace uncertainty, it is still his task to do his utmost to lessen the impact of uncertainty and strive through all means attainable to arrive at high probability. As always, an active approach to command will aid the general in this. For Clausewitz the art of command was to make decisions in the midst of uncertainty.¹⁹³⁰

As Patton wrote, "There will always be some who will voice misgivings. Only he will be successful, however, who dares to act in the face of the unknown. The future will be more lenient in judging the active than the inactive."¹⁹³¹ In the most confused circumstances it is always better to take action, to actively participate in shaping the surrounding situation, than to remain passive and float around on the waters of uncertainty and allowing events and actions of the enemy to propel one onwards. But active participation in events as they unfold more often than not concerns only the tactical level commanders. For operational artists and strategists the situation is different. The higher the level of war, the more time there is to decide and the more important the decisions become. As Clausewitz wrote,

"it takes more strength of will to make an important decision in strategy than in tactics. In the latter, one is carried away by the pressure of the moment, caught up in a maelstrom where resistance would be fatal, and, suppressing incipient scruples, one presses boldly on. In strategy, the pace is much slower. There is ample room for apprehensions, one's own and those of others; for objections and remonstrations and, in consequence, for premature regrets. In a tactical situation one is able to see at least half the problem with the naked eye, whereas in strategy everything has to be guessed at and presumed. Conviction is therefore weaker.

¹⁹²⁵ Jomini (2007), p. 95.

¹⁹²⁶ Delbrück (1997), p. 53.

¹⁹²⁷ Machiavelli (1965), p. 202. See also Creveld (2008), pp. 96-97.

¹⁹²⁸ Quintus (1988), p. 40.

¹⁹²⁹ Mao (1963), p. 243.

¹⁹³⁰ Handel (2001), p. 8.

¹⁹³¹ Guderian (1937). p. 39.

Consequently most generals, when they ought to act, are paralyzed by unnecessary doubts."¹⁹³²

To have ample time at one's disposal is not necessarily a good thing. Many of the experienced combat leaders are able to use their instinct. This depends on previous battleexperience in decision-making. If one is forced to make a decision in a situation he has at his hands or can at least partially comprehend by being engulfed in the action, it may be easier to do it. Since there is little time, there is just as little time for second-guessing. Almost instinctive action has its benefits, but generally to be successful it requires accumulated experience to base the decision on. An inexperienced commander is more likely not to comprehend the events *in toto* and make an unfavorable decision

In operational art and strategy, following Clausewitz, the situation is more complex. Perhaps the operational commander will produce his decision rapidly, but since the pace of action is slower and less hurried because he is removed from the eye of the hurricane of battle raging around him, he has more time to ponder upon alternative solutions and methods. This does not mean that the plans of the brightest minds do not fail on occasion. This is what happened with the carefully drafted Schlieffen Plan. It was never a sound formula for victory, but a great gambit whose success was dependent on several lucky accidents. As these did not occur, the plan failed.¹⁹³³ The more important the upcoming battle is for the operation or for the overall result of the war, the greater the stakes and the burden of responsibility. It is a part of the human nature not to make decisions with serious consequences without allowing the considerations failure to influence the decision. If doubt begins to eat into the mind of the strategist or the operational artist, despite the ample time he has for decision-making, it is possible that a proper decision will not be made in time, or at all. At some point the period of contemplation must end and the operation commence. Schwarzkopf described eloquently what goes on in the mind of the operational artist at that moment. Once he had given the orders to attack in Desert Storm,

"I felt as if I were standing at a craps table in some kind of dream - I'd bet my fortune, thrown the dice, and now watched as they tumbled through the air in slow motion onto the green felt. Nothing I could do would change the way they landed."¹⁹³⁴

In any case, no matter how well the action has been planned and prepared, fundamentally waging war is gambling. According to Leo VI the greatness of the general is not determined by his ability to plan ahead when there are no time constraints and he can use the time in a leisurely manner. The gifted general hatches his plans rapidly when he is pressed for time, or, in the case of a true genius, when the decision has to be taken instantaneously.

"The mark of a genuine general and one worthy of admiration lies in perceiving what has to be done at the moment of great emergency rather than the ability to make plans about such matters before the emergency."¹⁹³⁵

7.10. COUP D'OEIL AS MASTERY OF TIME

"Hurry, Your Excellency! Money is dear; human life is still dearer; but time is the dearest of them all¹¹⁹³⁶

Coup d'oeil has an importance concerning both the future and the present moment. According to Bülow it means distinguishing "the point chosen, before a battle, in the enemy's position, and on which the chief force of the attack is directed."¹⁹³⁷ This is a relatively passive interpretation, since

¹⁹³² Clausewitz (1989), pp. 178-179.

¹⁹³³ Ritter (1958), p. 66.

¹⁹³⁴ Schwarzkopf (1993), p. 476.

¹⁹³⁵ Leo VI (2010), p. 603.

¹⁹³⁶ Suvorov, cited in Longworth (1965), p. 248.

¹⁹³⁷ Bülow (2013), p. 52.

it argues for prescribing the point prior to the battle. Jomini emphasized the meaning of taking the initiative and seizing the moment in battle. This is due to the presupposition that the practice of operational art consists in "throwing the masses upon the decisive points, to do this it will be necessary to take the initiative. The attacking party knows what he is doing and what he desires to do; he leads his masses to the point where he decides to strike. He who awaits the attack is everywhere anticipated."¹⁹³⁸ As soon as both sides attempt to seize the initiative and cause a surprise "two armies approach each other, each intending to make an unexpected attack upon the other. A collision ensues unexpected by both armies, since each finds the other where it does not anticipate a meeting."¹⁹³⁹ The more one seeks to seize initiative against an enemy with a similar doctrine of active warfare, the more probable it is that either side, regardless of their planning, will be driven into an unexpected situation. The ability to act decisively and partially instinctively at any moment remains crucial. Du Picq argued that

"war between savage tribes, between Arabs, even today, is a war of ambush by small groups of men of which each one, at the moment of surprise, chooses, not his adversary, but his victim, and is an assassin. Because the arms are similar on both sides, the only way of giving the advantage to one side is by surprise. A man surprised, needs an instant to collect his thoughts and defend himself; during this instant he is killed if he does not run away."¹⁹⁴⁰

The qualities he attached to the Arabs are necessary for any army. Seeing war as a continuum of ambushes would enable one to fully exploit the element of surprise for his benefit. Simultaneously the defender has to always prepare himself in order to remain a combatant and not to be turned into a victim by the sudden action of his enemy. Under conditions of surprise the only method of self-preservation lies in practically instantaneous countermeasures. The response must be reflexive. "*The primitive man, the Arab, is instability incarnate. A breath, a nothing, governs him at each instant in war. The civilized man, in war, which is opposed to civilization, returns naturally to his first instincts.*"¹⁹⁴¹ Emotional, moral, intellectual, or any other restraints must not hold armed combatants back. They must be ready for immediate instinctive responses to stimuli of the battle. "*It is commonly said that modern war is the most recondite of things, requiring experts. War, so long as man risks his skin in it, will always be a matter of in-<i>stinct.*"¹⁹⁴² No expert is needed, only someone able to act without a moment's notice. This applies more to soldiers and less to operational artists. Clausewitz used the example of Tatars to argue that such cultures produce great warriors but no commanders of genius of strategists.¹⁹⁴³

Strategists and operational artists, on the contrary, must understand that a part of winning time in battle is developing measures for decision-making, giving orders and overseeing their realization so that not a second is wasted, since every tick and tock of the clock until action is initiated is time lost to the enemy. Or must they? Clausewitz opposed this kind of thinking since he argued that "all great commanders have acted on instinct, and the fact that their instinct was always sound is partly the measure of their innate greatness and genius."¹⁹⁴⁴ We must admit that not every general can be a great commander and possess the genius permitting him to act with instinct to perform the most suitable action. The artist of war, the truly great genius, may do what he wills. The rest of us have to do with attempting to minimize the time consumed in decision-making.

¹⁹³⁸ Jomini (1992), pp. 72-73.

¹⁹³⁹ Jomini (1992), p. 207.

¹⁹⁴⁰ du Picq (1987), p. 69.

¹⁹⁴¹ du Picq (1987), p. 138. Lawrence (1997), p. 43 called the Arabs "*too free-minded to endure command, or to fight in a team*" meaning that tactics for them had to be different than those commonly applied in his times.

¹⁹⁴² du Picq (1987), pp. 138-139. ¹⁹⁴³ Strachan (2013), p. 49.

¹⁹⁴⁴ Clausewitz (1989), p. 71.

The ancient Japanese military thought always focuses on explaining the 'Way' or 'do' of warfare on both the level of the life of an individual, or a great $\operatorname{army}^{1945}$. To thoroughly familiarize oneself with the correct way is the method of being prepared. According to Yamamoto Tsunetomo, "when the time comes, there is no moment for reasoning [...] Above all the Way of the Samurai should be in being aware that you do not know what is going to happen next, and in querying every item day and night. Victory and defeat are matter of the temporary force of circumstances."1946 The Samurai style of life is not suitable to contemporary warfare, since the real warrior should always retaliate, even if losing seems certain. There is no place for contemplation, since "a real man does not think of victory or defeat. He plunges recklessly towards an irrational death."1947 The warrior focuses on being prepared to die at every moment of life and armed with this preparedness, should act with haste. Decisions should be made in the space of seven breaths. "A warrior is a person who does things quickly."¹⁹⁴⁸ Preparing oneself constantly supposedly brings a about a stage, where the man becomes experienced enough not to be perplexed by any circumstances.¹⁹⁴⁹ One must gain experience from every moment and let this accumulate. The Way emphasizes the meaning of the present, not the past or the future. There is no need to worry about the future or attach oneself to the past since it cannot be brought back. "A man's whole life is a succession of moment after moment. If one fully understands the present moment, there will be nothing else to do, and nothing else to pursue. Live being true to the single purpose of the moment."¹⁹⁵⁰ In Occidental thought what has come to signify for a general living "for the purpose of the moment" is the somewhat intangible idea of *coup d'oeil*.

The dilemma between making decisions by instinct or making them after painstaking contemplation concerning all the aspects of the situation is resolved by Clausewitz, when he argued that "any given situation requires that probabilities be calculated in the light of circumstances, and the amount of time available for such calculation will depend on the pace with which operations are taking place."¹⁹⁵¹ The pace of operations or the rhythm of battle determines how thoroughly the operational artist should contemplate. If there is sufficient time, probabilities for any imaginable change in the situation to be taken have to be employed. The more rapidly one wants to bring about a resolution, the more planning, calculation, and contemplation should take place prior to the phase of execution. Delbruck argued that "in the military art not everything can be calculated, weighed and measured; in situations defying such calculation, and calculation is before action.

According to Frederick, a general is not a superhuman. For him, "a perfect general, like Plato's republic, is a figment of the imagination."¹⁹⁵³ It would of course be an admirable goal for every operational artist to strive for, but humanity is not able to produce flawless individuals. As for the requirements a great general ought to have, Frederick listed that he should be "more than an industrious, active, and indefatigable man, not forgetting one thing to execute another, and above all not despising those sorts of little details which pertain to great projects."¹⁹⁵⁴ Even these are characteristics of extraordinary people. Activity, indefatigability, and execution are all qualities that relate to the time-factor. In the writings of many of the great occidental

¹⁹⁴⁵ As Cleary (2005), p. 5-6 argues, during the 13th century the samurai leaders of Japan were inspired and influenced by Chinese ways of thinking, especially Zen Buddhism and Neo-Confucianism. This is partially why there are so many similarities in Japanese and Chinese interpretations of the art of war and simultaneously so many differences.

¹⁹⁴⁶ Tsunetomo, p. 16.

¹⁹⁴⁷ Ibid.

¹⁹⁴⁸ Tsunetomo, p. 30.

¹⁹⁴⁹ Tsunetomo, p. 36.

¹⁹⁵⁰ Tsunetomo, p. 45.

¹⁹⁵¹ Clausewitz (1989), p. 85.

¹⁹⁵² Delbrück (1990), p. 321.

¹⁹⁵³ Frederick (1985), p. 346.

¹⁹⁵⁴ Ibid.

military thinkers is to be found the mysterious concept of "*coup d'oeil*." But what does this 'stroke of the eye' mean and why is it listed so high the rank of qualities a general needs to possess? It could perhaps be interpreted as 'a glimpse', since it refers to the idea that "*a general who possesses a coup d'oeil is with a glimpse of an eye able to perceive the situation and act accord-ingly*."¹⁹⁵⁵ Frederick summarized it as "*the talent which great men have of conceiving in a moment all the advantages of the terrain and the use that they can make of it with their army*."¹⁹⁵⁶

Clausewitz in turn interpreted the *coup d'oeil* as the "*ability to see things simply, to identify the whole business of war completely with himself*" and argued "*that is the essence of good general-ship*."¹⁹⁵⁷ Frederick claimed that when the general is accustomed to the size of his army, the *coup d'oeil* will develop accordingly by habit and he can perceive easily the ground he can cover with the number of troops at his disposal.¹⁹⁵⁸ Jomini went further and wrote that theory is an uncertain guide and thus having all theoretical knowledge can never be as valuable as "*a natural talent for war, nor be a sufficient substitute for that intuitive coup d'oeil imparted by experience in battles to a general of tried bravery and coolness.*"¹⁹⁵⁹ Thus, *coup d'oeil* is a natural gift or talent, but also accumulates and grows with experience. It is crucial to an operational artist since, as Clausewitz argued, "*only if the mind works in this comprehensive fashion can it achieve the freedom it needs to dominate events and not be dominated by them.*"¹⁹⁶⁰ It is the nature of war to cause surprises and unless the operational artist can prepare himself in advance or be able to react instantaneously, will the events dominate him and make his leadership ineffectual.

Frederick saw a special need for *coup d'oeil* in two tactical situations; when one encounters the enemy on his march and when one finds the enemy in position and must attack. In the first case the general must quickly choose the ground on which to fight and determine how to conduct the fight so that all advantaged and disadvantages of the terrain are accounted for in the battle formation. The rigid tactics of his time provided many models for orders of battle, and the instant decision concerned finding the most suitable one. In the second case the *coup d'oeil* will supply the general with the ability to perceive where he should direct the force of his attack. According to Frederick, "*whoever has the best coup d'oeil will perceive at first glance the weak spot of the enemy and attack him there.*"¹⁹⁶¹ *Coup d'oeil* has gradually become more and more a metaphysical concept that today refers mostly to the inner eye of imagination and intellect. This is partially an outcome of the enlarged battlespace. Freytag-Loringhoven argued that

"In the 18th century, the coup d'oeil of the leader had its place on the tactical battlefield even in the physical sense. The small armies and the accepted methods of fighting enabled him, as a rule, to watch not only his own troops but also the enemy's, which would be out of the question today for the commander of an army corps, and hardly possible for that of a division:⁽¹⁹⁶²

Clausewitz noted that traditionally *coup d'oeil* was interpreted as a glimpse of the actual eye and turning the visual information of the battlefield into suitable modes of action. *Coup d'oeil* resulted in a calculation of time and space and evaluation of their interaction.

"Because time and space are important elements of the engagement,[...] the idea of rapid and accurate decision was first based on an evaluation of time and space, and consequently received a name which refers to visual estimates only. Many theorists of war have employed the term in that limited sense. But soon it was also used of any sound decision taken in the midst of action – such as recognizing the right point to attack, etc. Coup d'oeil therefore refers not alone to the physical but, more commonly to the inward eye." ¹⁹⁶³

¹⁹⁵⁵ Frederick (1985), p. 341.

¹⁹⁵⁶ Ibid.

¹⁹⁵⁷ Clausewitz (1989), p. 578.

¹⁹⁵⁸ Frederick (1985), p. 341.

¹⁹⁵⁹ Jomini (1992), p. 203.

¹⁹⁶⁰ Clausewitz (1989), p. 578.

¹⁹⁶¹ Frederick (1985), p. 343.

¹⁹⁶² Freytag-Loringhoven (1991), pp. 285-286.

¹⁹⁶³ Clausewitz (1989), p. 102.

This tendency to use the inward eye was already evident in the second example of Frederick we discussed. The first one, figuring out a suitable order of battle is a perfect example of the evaluation of time and space. Finding the weakest part of the enemy's defense is due to the mind's eye. Nevertheless, both examples are intimately connected with time, since in the making of the decisions, not an instant is to be wasted. Seeing with the inward eye requires not only power of intellect but also of imagination. Thus, to develop

> "the power of imagination and its various ramifications is an essential part of general staff training, and an indispensable requisite for leaders of large forces distributed over a considerable area. The ability to form accurate mental pictures of a situation quickly is especially important today when the higher commander cannot hope to see his troops with his physical eyes."¹⁹⁶⁴

General staff education often tends to focus on other matters than imagination, but only through imaginative ability can the complexities of battlespace or theatre be comprehended since they are no longer under the commander's direct observation at any given situation in real time. The inner eye must add detail to the rather sketchy view provided by different channels of information. *Coup d'oeil* as the ability to manage available force in the optimal relation of time and space is thus despite its instantaneous essence a product of the intellect and not a reflex. This is why Clausewitz extrapolates from *coup d'oeil* the concept of *"presence of mind"* which, according to him,

"must play a great role in war, the domain of the unexpected, since it is nothing but an increased capacity of dealing with the unexpected. We admire presence of mind in an apt repartee, as we admire quick thinking in the face of danger. Neither needs to be exceptional, so long as it meets the situation."⁹⁶⁵

From all this we can deduct that one of the most crucial characteristics an operational artist must possess in warfare is the ability to lose no time in evaluating the situation from all angles and making a quick decision how to act. It has been argued that courage is the primary requirement of a soldier.¹⁹⁶⁶ For a commander, the ability to use *coup d'oeil* is the way his courage shows. "*Determination in a single instant is an expression of courage [...] we are referring not to physical courage but to the courage to accept responsibility, courage in the face of a moral danger.*"¹⁹⁶⁷ When making a decision the operational artist is aware that he will face the consequences but still possess the courage to make it.

At all levels of command "*the basis for decision is not the physical situation as last reported or observed, but the commander's mental picture of the situation as it will shortly develop.*"¹⁹⁶⁸ Thus the *coup d'oeil* in the final analysis can be seen as looking into the past, present and future at the same time. When the operational artist uses it to look into the past, he plots the causal chain of events that has led him and his troops to the present. The present he looks at includes not only the battlespace he sees around him but at all reports concerning the prevailing situation he receives from the units in his command. This is the easiest task in employing the *coup d'oeil* and from hence onward the demands greatly increase. The insufficient information of the aforesaid reports provides him with a vision of what the momentary situation is and based on this he has to plot the course of future developments. It is through imagining short-term future developments that the commander is able to win time by mentally preparing himself and his subordinates to emergent situations.

Much of the mastery of *coup d'oeil* is concerned with using the mind's eye to pierce the fog of war to augur what will happen. Nevertheless, we should not think that the ancient commanders who were able to view the battlefield physically in front of them had things very easy either. Even if Caesar, Hannibal and Scipio, and even later Napoleon and Frederick the Great, enjoyed this advantage, they required the inner eye as well since

¹⁹⁶⁴ Freytag-Loringhoven (1991), p. 296.

¹⁹⁶⁵ Clausewitz (1989), p. 103.

¹⁹⁶⁶ See for example Clausewitz (1989), p. 101.

¹⁹⁶⁷ Clausewitz (1989), p. 102.

¹⁹⁶⁸ Simpkin (1985), p. 224.
"the annihilating battles fought by these great generals were possible only because they possessed in high degree not only the outer but the inner coup d'oeil - because they possessed that power of determination which is always an inseparable part of battle intuition and which guided them not only during, but after the battle as well:"⁽¹⁹⁶⁹

Intuition, imagination and intellect are necessities both during the battle and after it. If we talk of operational art, in order to plan a future course of action a commander must grasp mentally how the outcome of a battle just fought influences the enemy disposition. The chaotic circumstances that reign in the battlespace during and right after the battle serve to confuse. Here is a time when his inner *conp d'oeil* must gauge the characteristics of the situation and proceed to fulfill his operational idea and continue the operation without delay while the enemy is still in a disorganized state both physically and mentally.

While we have thus far concentrated on directing battles and operations, *coup d'oeil* as a leadership skill must as well, according to Clausewitz "*also have its place in strategy, since here as well quick decisions are often needed*"¹⁹⁷⁰ According to Mao *coup d'oeil* is first and foremost a process of employing one's intellectual powers to discern the situation as a whole and not focus on detail. In order to make sense of the strategic and to a large degree also the operational picture, the mental powers have to be utilized since the situation is not visible to the physical eye. The same need for abstract contemplation applies to operational level *coup d'oeil*, because

"what pertains to the situation as a whole is not visible to the eye, and we can understand it only by hard thinking; there is no other way. But because the situation as a whole is made up of parts, people with experience of the parts, experience of campaigns and tactics, can understand matters of a higher order provided they are willing to think hard."¹⁹⁷¹

Coup d'oeil is an asset on all levels of warfare but its proper utilization requires attempts to configure the situation on at least one level higher than one's own. That is, within a battle, the commanders must be able to relate the battle in its context of the operation to properly perceive what is necessary and required. Tactical victories or defeats shape the course of operations and operational artists must relate their activities to strategic level. Even the commander-in-chief has to comprehend the political situation to support his perception of opportune moments when to alter the strategic plans to best suit the objectives of the state. Many theorists do not use the specific term *coup d'oeil*, but the meaning is to be found in the texts and the idea is illustrated with in varied terminology. Andolenko appraised Suvorov for his "*quick grasp*", defining this as

"the power of solving, swiftly and well, any kind of problem likely to arise; of appraising a situation quickly, of making a decision rapidly; of preparing its execution rapidly, yet with attention to detail; then, finally, of carrying it out in the same way, with the maximum chances of success. Reason and calculation, an accurate knowledge of the possibilities of one's own side and the enemy's, play an important part."¹⁹⁷²

Every important characteristic attributed to the *coup d'oeil* of the great captains is present in this quotation. Even the occasionally omitted ability for reason and calculation married to rapidity of decisions and executions is included. As another example we can use Maurice de Saxe who wrote that the truly great captain

"should possess a talent for sudden and appropriate improvisation. He should be able to penetrate the minds of other men, while remaining impenetrable himself. He should be endowed with the capacity of being prepared for everything, with activity accompanied by judgement, with skill to make a proper decision on all occasions, and with exactness of discernment."¹⁹⁷³

¹⁹⁶⁹ Freytag-Loringhoven (1991), p. 286.

¹⁹⁷⁰ Clausewitz (1989), p. 102.

¹⁹⁷¹ Mao (1963), p. 81.

¹⁹⁷² Andolenko (1956), pp. 15-16. Lalu (2014), p. 28 defines *glasomer*, or, *coup d'oeil* as one of the three principles behind Suvorov's art of war.

¹⁹⁷³ De Saxe (1987), p. 294.

How could we better summarize the essence of an operational artist? Here we see the importance of planning and preparation, focusing on the intentions of the enemy in order to prepare for them combined with the ability for instinctive and improvised action.

"One of the branches of the art of war, that is to say drill and the method of fighting, is methodical; the other is intellectual. For the conduct of the latter it is essential that ordinary men should not be chosen. Unless a man is born with talent for war, he will never be other than a mediocre general. It is the same with all talents; in painting, or in music, or in poetry, talent must be inherent for excellence."¹⁹⁷⁴

De Saxe proposed a divide of the military art into the methodical and the intellectual.¹⁹⁷⁵ Time is a factor omnipresent in both spheres. The methodical seeks to save time for commanders from mechanical responses by perfecting doctrines to shorten the response-time to orders or enemy activity. Naturally the intellectual and inspired side of the art of war, the planning, the *coup d'oeil*, the initiative, the surprise factor, and the entire leadership function attempts to hasten its processes too. A true genius may not need additional time because he does "*possess a talent for sudden and appropriate improvisation*"¹⁹⁷⁶ Sadly, most of the operational artists are ordinary men facing extraordinary situations and in order to master or even manage them, every second spared from manual drafting of orders and reallocated to thinking them through is of huge importance. Armed forces treat time as a resource to be distributed somewhere it is needed if it can be reduced from menial issues elsewhere. The management of time is the task of the operational artist who

"must know how to subsist his army and how to husband it; how to place it so that he will not be forced to fight except when he chooses; how to form his troops in an infinity of different dispositions; how to profit from that favourable moment which occurs in all battles and which decides their success. All these things are of immense importance and are as varied as the situations and dispositions which produce them."¹⁹⁷⁷

In this quotation we find concentrated the essence of De Saxe's thoughts on time and its meaning. While the tasks of the commander are chimerical, he needs to manage time and temporize and synchronize all the activity of the troops he is in charge of. Even more importantly, he must be able to dive into the stream of *kronos*-time and locate the *kairos*-moment suitable for action. Amidst of the humdrum of war there are moments endowed with enhanced importance to be exploited to gain victory. Not every moment is of an equal value, it is these special *kairos*-moments that the operational artist thrives on and *coup d'oeil* is personal trait that enables him to identify the moment that holds most promise.

Since the agrarian age of De Saxe war has gained a different outlook and waiting for the kairos-moment is not sufficient. The acceleration of pace of society and war alike during the indust-reality created a situation in which the commanders must attempt to bring around the kairos-moments by their own activity. This acceleration has continued during the Third Wave and ideas of flexible time lends further emphasis on the need to not wait for and identify kairos-moments when they occur but to attempt to create them proactively at an accelerated pace. In the words of Leonhard,

"We use the term acceleration, because twenty-first-century strategy well require not just the creation of strategic options, but the rapid creation of them - at a pace faster than the enemy can match. Warfare is and will remain a time-competitive event, and future warfighters will be judged by how rapidly they can put viable strategic options in the hands of the National Command Authority."¹⁹⁷⁸

In this chapter we have attempted to focus on the mental and intellectual aspects involved in the management and control of time and temporality. We saw how impossible a mental

¹⁹⁷⁴ De Saxe (1987), pp. 296-297.

¹⁹⁷⁵ In this de Saxe is in union with Mushashi's idea of strategy being twofold, that of the sword and that of the pen. See Musashi (1995), p. 47.

¹⁹⁷⁶ De Saxe (1987), p. 294.

¹⁹⁷⁷ De Saxe (1987), p. 295.

¹⁹⁷⁸ Leonhard (1998), p. 157.

feat it is for the commanders of today to control all the details involved in operational art. Staffs were created to support the commander by managing the details and allowing the commander to practice his art. In addition, certain methods of command like *Auftragstaktik* were invented to rationalize the command and decision-making processes. In order to save time and to reallocate the saved time into a more important activity, the chain of command should be as simplified as possible and authority to make decisions needs to be delegated to the subordinate commanders who are directly involved in the situation. Time is saved by not having to ask authorization from higher commanders but to be aware of their intent and act accordingly in every pressing need.

When *Auftragstaktik* considerably shortened the chain of command it was also understood that it should be as flexible as possible. Toffler had identified "flexi-time" as one of the characteristics of the Third Wave and in this chapter we argued that in order to be able to adhere to flexible temporality the command and control processes of the armed forces need to be just as flexible. In order to manage the complexity of warfare as a phenomenon every process and product should be as simplified as possible. Flexibility is a requirement of the minds of the planners and the commanders and the resulting plans just as it was required of the tactics used as we saw earlier. The mind, the plan, the decisionmaking, the command, and the execution – in all of these flexibility and even plasticity are essential requirements. Only then can we create truly fluid operational art in contrast to a rigid one strictly defines by doctrine and procedures.

The mechanical way of winning time intellectually is to hone the processes of information gathering, analysis, and decision-making so that not a second is wasted and the saved time can be delegated to supporting the commander in his decision-making. Time lags in the processes must be minimized to enable the commander to make his decisions backed up with the necessary amount of information. Too much information only serves to confuse and in all cases the commanders must be able to decide on insufficient information. Only the quality of the information can be increased and this occurs through more efficient analysis to ensure the 'freshness' of the information.

Nevertheless, in all cases, no matter how valid the information and how intelligent the general using it, there is no escape from the fact that there are no certainties in war and in every decision huge risks are taken. On occasion the general has to resort to gambling, but mostly his task is to manage the risks and evaluate them in relation to possible outcomes. The commander's most important means of managing temporality is to make decisions as rapidly as possible. This depends on his *coup d'oeil* as both physical and inward eye in creating situational awareness through imagination and intellect alike. Energetic, intelligent and imaginative operational artists, able to combine these three are masters of time.

TIME TO THINK OR CONCLUSIONS

"Philosophy clarifies our mind and makes us better human beings, but worse soldiers."¹⁹⁷⁹

ne of the most important arguments here is that development in military thought is not teleological and progressively improving at a set pace towards perfection. Rather development in the art of war and operational art moves in waves and cycles. Old ideas return clothed anew and sometimes they are slightly altered to suit better the new context of their applications. According to Gray

> "we have powerful tendency to rediscover that which was never lost, but was only misplaced and forgotten and which probably should never have been forgotten in the first place ... strategic ideas rise and fall, appear and disappear, and then reappear in slightly different form, according to the policy and strategic agenda."¹⁹⁸⁰

Ideas come and go but there are things that remain constant even if the meanings given to them change. Time is one of the basic elements at play in warfare that has to be joined together to create operational art. The commanders of all ages have employed time and tempo to coordinate their operations and combine many factors into a unified whole according to a pre-planned timetable. In order to be able to effectively do this he must understand thoroughly both the universal and 'wave-specific' aspects of management of time. What is required mentally of an operational artist is a Janus-like approach to his art. One face needs to be turned to the past and the other boldly facing the future. As Liddell Hart wrote,

"The aim of military study should be to maintain a close watch upon the latest technical, scientific, and political developments, fortified by a sure grasp of the eternal principles upon which the great captains have based their contemporary methods, and inspired by a desire to be ahead of any rival army in securing options on the future. The ways in which Napoleon achieved strategic surprise are of little guidance nowadays, but his ruling idea of strategic surprise ought to dominate the mind of any commander. The practical value of history is to throw the film of the past through the material projector of the present on to the screen of the future:"¹⁹⁸¹

Lessons of the past do not work in the world of today word-perfect. Past victories cannot be recreated down to the last detail. As Sokolovsky wrote, "*history knows of no two wars, no matter how close together, that were conducted by the same methods.*"¹⁹⁸² Thus, the avid student of military art has to be able to skip over the case-specific elements and grasp the universal ones. He must understand the principles used to create the desired outcome and adopt those principles to be used in accordance with the demands of the present day and use his intelligence and imagination to perceive their role in the future. The idea of the soldier looking into both the past and the future for inspiration is a crucial requirement. The technical, scientific and political developments and trends set the course for the future and the soldier must anticipate in and ride on the crest of the wave of progress to be able to use the age-old principles efficiently.

Moltke argued that "human life, even the entirety of human nature, is nothing but war of the future against the present. The lives of the various peoples are no different."¹⁹⁸³ The biggest fight

¹⁹⁷⁹ von Brenckehoff, cited in Gat (2001), p. 65.

¹⁹⁸⁰ Gray (2007), pp. 62-63.

¹⁹⁸¹ Liddell Hart (1927), p. 173.

¹⁹⁸² Sokolovsky (1963), p. 237.

¹⁹⁸³ Moltke (1993), pp. 24-25.

occurs when the ideas of tomorrow clash with the practices and ways of thought of the present. One of the primary findings in this study is the idea that society and the wars it wages evolve constantly but the development is not linear but cyclical. History does not repeat itself but we look into the lessons of history to help us better overcome the challenges of tomorrow. Thus many of our choices are fueled and shaped by history and old ideas are resurrected. Unless we are able to distinguish the difference between the valid and obsolete teachings of history and re-evaluate continuously the principles of war we are liable to repeat the mistakes of history by shaping our actions based on wrong guidelines and in effect force historical patterns to reoccur.

One major problem strategy and operational art need to face is the status of 'the classics.' For some people they have become unquestionable dogma no one will approach with criticism.¹⁹⁸⁴ Some others in their frustration take the role of iconoclasts and seek to prove that the classics are utterly useless in our Third Wave world that is drastically different from the First or the Second. Both of these vantage points should be discarded. We should not read any of the theorists of the past or today as words of ultimate truth. When visionaries err, they do it with the same enthusiasm and boldness as when their thoughts triumph. The age of mechanization and the indust-reality in general was reflected in theories of operational art as one of vigorous offensives and maneuver and it is hard to recognize this character in the writings of Fuller that claim, "warfare is likely to become less offensive once the horde is diminished, or disappears, consequently wars will become less frequent."¹⁹⁸⁵ The reality of the 20th century turned out to be something completely different.¹⁹⁸⁶ There is no guarantee the 21st century developments will follow the pattern described by technology enthusiasts. While the Third Wave is sweeping across most of the armed forces, it is possible that there may never occur a Third Wave war on a global scale. Armed conflicts of tomorrow may still be fought adhering at least partially to the patterns of indust-reality or even the agrarian age.

Military minds from one generation to another have read their Clausewitz, Sun Tzu and Jomini and accept them as 'holy writ.' Likewise, the older the classical writ is, the more its ideas have been copied by later thinkers and since a well-recognized principle is that the fundamentals of strategy do no change over time we end up with recycled thoughts that pass from one generation to another without critical evaluation and texts influence each other without their intellectual debt openly acknowledged. It is beyond my intention to argue that the idea of striking at the right time at the right place would not be a precursor to victory. But it has been repeated so often that it has become an empty cliché devoid of any meaning.

We need operational artists who can give us guidance on *how* to determine the right time and place. Due to the complexity of war in our age, a comprehensive list is impossible to produce, but some guidelines are needed lest we degenerate to the level of parrots repeating slogans that have turned hollow with the passing of time. The importance of the principles has not waned but the meaning inbuilt to them has to be reinterpreted anew from time to time. To pick an example, the idea of concentration of force has to some degree turned into concentration of effects and is in turn is accomplished through different means and methods with bytes or precision weapons than with armed peasants or tank armies. Yet the difference is superficial because regardless of the tools used in exerting force, the necessity to do so remains the crux of operational art.

¹⁹⁸⁴ Naturally the military mind no less than the academic mind should take things as given. None of the great theorists, not even Clausewitz, should be taken as sacrosanct but instead should be constantly challenged. Not all of his thoughts remain valid and there are considerable gaps and inconsistencies in his text. Echevarria (2013), pp. ix-2.

¹⁹⁸⁵ Fuller (1932), p. 280.

¹⁹⁸⁶ As Reid (1998), p. 5 admits, both Fuller and Liddell Hart were progressive thinkers ahead of their time but they were not always right and some of their ideas continue to have a greater value than some others.

This idea applies to the meaning of time just as well. In warfare of Waves there are different amounts of time to handle, different ways of winning and saving it, but time is always of essence and somehow or another, it needs to be managed and optimally utilized. The idea of quantifiable time imbued with the purpose of saving every second characteristic to the indust-reality is not wholly compatible with the idea of flexitime that has to be considered as a part of the Third Wave way of waging war. The difference is on the level of means and ways, but managing time remains a factor that has grown in importance with the constant acceleration of the tempo of warfare. The principles of war must be constantly analyzed to determine *how* they influence operational art specific to a certain Wave of warfare and how they should be taken into account for optimal performance in time-management.

As an example of rethinking the old ideas we can use Clausewitz who wrote that "*one cannot conceive of a regular army operating except in a definite space.*"¹⁹⁸⁷ This is true, but the definition of space must be rethought to fit this argument into the context of today. Time and space were central to Clausewitzian thinking and their relationship is a dialectic one on all three levels of warfare¹⁹⁸⁸. Tactically and operationally in Clausewitz' time this definite space meant a battlefield, consisting of only depth and width as the two dimensions. The invention of aircraft added the dimension of height and created a battlespace. The German V-1 and V-2 rockets were a developmental forerunner of many of the precision weapon technologies of today. In the words of Fuller,

"the revolution the V2 effect is to be sought not so much in its forms of a projectile, as in that of a reaction propulsion engine, which acting purely by recoil does not require air to 'push against' or sustain it. Therefore, it adds a new sphere of movement to those existing: movement in a vacuum. This possibility is as great if not a greater revolution than that introduced by the aeroplane, because it raises war into pure space."¹⁹⁸⁹

When ballistic missiles and spaceflight became a possibility the potential extent of battlespace has expanded far beyond the surface of the Earth. Simultaneously the ability to manipulate the electromagnetic spectrum has opened a parallel and virtual dimension of battlespace, which has since been widened to the concept of the intangible cyberspace as augmented reality. How can we argue that any type of army could conceivably have the definite space to operate in? The answer is simple; time can be used as the factor to frame the battlespace. An operation has to have temporal boundaries. War has to take place in a spatio-temporal context. If battlespace has extended beyond comprehension, the idea that warfare starts, is carried out, and ultimately ends at a certain point of time keeps it manageable. War can be fought anywhere at any time but not everywhere all the time. Time sets boundaries and creates a frame for fluid operations to flow in. This is a feature of the Third Wave with its fuzzy temporality and flexible management of time. For the classics of the past war began and ended at a certain point along the line of kronos-time. Today the temporal boundaries have to be set, artificially, if necessary. On the level of operational art this is manageable but in strategy very difficult.

Time is an important factor in warfare on all levels but may have different implications and requires different management. Time itself does not bring about victory or defeat, but its manipulation is terms of mobility, surprise attacks and catching the enemy off his guard perhaps will. In a similar manner the terrain is inconsequential, but how one uses it in connection with his troops and their operations provide one with the keys to victory. The numerical superiority in troops does not amount to anything, unless one is able to use them in a manner that will bring about the realization of operational and strategic objectives. We return to the classic military maxim that the way to victory consists of using

¹⁹⁸⁷ Clausewitz (1989), p. 109.

¹⁹⁸⁸ Strachan (2007), pp. 41-42.

¹⁹⁸⁹ Fuller (1948), p. 320. More or less at the same time as Fuller his compatriot Martel (1945), p. 70-72 extolled the future threat of rocket-weapons, claiming that "*whatever form the future may take, the rocket will certainly play a very large part in every form of warfare.*" Martel (1945), p. 72.

the right amount of troops in the right place at the right time. Clausewitz wrote that combat itself "is the essential activity of war, but we must also consider men, time and space, which are the components of this activity."¹⁹⁹⁰ His approach was primarily battle-centric and after the war started he saw fighting as the only means of winning it¹⁹⁹¹. Combat, the actual *praxis* of warfare, is a sum of different components related to each other. The crucial factors of time, place, and force are worthless by themselves. They only become important when combined by the general's mental and physical activity and in relation to activities of the enemy. Only through action – or inaction – at any given place at a given time the importance emerges. Every moment in a battle or an operation has the potential to be the most important one, but only if certain action is undertaken or discarded at that time. Only when this trinity is synchronized in the harmoniously, may we expect a masterpiece of operational art to unfold. We know that in the roof of the Sistine Chapel the basic colors in different paints are simply combined together, but a palette in the hands of Michelangelo created something far greater than the sum of its ingredients. The operational artist is like any other. He must apply his genius to the tools at his disposal, analyze them, and create a masterpiece using all that they have to offer. He has to use time as a tool, a resource, and precondition of his art.

The need to manage, manipulate, win and save time takes different forms in each age. When time is not only measured and saved in one's own actions but actually won from the enemy, we are no longer talking about kronos-time measured in minutes and seconds but 'relative' time. Time in this case is closely tied to what can be accomplished within a given time period and the faster one is, the less time enemy has at his disposal. Thus time is relative not only to what one can accomplish during it but also to what meanwhile the enemy can do and how stealing his time can hamper his operations. Time won in the heat of battle has meaning mostly through the influence it has on enemy and his temporizing.

Laying an emphasis solely on winning time has led us to remain true to the principles of indust-reality and to create processes that would run with maximized efficiency with the aim of being simultaneously as comprehensive and as rapid to carry out as possible. To utilize time and to manipulate it as a resource is crucial, but if we focus too entirely on 'winning seconds' and seeing the clock as our principal enemy we quantify warfare. Warfare turns into a test-lab of natural science instead of the intuitive and imaginative art it was earlier considered to be. We must be able to combine quantitative and qualitative factors into our operational art. If we produce avant-garde art, there is a looming possibility of being too creative and creating a mess. If we seek to compute warfare, the importance of intuition, incentive and spontaneity disappear. We are no longer artists of war but its engineers. Yet there is a long tradition to perceive war not only as an art, but a science as well. As du Picq wrote, "The essential of tactics is: the science of making men fight with maximum energy. This alone can give an organization with which to fight fear. This has always been true. We must start here and figure mathematically. Mathematics is the dominant science in war, just as battle is its only purpose."¹⁹⁹² This type of thinking excludes creativity and intuition and reduces the artistic value of command in war. Mathematics is the basis of all arts; the musical notes adhere to mathematic equations and laws, perspective is dictated by mathematics, proportions follow mathematical rules. Therefore, one should not exclude mathematics from the art of war either, but to make sure that it remains the foundation of which to build the masterpiece and not the method.

Rhythm of warfare is another concept which gains its meaning only in conjunction with timing. A symphony orchestra would sound horrible, if the notes each individual instrument produces were not perfectly timed in accordance to other instruments. The operations of armed forces must be synchronized similarly, that is, timed with every element in joint relation to others. Operational art can produce a beautiful symphony and avoid the fugue created by the fog of war. The commander becomes a conductor if his

¹⁹⁹⁰ Clausewitz (1989), p. 207.

¹⁹⁹¹ Echevarria (2013), p. 3

¹⁹⁹² du Picq (1987), p. 166.

sense and intuition of timing his operations is flawless and even when the instruments he marshals attempt to produce discord, he should be able to 'play by the ear' and resynchronize them again. There are, moreover, certain things that the generals of old could do which can no longer be carried out in our civilized societies. The campaigns of Julius Caesar or Alexander, or Napoleon, were so effective because they had full artistic freedom.

> "With his small but excellently trained and organized army, Alexander shattered the brittle states of Asia. Ruthlessly, without pause, he advanced through the vast expanse of Asia until he reached India. That was something no republic could ever have achieved; only a king who in a sense was his own condottiere could have accomplished it so rapidly."¹⁹⁹³

When the commander-in-chief of the army was simultaneously the head of state grand strategy, policy of the nation, and strategy were one. When there are no restraints on the commander-in-chief, he is able to make decisions and carry them out so rapidly that the enemy is unlikely to keep up with the pace. This would be inconceivable in the advanced democratic societies of today and even in the past existed only as an anomaly of history.

Even Clausewitz, the misunderstood proponent of total war¹⁹⁹⁴ supported political control since "subordinating the political point of view to the military would be absurd, for it is policy that has created war. Policy is the guiding intelligence and war only the instrument, not vice versa."¹⁹⁹⁵ No matter how much more effectively war could be waged and how much time won without the restraining leash of policy, it has to remain in place. Political goals restrain the military in deciding the ultimate conclusion of the clash of arms. Even if both share the same goals, the ideals of military strategy, that is, causing as much loss of life as quickly as possible with as few losses to one's own would lead to methods that would inflict excessive suffering. An example is easy to find; a nuclear strike on any country would bring it to its knees immediately. It would be short war. But if the enemy or other nuclear powers retaliate, the ultimate result could in the worst-case scenario be the end of civilization as we know it. In the words of Clausewitz,

"So policy converts the overwhelmingly destructive element of war into a mere instrument. It changes the terrible battle-sword that a man needs both hands and his entire strength to wield, and with which he strikes home once and no more, into a light, handy rapier – sometimes just a foil for the exchange of thrusts, feints and parries."¹⁹⁹⁶

And it is this foil the world needs, because technology has created weapons that make a total war so deadly that fighting must be tamed into political argument "*which takes up the sword in place of a pen*."¹⁹⁹⁷ War can be perceived as a form of political discussion beyond exchanging diplomatic notes, "*another form of speech or writing? Its grammar, indeed, may be its own, but not its logic.*"¹⁹⁹⁸ This discussion may be carried out in harsh tones.

When we are forced to wage war, everything should be done to win time in from the enemy, to catch him off his guard and ultimately end the war sooner. But policy has to decide which means of winning time are allowed. This requires expertise, insight, and decision-making capability from the political leadership of the nation.

¹⁹⁹³ Clausewitz (1989), p. 587.

¹⁹⁹⁴ For example Sumida (2008), p. 6 argues that all too many approach Clausewitz with preconceptions that create obstacles for understanding the actual text.

¹⁹⁹⁵ Clausewitz (1989), p. 607. For a very thorough discussion on how Clausewitz actually viewed total war and especially how his ideas developed see Palmgren (2014), pp. 379-417. Palmgren's work provides excellent in-depth perspective into how Clausewitz's thinking on war evolved. Should the reader wish to immerse into details concerning the life and especially military service of Clausewitz Stoker (2014) is a recommendable choice.

¹⁹⁹⁶ Clausewitz (1989), p. 606.

¹⁹⁹⁷ Clausewitz (1989), p. 610.

¹⁹⁹⁸ Clausewitz (1989), p. 606. Echevarria (2011), p. 137 has argued that there are two different grammars in warfare when viewed from the U.S. perspective. The first grammar applies to more traditional military operations with massed armed forces such as Desert Storm of 1991 and the second grammar connects to insurgency and irregular warfare.

"Woe to the government, which, relying on half-bearted politics and a shackled military policy, meets a foe who, like the untamed elements, knows no law other than his own power! Any defect of action and effort will turn to the advantage of the enemy, and it will not be easy to change from a fencer's position to that of a wrestler. A slight blow may then often be enough to cause a total collapse:"¹⁹⁹⁹

This creates a situation where the politicians need to be thoroughly familiar with their instrument so that the general can focus of perfecting his art to a point where the military loses no time in reacting to the political orders, issuing its own, and carrying them out. It is true that since war is an expression of political will of the society, it must follow the written and unwritten rules of that society. If the pace of living in a society has quickened, it is selfevident that warfare has to adapt to this pace. But generals are rarely avid futurists and the intricacies of the change in tempo are difficult to analyze when one is confronted with future shock. How can we reliably attempt to augur the future if we are struggling to comprehend the present? Perhaps we can understand the present by following the pattern of history that has brought us here and seek to project the chain of events and developments into tomorrow. We could do worse that dig deep into the traditions of operational art and strategy for guidance. Why are these old texts on wars totally different than the ones we are likely to be facing in the future still necessary and even obligatory reading for future officers? Because of the intellect behind the best of the texts rises above its contemporary context and treats war as a universal phenomenon. In the more inspired texts we can even find predictions of things to come.

> "Turning back to the law of military development, and remembering that the present tendency of civil science is towards the existence of an electrically constituted universe, and that industry and civil life are becoming daily more influenced by electricity, and the many applications of this energy, it is conclusive that military organization will follow suit, and will develop what I will call, for want of a better name, the 'robot' cycle,"²⁰⁰⁰

It is difficult to believe Fuller wrote these words over eight decades ago when "an electrically constituted universe" was an absurd idea. Today, with internet, wireless connections, PCs, cloud computing, networks, cyberspace, and virtual reality Fuller's prediction seems to be accurate. We might not yet live in a 'robot' cycle, but the drones flying over Afghanistan controlled from Nevada hint that such a phase is opening up as the next wave. As we immerse ourselves in the thoughts of past theorists and practitioners it is beneficial to augment these ideas with the dreamers of today and their visions of what the future could be.

Throughout these pages there has been recurring criticism towards technology. It seems that all too often technological innovations have been hailed as augurs of new wars that supposedly are utterly different than any wars of the past. But always throughout history every war has in a sense been a new war, since they have been fought at least slightly differently than earlier wars. As already Caesar wrote, *"In this new kind of war, new methods of managing it were invented by both generals."*²⁰⁰¹ Warfare develops constantly but there seldom are true discontinuities of breaches from the evolutionary pattern. New technologies enable wars to be fought with new means but they do not dramatically alter the essence of war. War abides to certain principles but the application of these principles varies according to not only technological but also societal and cultural level of development.

Fuller was in his time one of the most vociferous 'science-fiction writers' of military theory. Nevertheless, we must not forget that many early sci-fi writers of fictional literature were simultaneously hard-core scientist in their fields. Names like Fred Hoyle, Arthur C. Clarke and Isaac Asimov are famous in both literary and scientific circles and in our hype on cyber we have elevated people like William Gibson, the author of "Neuro-mancer", to the select society of authorities of the networked age. The reality of today was the sci-fi of yesterday and some of what is envisioned today may be the basis of tomorrow.

¹⁹⁹⁹ Clausewitz (1989), p. 219.

²⁰⁰⁰ Fuller (1932), p. 229.

²⁰⁰¹ Caesar (2010), p. 221. He was referring to the Civil War in Rome.

Sikorsky argued that it is just as dangerous to fall deeply "*into the rut of routine as to yield, in the matter of military art, to fantastic imagination.*"²⁰⁰² This is not limited to technology, but ways of thinking in general since fictional writing about future wars to a degree has the power to shape national stereotypes and affect government policy, as for example Bernhardi demonstrates²⁰⁰³. To understand the contemporary demands of time we need to follow the current megatrends of progress.

For example, we can plausibly argue that the aspect of asymmetric warfare has always been present. It is the oldest element of war from the time when a caveman had to use a weapon as defense against dangerous predators. The creation of mechanized and motorized warfare led to a wide resurgence of the guerrilla tactics, the most common of all asymmetric forms of fighting. As Fuller wrote, "guerrilla warfare, the most primitive of all forms of war, is likely to be revived, and as it obviously demands a high order of initiative to combat it, it will force this essential quality upon the commanders of organized forces."2004 Secondly, the mobility of motorized troops enabled them to act as guerrillas themselves, penetrating deep into enemy territory, inflicting damage there and withdrawing speedily before the enemy could react. These methods of fighting were an important part of Rommel's operational art in the African desert where emptiness allowed for the exploitation of mobility. Guerrilla warfare also broke out in almost every country occupied by the Nazis in form of resistance movements. This led Liddell Hart to write, "in no great war of modern times has there been such a widespread guerrilla warfare as in the last one."²⁰⁰⁵ In WWI it had not been a very prominent feature on the European continent, but it had a huge impact in Turkey and the Middle East under the inspiration and influence of T.E. Lawrence.²⁰⁰⁶

I argue that the resurgence of guerrilla warfare was a countermeasure to the mobility and speed of the indust-reality and evolved during the Third Wave as an asymmetric response to forces superior in almost every sense. The juxtaposition of speedy modern maneuver warfare and its slow asymmetric counterpart is a characteristic of many contemporary conflicts and the growth in importance of asymmetric warfare has been almost exponential during the Third Wave and has taken forms far beyond those of the guerrilla strategists. Asymmetry today works not only through variable tactical choices or variable pace of activity but is an increasingly important element in all facets of operational art. If, as this study has repeatedly argued, the conduct of war has become ever more complex and its pace has constantly accelerated, measures to control the speed and to manage the complexity have to be invented and asymmetric methods look promising. They offer the possibility to break free from the spin of the decision-making cycle and self-sustaining processes that erode the artistic element of war and favor the mechanistic parts. An asymmetry of time is an element of warfare during the Third Wave of warfare.

First and foremost, asymmetry is an option that needs to be considered as means of controlling, managing and optimizing time in warfare. The aforementioned processes seek to make the armed forces win time by being as quick and efficient as possible. Asymmetry promises the option of finding the auspicious moments when to act to derail the processes of the enemy. If the conception of agrarian societies of time and demand of temporality were relaxed and time at one's disposal was not utilized to its fullest and if the art of war of the indust-reality was about mechanization of the tools and methods alike, all aimed for maximized efficiency of time and other resources, the Third Wave society should perhaps combine the two and add new characteristics particular to itself. There needs to be

²⁰⁰² Sikorski (1943), p. 11.

²⁰⁰³ Bond (2006), p. 85. See e.g. Bernhardi (1914) and (1914b).

²⁰⁰⁴ Fuller (1943), p. 11.

²⁰⁰⁵ Liddell Hart (1950), p. 53.

²⁰⁰⁶ On the impact of guerrilla operations see Liddell Hart (1950), p. 53. In the chapter in question Liddell Hart poses a question whether it was indeed wise policy that Britain took when it chose to foster resistance movements on the continent. The U.S. probably has learnt the same lesson later from the "brave *mujahedeen*" who turned on them in Afghanistan and around the world. For a beautiful narrative of the Arab way of waging war see also Lawrence (1935).

a return to focus on the importance of kairos-moments and their temporary nature while a certain sense of efficient management of time has to be present as a carry-over from indust-reality. If indust-reality saw functioning of the optimized process as important, the Third Wave society and the wars it fights returns to identifying the rhythm of activities and seizing the right moment to act for maximized benefits. In highlighting the importance of moments of kairos-time in the flow of kronos-time the Third Wave society actually pays homage to the agrarian society. One idea that emerges from thinking about flexitime is that the temporal resources during periods of kronos-time have to be meticulously managed and not a second can be wasted. When a moment of kairos arrives, intuition, imagination, intelligence and professionalism are required to fully exploit their possibilities for the short but auspicious duration that they last. Thus, perhaps the essence of managing time in oper-ational art in the Third Wave societies must be able to configure and assimilate into itself the ideas of temporality from the two previous Waves as well.

In terms of future research, a final word is to be said about the methodology I have employed. Anyone doing research cannot perform his task from an Archimedean immovable point which would not connect to the entire field of research. At the least observation enters the world as a constituent part of what is being observed and a researcher enters into the dialogue of the texts as a third party.²⁰⁰⁷ Many of the interpretations I have drawn have been pointed out by earlier researches who were, nevertheless, not as interested as I am with the interpretations given in the texts but the ontological truths themselves. With my method I have cast an eye back to the original texts from a vantage point of my contemporary conjunction, one where the composition of mass armies, mobile or not, are increasingly being questioned and special forces, trained professionals and precision weapons are highly valued. Knowledge gains more and more importance as the weapon of the Third Wave operational art of the information societies.

Here it is worthwhile to note that working with texts from different eras, different cultures and different languages is riddled with hazards. As many military historians have noted, translations from different languages, intended to be used in different times than when they originally were written invariably distort the meaning of any text.²⁰⁰⁸ While the distortion of the actual text is an undeniable fact, there is a multitude of narratological theory that argues that while the meanings of words and even texts change, the narrative itself, the story the text communicates, remains intact. The researcher should not read too much into the individual words used but to evaluate what is being communicated. I have focused on the metatext composed of thematically picked utterances from the originals to inquire into the meaning of time as it has been perceived by the most important military minds of their times to illustrate the particulars and characteristics of the narrative discourse in the development of operational art. In order to understand metatexts we must acknowledge that, as Barthes wrote, "nothing exists outside the text, there is never a whole of the text."2009 The text is plurivocal; a text is indeed a network woven out of other texts and other voices²⁰¹⁰. This means that no matter how many more texts had I included, I still would not have been able to arrive at the 'whole' metatext of operational art. It is sufficient in order to perform a narrative analysis that the body of literature used as my data has included enough voices to draft the outlines of the metatext and illustrate what it is composed of. After all, not every voice and every text is as important as the other regarding the composition of the entire narrative discourse.

The Reader may question the level of objectivity a researcher has in this type of study. Pure and unsullied objectivity is simultaneously an illusion and a necessary goal for any researcher. According to for example Bakhtin and Barthes, all texts become dialogic in the process of interpretation. When the researcher or any reader involves himself with a

²⁰⁰⁷ In Bakhtinian thinking a dialogue can have innumerable participants. See Bakhtin (1986), p. 126.

²⁰⁰⁸ See for example Heuser (2008).

²⁰⁰⁹ Barthes (1974), p. 6. Italics in the original.

²⁰¹⁰ Barthes (1974), p. 21.

text he becomes automatically a conversant with it. I have compiled a metatext out of the writings of the theorists and commanders and allowed the texts to interact and criticize each other. Thus, in the resulting metatext or narrative discourse under analysis here, the interplay between texts is abundant and intertextuality has been allowed to work freely. As a participant in the dialogue my influence can be seen not only in criticism of the texts but mainly in the emplotment of the metatext around the themes of time, timing and temporality. To remain true to the original texts the individual theorists and practitioners have been given a voice to speak for themselves through numerous quotations. This has worked to ensure that while out of necessity I as a researcher became part of the narrative discourse and ultimately shaped this study in narrative form, the original thinkers conjoined in the metatext have had their say and an unbiased representation of their thoughts as they spelled them out originally. Even with this many pages at my disposal I ran into the problem Horace described; *brevis esse laboro, obscurus fio.* The aim of this study was to recover what the influential military thinkers themselves wanted to say about time as a component of the art of war and how they said it.

The researcher ought to have experience with multiple narratives in order to provide a description that includes contrasts and comparison both within the story analyzed, and between this and other stories. Nevertheless, the entire intertextual field of comparison does not have to be found on the pages of each research paper.²⁰¹¹ The danger in performing re-readings of old classics is the possibility of providing nothing new but the promise lies in being able to produce alternative ways of thinking and viewing the art of war. I encourage further experiments in researching and writing military metahistory emplotted to illustrate a chosen theme. Viewing the history of the art of war as a narrative of times and actions past offers new tools of interpretation and opens up new vistas for possible research. As Wylie wrote, the poet or the historian "*tells us a tale, in his own fashion, of the drama and the data of war. One of them gives us the feel and other the facts of war. And both of them are a needed prelude for the study of war. But the analyst must go further than either, and perhaps in a different direction."²⁰¹² I suggest combining them through metahistorical approach.*

To make sense of war, all historians have to at least partially resort to metahistory. The utter confusion that reigns on a battlefield has to be narrated so that a coherent and logical whole emerges. Isolated incidents and actions have to be represented so that causality seemingly emerges from the chaos. In a similar manner the entire history of war can be seen as a unified story and a narratologist can use his chosen theme as a storyline to be followed. Alasdair MacIntyre has claimed that "*man is in his actions and practices, as well as in his fictions, essentially a story-telling animal.*"²⁰¹³ All the great thinkers on the topic of war have presented their thought in the form of a narrative. Why not then be bolder in employing narratological tools in our research on a wider scope?

Narratology as a method or research orientation does not provide us with the infallible formula of victory in war, but neither will any other method. Narratology belongs in the realm of linguistic methods and is mostly used qualitatively. Since the teachings of the past theorists and commanders reach us only through their narratives or narratives about them, the source material justifies the use of this method. No matter how thoroughly we cover ourselves with cobwebs in archives trying to search for the ontological truths, all the research material still is in a form that can be approached through narrative perspective. Every history book, every memoir, all diaries and notes are still narratives about what occurred in the war even if they possess varying degrees of narrativity and sometimes their narrativehood seems less than self-evident at first glance.

As war is a human drama on a monstrous scale with corresponding amounts of emotions involved, there are no objective truths. We can study military history as accounts of wars, operations and battles and through thorough cross-examination of differ-

²⁰¹¹ Polkinghorne (1988), p. 167.

²⁰¹² Wylie (2014), pp. 16-17.

²⁰¹³ MacIntyre (1984), p.216.

ent sources discard the unreliable views and produce verified descriptions of what actually happened - naturally in narrative form. With this method we can decipher what happened, that is, how operational art was put to practice. But the heart and soul of operational art is not to be found in the planning process, the resulting plan, or its execution. These give us a view of operations as the praxis of war. Operational art in its purest form is a mental process. It is thinking, estimating, evaluating and envisioning how to conduct an operation. As battles are reciprocal and the enemy has a say in how they turn out, the result of operations may differ drastically from the aspirations of the commander. "*The enemy is always a reacting being that not only has no intention of falling in with your plans, but will actively be setting out to foil them - whilst making plans of his own at the same time. The enemy is an adversary, an opponent, not a sitting target.*"²⁰¹⁴ Since the realm of operational art is the mind of the commanders who practice it and the mind of the theorists seeking to influence the actual artists we must seek to understand how these individuals conceived of war to uncover the thought patterns that have shaped our understanding of operational art.

Operational art and the art of war are of primarily intellectual and imaginative concepts that gain their physical form through warfare. We can argue that war as a clash of wills is fought on the level of intellect where minds are pitted against each other. If the mental aspect of operational art is of insufficient quality, the resulting physical clash of forces will eventually be lost. Of course we must constantly think how to consume less time in operations than the enemy to, but the first and foremost priority is to learn to out-think him. This is why military history as a study of past wars and operations must be coupled with more philosophical reflections on the art of war. In order to gain understanding of this intangible element of warfare, the 'art' embedded in operational art, narratology offers new and heretofore almost unused tools.

Concerning the application of narratology in operational art research my argument is that it can and even should be applied but with caution. Narratology is best used as a broad research orientation or a perspective into both the material analyzed and the composition of a synthesis out of it. With this I mean that the researcher should be well versed in the theory of narratology to understand its possible range and scope of application and within these bounds treat his research data as narratives. Traditionally narratology has had an obsessive attitude towards taxonomies and burrowing deep into the structures and forms of sentences and words to their most minuscule detail and focusing only on dissecting the textual part of the narrative. Postmodern and constructivist approaches have emphasized the element of extratextuality in the narratives and the ideas and intentions of the texts beyond the words on paper. This type of perspectivalism in a researcher allows the research to go beyond the language into the narrative itself. Not all of the theorists and commanders chosen to partake in the metatext are great users of language or natural storytellers. One is tempted to argue that many would rather wield a sword than a pen, but seeking to uncover their thoughts behind the facade of words by employing narrative orientation one is able to produce worthwhile interpretations.

Hew Strachan has criticized historians for their desire to "*create meta-narrative lumps rather than splits*"²⁰¹⁵. However, this valid point refers to a slightly different approach to past times than the one used in this study. Strachan means that by pursuing generalizations the exceptional or inconvenient is excluded and a comprehension of the past is based on a selective set of insights.²⁰¹⁶ As stated before, this study does not aim to produce a historical metanarrative, but a metahistorical narrative on the theme of temporality within a certain body of texts that have influenced each other. History is not forced into a storyline, but a chosen storyline is followed through history, looking for the exceptional as well as the contingencies. Both the tradition and breaches to it are important to grasp to juxtapose them.

²⁰¹⁴ Smith (2008), p. 9.

²⁰¹⁵ Strachan (2013), p. 102.

²⁰¹⁶ Strachan (2013), p. 103.

What this study and any upcoming narrative inquiry into operational art is likely produce are not ontological but narrative truths. There is an important difference. Thus my research does not show what indubitably the meanings of time and temporality are in operational art. Rather, this study illustrates how the military thinkers of different times thought the about the meaning of time in the art of war and how time affected their operations. The objective of narrative research is to produce interpretations instead of proven facts. By choosing alternative paths than those favored by some of the most eminent military historians in Finland new approaches to data can be taken. While this study is not a part of military history as a subject of research, it focuses on the phenomenon of war and the myths involved in it and seeks to add to traditional methods used adhering to the call of Professor Kesseli.²⁰¹⁷ The approach in this study has been metahistorical in the sense Hayden White propagated. A long time span of history of military thought evidenced in texts is emplotted to follow the theme of temporality as a storyline through the entire narrative arc of the metatext. The same approach could be used to analyze the development of any other theme over time in any other narrative discourse.

The texts included into the corpus of data in this study analyzed do not cover the entire span of military thought. The Reader can immediately spot that there is not a single example of a Finnish operational artist included into the research material and question the validity of choices, since undoubtedly there have been several important operational artists in our national history. They have been omitted because they are not influential to the development of operational art or the art of war on a wider scale. The texts included here cross-reference each other, debate amongst themselves, influence or discredit each other and create intertextual webs. The metatext is partially created by this intertextuality among commanders and theorists. They all engage in a common discussion. Furthermore, the commanders used here are among the most influential in their armies and their practice of operational art had an influence beyond their respective armies. This study is focused on the thinking behind the practices and thus the voices of the texts are foregrounded instead of how these ideas were enacted.

I have left myself open to criticism that time is an abstract concept I have not chosen to define and pin down for analysis. As I have several times in the course of this work argued, in order for time to have any meaning in operational art, it has to be tied to something else; some action, something accomplished, something prevented. What this study has concerned itself with is 'time in relation to something.' Contemporary military thought often seems to view abstract concepts and time spent thinking of them as waste of time and dallying around with inconsequential things. One could hardly err more than this if one wishes to develop operational art instead of operations. Pure abstractions have to be married to practical issues. As we discussed earlier, while there may be use for a pure intellectual in the role of a strategist, they are incapable to lead operations. For a tactical commander sheer inexhaustible energy and iron will as catalysts of relentless activity may be enough. An operational artist has to combine abstract thinking and very palpable execution into a concoction. He cannot be either intelligent of energetic but both. Most of the research in Finland concerning operational art focuses of its execution and narratology as a research orientation enables one to focus on the abstract realm on intelligence and imagination and resulting originality and creativity. New ideas gained through this type of methodology can either be verified through more 'traditional' research or put to test in practice.

To summarize what the future war will be like, it is a safe bet that whatever new tools and tactics will be employed, the essence of war, its raw ontology and nature, will remain unchanged. If we look back at the development of warfare during the last decades we note that it is not the drone or any other Third Wave technology-enable weapon that has produced most casualties, but the unholy trinity of the machete, the AK-47 and the

²⁰¹⁷ Kesseli (2008), pp. 39-48.

suicide bomber.²⁰¹⁸ It is unlikely that the next Wave will be an irresistible tsunami that would wash over warfare altering its foundations. Rather warfare is likely to become multi-spectrum, or "multi-wave" war in which the range of operational art stretches from the principles governing agrarian age, the industrial age and the information age alike. All three Waves and their ways of thought and action will be present in the asymmetric battlespaces of tomorrow. As Marcus Aurellius wrote, "Don't fear the future. You will face it, if that is your fate, armed with the same reason that protects and guides you in the present."²⁰¹⁹ Unfortunately the military cannot stand back and stoically follow the development but must strive to adapt.

²⁰¹⁸ See Smith (2008), pp. 299-300.

²⁰¹⁹ Marcus Aurelius (2002), p. 78.

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WHO IS WHO

- or some of the theorists and practitioners mentioned in the text

Alberts, David Stephen (1942 -) is a former Director of Research for the Office of the Assistant Secretary of Defense on Networks and Information Integration. He has a long history of leadership in NATO research groups. Theorist of Network-centric warfare.

Alexander the Great (Alexander III of Macedon, 356 – 323 BC) was a Macedonian king, warrior, commander and the greatest conqueror in history.

Alexander, Harold Rupert Leofric George. Earl Alexander of Tunis, (1891 – 1969) was a British Field Marshal and 1st Viscount Alexander of Tunis. Served in both World Wars and his last command was Supreme Commander Allied Force Headquarters.

Andolenko, Serge was a French General and military historian.

Bayerlein, Fritz Hermann Michael (1899 – 1970) was a German *Generallieutenant* who served in the Afrika Korps under Rommel. He was a commander for the 3rd Panzer Division and LIII Army Corps.

Beaufre, Andre, (1902 - 1975) was a French general who started WWII as a colonel. Has gained his fame as a military strategist and an exponent on French nuclear force. Led French troops in the Suez War and became chief of the general staff of the Supreme Headquarters, Allied Powers in Europe in 1958.

Bismarck, Otto Eduard Leopold, Prince of Bismarck, Duke of Lauenburg (Otto von Bismarck, 1815 – 1898). Prussian statesman who played an influential role in the German Wars of Unification and European politics in general between 1860 – 1890. In Franco-Prussian war of 1870 – 1871 kept Moltke the Elder under political control.

Bloch, Jan Gotlib. (1836 – 1902). Polish banker and railway magnate who devoted his private life to the study of industrial warfare.

Borden, William Liscum, American nuclear theorist, former executive director if Congress' Joint Atomic Energy Committee.

Bourcet, Pierre-Joseph de (1700 - 1780) was a French general who served as the chief of staff during the Seven Years' War and the War of the Austrian Succession. He wrote a special treatise dedicated to tactics of mountain warfare.

Brodie, Bernard, (1910 – 1978), an American military strategist and system theorist. Was one of the early and most influential nuclear strategists. Long service in the RAND.

Caesar, Gaius Julius (100 BC - 44 BC) was a Roman general, commander of legions and a statesman whose victories in the Gallic War and Civil War paved his way to dictatorship of Rome.

Carver, Richard Michael Power Carver, Baron Carver, (1915 – 2001) British Field Marshal, served as Chief of the General Staff and the Chief of the Defence Staff.

Clausewitz, Carl Philipp Gottfried (or Gottlieb) von Clausewitz (1780 – 1831). A Prussian major general and military theorist. A prominent writer whose seminal work was On War, unfinished at the time of his death. Stressed the psychological and political aspects of war. Served in the Prussian and Russian armies.

Christopher Coker, professor of international relations at the LSE. Theorist of philosophy and ethics of war.

Colonna, Prospero (1452 – 1523) was an Italian condottiero who serve the Holy Roman Empire during the wars of Italy.

Corbett, Sir Julian Stafford, (1854 – 1922), British naval historian and geostrategist. One of the most important naval theorists of the 19^{th} and 20^{th} centuries.

Paul K Davis, policy analyst at the Rand Corporation, PhD from M.I.T. Proponent of capability-based planning and theorist of effects-based operations.

De Gaulle, Charles André Joseph Marie (1890 – 1970). French brigadier general and statesman. Leader of the Free France in 1940-44 and was elected President of France in 1959. Retired in 1969.

Delbruck, Hans, (1848 – 1929). German historian who wrote extensively on military history. Often considered to be the first modern military historian basing his research on critical examination of ancient sources and using auxiliary disciplines.

Douhet, Giulio, (1869 – 1930) Italian fascist, general and one of the most important early theorists of air power and especially of strategic bombing.

Dragomirov, Mikhail Ivanovich (1830 - 1905) was a Russian general and military theorist whose publications were mostly translated into French. He was a relatively conservative thinker who followed the ideas of Suvorov.

Eddy, Manton (1892 – 1962) American Lieutenant General who led the 9th Infantry Division in Normandy and later the XII Corps that often was used as the spearhead of Patton's Third Army.

Ehrhfurth, Waldemar (1879 – 1971) German general of infantry. Served as a liaison officer in Finland 1941-44.

Falkenhayn, Erich Georg Anton von (1861 - 1922) was a German general of the infantry and a field marshal in the Ottoman army. Prior to WW I he was the Prussian minister of war and served as the Chief of the General Staff of 1914 – 1916 and was removed after Verdun and Somme.

Foch, Ferdinand, (1851 – 1929), French marshal, military theorist and the Allied *Généralis-sime* or commander-in-chief in WWI.

Franks, Tommy (1945 -) General of the United States Army. Served as US CENTCOM commander during the second Gulf War and the attack on the Taliban in Afghanistan during the early stages of the War on Terror.
Frederick II (Frederick the Great, 1712 - 1786) King of Prussia 1740-1786. His most important military achievements were gained in the Seven Years' War. In addition to being a king and a commander-in-chief he also wrote as a military theorist.

Freytag-Loringhoven, Hugo von, (1855 in – 1924 in Weimar). A Prussian general of infantry and military theorist.

Fuller, John Frederick Charles, (1878 – 1966), a British major general, military historian, strategist and an early theorist of armored warfare. Wrote esoteric military theory.

Gat, Azar, (1959 -) an Israeli major, professor and author of military history and strategy.

Giap, Vo Nguyen, (1911 – 2013), a Vietnamese general of the Peoples' Army and a politician. Often considered to be one of the greatest military strategist of guerrilla and resistance warfare. Served in the WWII and later was beside Ho Chi Minh the most prominent military commander of the Viet Cong.

Gneisenau, August Wilhelm Antonius Graf Neidhardt von (1760 - 1831) was a Prussian field marshal in the War of Liberation. Participated also in the American Revolutionary War and for example the Battle of Waterloo.

Goltz, Freiherr, pasha Wilhelm Leopold Colmar von der Goltz (1843 – 1916). German general field marshal who served in the Austro-Prussian War, Franco-Prussian War, and in WWI as the military governor of Belgium. In addition he was an avid military theorist.

Grant, Ulysses S. ((born Hiram Ulysses Grant; 1822 – 1885), 18th President of the United States of America, commanding general in the American Civil War with the rank of the general of the army. Wrote his memoirs on the Mexican-American War and the American Civil War.

Guderian, Heinz Willhelm (1888 – 1954), a German Generaloberst, one of the early proponents of armoured warfare. Pioneered motorized and panzer tactics in Wehrmacht and served in both WWI and WWII at best as a commander of a *Panzergruppe* named after him.

Guevara, Ernesto "Che" (1928 – 1967) was an Argentine Marxist revolutionary, guerrilla leader and military theorist. He was one of the main figures in the Cuban Revolution.

De Guibert, Jacques-Antoine-Hippolyte, Comte (1743 – 1790) was a French general and a military writer whose main contribution was the idea of grand tactics.

Gustavus Adolphus (Gustav II Adolf, 1594 – 1632) was a Swedish king and a commander of his troops during the Thirty Years War until he died in the Battle of Lützen but managed to turn Sweden into one of the great powers of Europe.

Haig, Douglas, 1^{st} Earl Haig (1861 – 1928) was a British filed marshal who earned the nickname "Butcher" for his leadership in the Battle of Somme. Participated in the Boer War and the WWI.

Hannibal Barca (247 – c. 182 BC) was a legendary military commander from Carthage during the Punic Wars. Considered as one of the best strategists of all time.

Heinrici, Gotthard (1886 – 1971) was a German Generaloberst during WW II whose main command was the Army group Vistula.

Hindenburg, Paul von (Paul Ludwig Hans Anton von Beneckendorff und von Hindenburg, 1847 – 1934) was a German general field marshal who retired in 1911 but returned to service for WWI serving as a chief of the general staff. Later became the second President of Germany (1925-34).

Hobbes, Thomas, (1588 - 1679) was an English philosopher writing about political philosophy and the theory of social contract. Is considered to be one of the founders of modern political science and is one of the most prominent classical realists in that tradition.

Isserson, Georgii Samoilovich (1898-1976) was a Russian general and military theorist who wrote on operational art and contributed into the development of the deep battle theory.

Joffre, Joseph Jacques Césaire (1852 - 1931) was a Marshal of France who became the French chief of general staff before WW I and after the massive casualties suffered in Verdun was relieved of his command.

Jomini, Antoine-Henri, Baron (1779 - 1869) was a Swiss-born officer and military theorist who served in the rank of a general in the French and later Russian armies. Is considered to be one of the most celebrated writers on the Napoleonic art of war.

Juvaini, 'Ala-ad-Din 'Ata-Malik (1226–1283) was a Persian historian who wrote an account of the Mongol Empire and its wars.

Kaldor, Mary Henrietta (1946 -) is a British political scientist who is currently a professor at LSE. She has written on the "new wars" the post-Cold War era seems to have produced.

Kautilya (also known as Chanakya or Vishnugupta, 350 – 275 BC) was an Indian jurist, economist and philosopher whose ancient "Arthashastra" is the pioneer work of political science and economics in India.

Keitel, Wilhelm Bodewin Johann Gustav (1882 – 1946) was a German field marshal who served as chief of the Supreme High Command of the German Armed Forces for most of WWII. He was later sentenced to death at Nuremberg.

Kesselring, Albert, (1885 – 1960) was general field marshal of the German Laftmaffe who commanded air forces in invasion of Poland and France and during the Operation Barbarossa in the eastern front. In the last stages of the war as commander-in-chief south he was in charge of defending Italy against the Allied forces. Was sentenced in Nuremberg to death but the sentence was first commuted to life imprisonment and he was released in 1952 on health grounds.

Kuropatkin, Alexei Nikolayevich (1848 – 1925) was a Russian general and Imperial Minister of War who served in the Russo-Japanese War and WW I. He was relieved of his command after the Battle of Mukden, then reinstated in WW I but ultimately in 1916 reassigned to Governor General of the Turkestan Military District.

Lawrence, Thomas Edward, (1888–1935) is often referred to as "Lawrence of Arabia". He was a British archaeologist and military officer who served as a liaison officer in the Sinai and Palestine Campaign and the Arab Revolt in 1916-18. Gained the rank of a colonel.

Leeb, Wilhelm Josef Franz Ritter von (1876 – 1956) was a German field marshal in WWII and was in charge of the northern sector in Operation Barbarossa. Did not agree with Hitler's method of leadership and asked to be relieved of his command.

Leo VI, (also known as Leo the Wise, 866 - 912) was the emperor of the Byzantine empire and a prolific writer among whose works is the "*Taktika*" that gathered together most of the existing military thought.

Leonhard, Robert R. is an American professor of military science and an important theorist of maneuver and information age warfare. He holds the rank of a lieutenant colonel.

Liddell Hart, Sir Basil Henry (1895 – 1970), was an English soldier with the rank of captain, but a prolific military historian and theorist. He was among the proponents of armored warfare but his reputation is somewhat marred by his own actions taken to emphasize his importance among the German Panzer theorists.

Liu An (c. 179–122 BC), was a Chinese prince during the Han dynasty and an advisor to Emperor Wu.

Ludendorff, Erich Friedrich William (1865 – 1937) was a German general during WWI and served as quartermaster general with Hindenburg in leading the entire war effort.

Luttwak, Edward Nicolae (1942 -) is a Romanian-born military strategist and political scientist who has published extensively both on international relations and military strategy.

MacArthur, Douglas, (1880 – 1964) was a American five-star general and Field Marshal of the Philippine Army. In the 1930s he was chief of staff of the US Army and during the WWII was the supreme commander of the Allied forces in the Southwest Pacific area.

Machiavelli Niccolò di Bernardo dei (1469 – 1527) was an Italian historian, politician, diplomat and author who wrote on politics and war alike. He is often considered to be the founder of modern political science and realist school of thought.

Mahan, Alfred Thayer (1840 - 1914) was an American admiral, geostrategist and historian who wrote a seminal work on the importance of sea power.

Maizeroy, Baron François-Jean Mesnil-Durand and Paul-Gedeon Joly de (1719 - 1780) was a lieutenant colonel who served under de Saxe and both a military historian and writer on tactics.

Manstein, Fritz Erich Georg Eduard von Lewinski (1887 – 1973) was a German field marshal who commanded among other units the Army Group Don and the Army Group South during the WWII. After the war he was jailed for war crimes but after serving for only four years he helped to establish the West German *Bundeswehr* as an advisor in the 1950s.

Mao Tse-tung (1893 – 1976) was a Chinese communist revolutionary and later the founding father of the People's Republic of China. He was a prolific writer and one of the most important early theorists of guerrilla warfare.

Marlborough, John Churchill, 1st Duke of Marlborough, Prince of Mindelheim (1650 – 1722) was an English general and a statesman who fought for example in the War of the Spanish Succession.

Martel, Sir Giffard Le Quesne (1889 – 1958) was a British lieutenant-general who served in both world wars but is most famous for his pioneering work in British military engineering and armored warfare.

Massenbach, Christian Karl August Ludwig von (1758 – 1827) was a Prussian officer and mathematician who served under Frederick the Great and later the quartermaster general for Prince Hohenlohe in the Napoleonic wars. Gained infamy at the Battle of Jena.

Minh, Hồ Chí (1890 – 1969) was a Vietnamese communist revolutionary leader who served as prime minister and president of the Democratic Republic of Vietnam. During the Vietnam War he was a key figure of the Viet Cong.

Mitchell, William. (Often referred to as "Billy" 1879 – 1936) was a US Army general and an important early air power theorist who is regarded as the father of the US Air Force.

Moltke, Helmuth Karl Bernhard Graf von (Often referred to as "Moltke the Elder, 1800 - 1891) was a German field marshal who served as the chief of staff of the Prussian Army for thirty years. He is considered to be responsible for creating new methods of directing armies in the field.

Montecuccoli, Raimondo Count (1609 - 1680) was an Italian military commander and a prominent name among the Condottieri or professional private solders of his time. He served as a general for the Habsburg monarchy.

Montgomery, Bernard Law, 1st Viscount Montgomery of Alamein (1887 – 1976) was a British field marshal whose perhaps greatest accomplishments if the WWII took place in North Africa where the defeated Rommel. After the war he served as the Deputy Supreme Commander Europe of NATO.

Musashi, Miyamoto, (c. 1584 - 1645) was a Japanese swordsman and ronin who wrote "The Book of Five Rings" in which he discusses strategy, tactics and philosophy of waging war.

Napoleon, (Napoleon Bonaparte, 1769 – 1821) was the emperor Napoleon I of France and both a military and political leader who revolutionized the warfare of his time completely.

Narses (c. 478 – 573) was a Byzantine general under emperor Justinian I.

Ney, Michel (1769 - 1815) was a highly esteemed French marshal during the French Revolutionary wars and one of the 18 original marshals under Napoleon.

Patton, George Smith Jr. (1885 – 1945) was an American four-star general who fought in the Mexican Revolution and both World Wars. He was legendary but a controversial military leader who played a major role on mechanization of the US troops.

Picq, Charles Jean Jacques Joseph Ardant du (1821 - 1870) was a French Army officer and military theorist whose writings had a huge impact of the development of the French military thought and doctrine.

Quintus Curtius Rufus was a Roman historian who probably wrote in the 1st century and his only surviving work is his history of Alexander the Great.

Ritter, Gerhard Georg Bernhard (1888 - 1967) was a German professor of history who among other works wrote a biography of Frederick the Great and criticized Ludendorff's idea of "total war".

Rokossovsky, Konstantin (1896 – 1968) was born Polish but became a marshal of the Soviet Union along with being marshal of Poland. He was one of the most prominent Soviet commanders of the WWII.

Rommel, Erwin Johannes Eugen (1891 – 1944) was a German field marshal in WWII. He commanded the *Afrika Korps* and put to practice mobile mechanized warfare in Northern Africa earning the nickname "The Desert Fox." Later he commanded the German forces in Normandy. He was forced by Hitler to commit a suicide with cyanide.

De Saxe, Maurice, Count of Saxony. (1696 – 1750) was a Saxon soldier who became a Marshal in the French army and later a Marshal General of France. He is notable for writing his "reveries" on the art of war.

Schelling, Thomas Crombie (1921 -) is an American economist, strategist and foreign policy expert. He is one of the classic and most prolific writers on nuclear strategy, but his main field is game theory. He was awarded the Nobel Memorial Price in Economic Sciences for the work he did with Robert Aumann on using game-theory analysis to describe conflict and cooperation.

Schlieffen, Alfred Graf von, Count Schlieffen, (1833 – 1913) was a German field marshal and strategist who served as Chief of the Imperial German General Staff. He is best remembered for devising the so-called "Schlieffen Plan" against France.

Schwarzkopf, H. Norman. (1934 – 2012) was an American four-star general who as the commander-in chief of USCENTCOM led all the coalition forces in the Gulf War and retired shortly after the war had been won.

Scipio (Publius Cornelius Scipio Africanus 236 – 183 BC) was a Roman general and Consul who is regarded as one the best strategists of his time. Defeated Hannibal in the Second Punic War.

Seeckt, Johanned Friedrich "Hans" von (1866 – 1936) was a German *Generaloberst* who served as the chief of staff for the *Reichswehr* and commander-in-chief of the German army after WWI and can be credited for rebuilding the German military might during the interwar period.

Sherman, William Tecumseh (1820 – 1891) was an American general of the Union Army during the American Civil War. His mastery of strategy commanded respect but his policy of "scorched earth" in the campaigns against the Confederate States was practically a way to wage total war.

Sikorski, Władysław Eugeniusz (1881 – 1943) was a Polish military officer and a prominent military writer. He served as the commander-in-chief of the Polish Armed Forces and Polish prime minister in exile during WWII.

Simpkin, Richard Evelyn (1921 – 1986) was a British Army brigadier, Russian language specialist and military theorist who was a strong proponent of maneuver warfare.

Skobeleff, Mikhail Dimitrievich (1843 – 1882) was a Russian general best known for his conquest of Central Asia and distinguished service in the Russo-Turkish War.

Slessor, Sir John Cotesworth (1897 – 1979) was a British Marshal of the Royal Air Force who began his career as a pilot in the WWI and ended up the Chief of the Air Staff in the 1950s. He wrote on behalf of strategic bombing and nuclear deterrence.

Smith, Sir Rupert Anthony (1943 -) is a British general who held senior commands in the Gulf War and the Bosnian War. Served as Deputy Supreme Allied Commander Europe (DSACEUR).

Sokolovsky, Vasily Danilovich (1897 – 1968) was a Russian military officer who became a Marshal of the Soviet Union and during WWII served as the chief of staff of the Western Front and after the German tide had begun to ebb, the commander as well. After WWII he was the deputy commander of Soviet Forces in East Germany.

Ssu-ma (Sima) is an expression referring to "a marshal". The Methods of the Sima is a classic military text of ancient China and it was written during the 4th century BC. The was no clear author to this rather philosophic text which seems to have been put together from various military treatises of the time.

Sun-Pin (Sun Bin, died 316 BC) was a Chinese military strategist, commander and writer from the Warring States period and allegedly a direct descendant of Sun Tzu. His treatise was rediscovered in 1972.

Sun Tzu (Sun Zi, 544 – 496 BC) was an almost mythical Chinese general, philosopher and military strategist who is credited with authorship of The Art of War, perhaps the most widely read work of military strategy. His historicity, however, remain uncertain.

Svechin, Alexander Andreyevich (1878 – 1938) was a Russian military leader, strategist, educator and military writer who was executed in Stalin's purges. His book Strategy was widely read in Soviet military schools and remains influential even today.

T'ai Kung (Lu Shang, or Jiang Ziya) lived sometime in the 11th century BC. He was an ancient Chinese military strategist and the founder of the state of Qi. Thus his posthumous title is Duke Tai of Qi or Qi Tai Gong. His text is among the ancient Chinese military classics.

Toffler, Alvin (1928 -) is an American futurist whose works have addressed the digital revolution, communication revolution and technological development. His theories have been very influential to the thinkers associated with the concept of information age warfare and. Toffler and his wife Heidi, also a futurist have indeed in their books addressed the problematic of future war.

Totila (- 552) was a king of the Ostrogoths and both a military and political leader.

Triandafillov, Vladimir Kiriakovitch (1894 – 1931) was a Soviet military commander and theorist with the rank of general. He wrote of the operations of modern armies with an emphasis on mechanization and elaborated the ideas of deep operations.

Tsunemoto, Minamoto no (894 – 961) was an Imperial Prince of Japan and a samurai who wrote a classical treatise of the samurai way of life.

Varro, Gaius Terentius was a Roman commander and consul who lived in during the 3rd century BC and suffered a humiliating and total defeat in the Battle of Cannae against Hannibal.

Vegetius, (whole name Publius Flavius Vegetius Renatus,) was a Roman writer in the late fourth century of whose life nothing is known except of what he tells in his two surviving works out of which "De Re Militari" seeks to compile the ideas of its time concerning the art of war. From the texts it is easy to determine that he was not a professional soldier himself.

Vego, Milan, is a former Yugoslav naval officer who works as a professor of operation in U.S: Naval War College and is the author of the monumental book "Joint Operational Warfare" and numerous other academic articles. One of the most prominent contemporary military thinkers.

Vitelli, Paolo was a late fifteenth-century *condottiero* who fought for Florence and failed due to excessive caution to capture the town of Pisa in 1498 and this led to him being tried for treason and executed.

Warden, John Ashley III (1943 -) is a retired colonel of the U.S. Air Force who is perhaps the most prominent air power theorist of the latter half of the 20th century who in his texts has written of behalf of seeing the enemy as a system and the need to create desired effects in the aforesaid system. He is a controversial thinker who served among other duties as the commandant of the Air Command and Staff College.

Wavell, Archibal Percival 1st Earl Wavell (1883 – 1950) was a field marshal of the British Army who served in the Second Boer War, WWI and during the WWII as the commanderin-chief in the Middle East where he repeatedly lost to Rommel.

Wei Liao-Tzu (Wei Liaozi) is one of the military classics of ancient China. It is named after Wei Liao but the historicity of such a person remains obscure. The text, however, was written sometime during the Warring States Period between 403 and 221 BC.

Wu-Tzu (Wuzi) is another classic Chinese military treatise that is attributed to Wu Qi. Thus the core of the work is considered to have been put together around Wu Qi's lifetime 440 - 381 BC in the middle of the Warring States period.

Zhukov, Georgy Konstantinovich (1896 – 1974) was a Russian military officer with the rank of marshal of the Soviet Union. He is the most decorated Soviet soldier and a notable strategist who commanded the Red Army in the last stages of WWII and ultimately conquered Berlin. Later he became a Minister of Defense.

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