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ABSTRACT (MAXIMUM 200 WORDS)

Carl von Clausewitz spoke of a “paradoxical trinity” of the will, intellect and chance. As the baseline theory for western warfare, this trinity has become the ground out of which all other theory flows, making all other arguments contingent on these three fundamentals. But what if another element existed, just as fundamental? What if this element so permeated war and life itself that it were unescapable? Would this shake the foundation of everything we understand about war? That fourth, fundamental element of combat is *time*. Time increases danger, creates friction, and drives decisions. Across the centuries, time has ruled the battlefield. But time is not merely relegated to unit combat; the same holds true for individual combat. The sport of boxing acts as an effective lens to study time and combat as war shares many similarities to this sport. An understanding of time in these terms has strategic implications to modern combat, including globalization, information operations, cyberwar, and counter-insurgency. The side that effectively uses time to its advantage is more likely to succeed in the cauldron of combat than its enemy. Time is omnipresent. Time is unforgivable. Time is unescapable. Time is the fourth fundamental of war.

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MASTER OF MILITARY STUDIES

**TITLE: COUNTER-PUNCH - TIME
AND CLAUSEWITZ'S TRINITY**

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OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

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Executive Summary

Title: Counterpunch – Time and Clausewitz’s Trinity

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Thesis: Time is a significant aspect of the fundamental nature of war and should be seen as a fourth part to Clausewitz’s trinity.

Discussion:

Carl von Clausewitz wrote a great discourse on the theory of war, acclaimed as the definitive work on this subject. In his treatise, he spoke of a “paradoxical trinity” of the will, intellect and chance.¹ Later in his work, he speaks of the other factors of war such as friction, danger and time. However, he posits that the fundamental nature of war is bound up in the first three elements that make up his trinity. As the baseline theory for western warfare, this trinity has become the ground out of which all other theory flows, making all other arguments contingent on these three fundamentals. But what if another element existed, just as fundamental as the other three? What if this element so permeated war and life itself that it were unescapable? Would this shake the foundation of everything we understand about war or would it just make more discernible certain principles that we have always seemed to “smuggle in” to our views to make the trinity fit all situations? That fourth, fundamental element of combat is *time*. Time increases danger, time creates friction, and time drives decisions. Time is the idea that makes deception work, surprise possible and flanks assailable. The maneuver *in time* rather than in space carries the day. Across the centuries, time has ruled the battlefield. But time is not merely relegated to unit combat; the same holds true for individual combat. The sport of boxing acts as an effective lens to study time and combat as the sport revolves around time and the use of time to achieve one’s aims. War on a larger scale shares many similarities to this sport. An understanding of time in these terms has strategic implications to modern combat, including globalization, information operations, cyberwar, and counter-insurgency. Furthermore, it has tactical implications based on trading time for space, the use of combined arms, deception, and the non-linear effects of actions. Time is king on the battlefield. The side that effectively uses time to its advantage is more likely to succeed in the cauldron of combat than its enemy. Time is omnipresent. Time is unforgivable. Time is unescapable. Time is the fourth fundamental of war.

Conclusion: Time is the fourth fundamental nature of war. A proper understanding of time as it relates to combat will aid in development of warriors who can gain and maintain the advantage from tactical to strategic levels.

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Preface

This paper focuses on time as a fundamental aspect of war. It is interesting to me that military officials often speak of the nature of war without ever broaching the subject of time while the battlefield tells a different story. In conflict, time reigns supreme. How is it possible to speak of war without considering time? An undue focus on maneuver in space belies the fact that time actually underlies space itself in the construct of combat. For instance, the ranges established for escalation of force procedures is based on creating time for the unit to complete a decision-making cycle that will both protect the force from ease of enemy targeting and protect the populace from indiscriminant engagement. Engagement areas, Named Areas of Interest, Event Templates/Matrices and Decision Templates/Matrices are all designed to increase time for a decision by the commander.² Feints, draws, and demonstrations are all executed to exploit the mind of the enemy commander so that he does not know exactly what is happening *until it is too late*. Time of the assault also creates its own surprise as detailed in *MCDP 1: Warfighting*.³ So understanding time in relation to oneself and the enemy is crucial for a graduate understanding of warfighting. Once elucidated, this idea is immediately accessible from the Private First Class to the General and applies across the spectrum of conflict. I hope that this rendering of the nature of time in combat is useful for you and both your understanding and subsequent application of these principles is not stymied by any inadequacy of explanation on my part.

Bryan Grayson

INTRODUCTION

“*Get inside his mind-time-space...fold adversary back inside himself.*” John Boyd.⁴

People like to watch boxing – especially the boxing greats such as Ali, Hagler and Hearns. One person might enjoy watching Ali for his effortless movement while another enjoys watching Hagler for his ability to switch stances during a fight.⁵ Other observable skills, such as evasion skills, combinations, footwork, cutting off the circle and sheer endurance may also surface in any given fight. But one skill in particular stands out as one of the foundational skills of boxing – rhythm. Boxers train by numbers, add delays in the center of their combinations, and work hours on end on the speed bag and the double end bag, the bag that is tied to the ceiling and the floor to replicate random movement on contact. All of this training is a tireless quest for rhythm. But the quintessential factor is not rhythm for the sake of syncopation, but for the purpose of countering the same. A boxer must feel rhythm before he can break it.⁶ But once he breaks it, he enters a realm in which the ability to counterpunch arises. Whenever young men get in a room with a heavy bag, it is typical to see them attempt to strike it as hard as possible. And while striking hard has its merits, boxers know what many of us do not – that *when* a boxer hits an opponent is as important as how hard he hits.⁷ Force generation, and thus damage, increases exponentially based on *when* a strike occurs.

Why, in an essay on war, is the author talking about boxing? Miyamoto Musashi, the legendary Japanese swordsman who purportedly won 60 live duels from the age of 13 to 29, claimed that to understand individual combat is to understand unit combat and vice versa.⁸ But, that is due to an “eastern perspective on war”, one might say. Nevertheless, Colonel John Boyd included Musashi’s work, *Book of Five Rings*, in his bibliography for *Discourse of Winning and Losing*.⁹ In fact, Carl von Clausewitz himself also likened war to a one-on-one struggle,

comparing it with both dueling and wrestling. The import in both instances is the same: the nature of battle is same at both ends of the spectrum, whether fighting one person or 5,000.¹⁰

If the nature of battle truly is the same in both instances, and if it be true that time matters so much in boxing (and in wrestling, though less opaque), then it would seem that time should have an impact in larger, unit combat, as well. If this is true, then why did Clausewitz fail to mention *time* as part of his “trinity” that he used explain the nature of war? More fundamentally, how much impact does time really have on war?

This paper will seek to answer this last question. The argument will begin, as Clausewitz did in his treatise, with an investigation into the nature of things – specifically, the nature of war and time. Next, the paper will evaluate the resultant qualities that arise based on the interplay between the two concepts from the perspective of complex, adaptive systems. Finally, the paper will offer both conceptual and concrete recommendations for exploitation of these emergent qualities. Over the span of discourse, it should become clear that *perhaps Clausewitz’s trinity should not be a trinity at all, but something else altogether.*

NATURE

*“Scratch away all the dirt your being has accumulated and reveal reality in its isness,
or its suchness” (Bruce Lee)¹¹*

This section also could be called “fundamentals” as the focus of the section is the very definition of fundamental as recorded in Merriam-Webster’s dictionary – “one of the minimum constituents without which a thing or a system would not be what it is.”¹² As it appears in this paper, the term “nature” refers to that inherent quality of an entity that distinguishes it from something else. Look around the room for a moment. What makes a ball a “ball” or a desk a “desk?” What are the qualities that must exist for each to be considered a “ball” or “desk?” How do these qualities differ from a pen, a wagon or a house? What are the parameters that define each item? These questions guide one to realize the fundamental nature of things. In philosophy, this investigation is termed “ontology”, or the “nature of being.”¹³ The qualities that are necessary to the existence of an entity are foundational and central to any discussion about the subject, object or idea. This applies to a ball, to a pen, and to war itself.

But why is it necessary to develop a deep understanding of the fundamental nature of things when one can still achieve a great deal of success in a craft by general approximations? Why spend time analyzing that enterprise about what so much has been written already? What drives the student and practitioner of combat to seek a deeper understanding? What does the study of the theory of war have to offer the practitioner of violence? The study yields three distinct gains for those who walk the warrior’s path: gap recognition, effortless engagement, and mastery.

First, the study of theory develops a recognition of gaps in understanding. Practitioners may meet with great success by merely studying their own battles as well as the battles of the

past, but the result is limited. Focusing on actions conducted by past warriors (history) can increase one's level of skill within a particular context of engagement, but it does not necessarily result in the ability to deal with problems outside of that very specific context. Even if the student of war wrapped his mind around all of the battles of the First and Second World Wars and Vietnam, he would only have access to a finite number of situations. Further, these situations may tend to link together by their similar characteristics. When one studies theory, on the other hand, one gains the ability to project his understanding in a direction in which he has little to no experience. Theory awakens the imagination. Imagination awakens the possibility of alternative solutions.”¹⁴ Or instance, a five year old's experience with gravity tells him that if he were to step out of an airplane, he would fall towards the ground. How does he know? He has never been in an airplane. An adult understands why that occurs and realizes that the same would occur if he were in space as the fundamental initial conditions had changed. The five year old is the practitioner who studies only history. The adult is the one who also studies theory.

Next, the study of nature develops a sense of effortless engagement in the student who also exercises application of the principles. Swimming is the best example of this idea. Look at the difference between an accomplished swimmer and the average “survival swimmer.” The accomplished swimmer appears to slip through the water while the other tends to thrash inefficiently. Despite the fact that the inefficient swimmer may have the fitness and enough technique to swim for miles, the distinction is astounding. Contrary to what many people think; however, the difference is not dependent on fitness level or endurance necessarily. The difference is based on one thing only – the manner in which each swimmer “treats” the water. One treats the water according to its nature while the other treats it as a medium that he must fight against to achieve a goal. The accomplished swimmer slips through the water, lays his head

on the water, lets the water flow around his body like the camber of a wing, and maintains balance through center of gravity placement. The other often does none of these or only a couple of these.¹⁵ The functionality of a thing is bound up in its nature. Often, the inability of a person to do a particular thing can be traced back to his own misunderstanding of the nature of the event or thing with which he is engaged. Most likely his lack of “ability” is not the issue; it is his understanding.¹⁶ The person who struggles does not truly understand.

Lastly, the study becomes a doorway to that place in which mortals approach mastery. Whether or not mastery of combat is truly possible is less the question than how one can better understand and apply the understanding of the nature of war in the context of engagement. This work presupposes a person’s concurrent experimentation with principle to make theory an applied science. This experimentation can be in the form of physical maneuvers between units, sand table exercises, war games against fellow opponents, chess, or the martial arts. The application medium is not restricted as long as it occurs between the reader and a thinking enemy.

These three ideas, gap recognition, effortlessness and mastery, together drive the need for truly seeking to understand the nature of mortal combat. The understanding gained from a study of the nature of war will permeate every decision one makes in the context of engagement, both deliberately and subconsciously. This is so important that it must be repeated. *A person’s understanding of the nature of things (ontology) will drive his application in the event itself.* Notice the use of the word “understanding” rather than “knowledge.” Knowledge can still result in lack of ability or will to act on what one has learned. Understanding is different.

Because this is so important, the author recommends reading this treatise in two stages. First, read this first section on nature. If at the end of the section you do not agree with the

conclusions regarding war and time, stop and reflect on your own observations. *Do not continue reading until you have come to some conclusions on your understanding of the nature of things.*

The argument as it occurs in the second and subsequent sections is a contingent argument – wholly based on the first section. If one follows the recommended method of pausing to reflect after reading this section, one will be able to apply the principles of the latter two –thirds of the book to his own philosophy. In this manner, the paper will still be useful in informing your approach to conflict whether you have minor disagreements with the nature section or not.

“We have more faith in what we imitate than in what we originate.

We cannot derive a sense of absolute certitude from anything which has its roots in us. The most poignant sense of insecurity comes from standing alone and we are not alone when we imitate.”

Bruce Lee¹⁷

The Nature of War

The pressure fighter places his opponent on the defense all of the time. He uses movement, feints, and draws to keep his enemy off balance. The opponent is always guessing what he will do next. The boxer threatens with his body and confuses with his movements.¹⁸

The treatise *On War*, although written almost 200 years ago, has been heralded as the definitive work on theory of combat. Many reasons exist for this, but the primary reason is that from Napoleon to the present day one could relate the work to the events of every conflict and find relevance. Additionally, positing his ideas on the past, one would find them relevant as well.

In this manner, despite his many critics throughout the ages, his manuscript is considered timeless. In his section on the nature of war, Clausewitz investigates war from the view of passion, probability and policy.¹⁹

War as Passion (will/instinct)

In his treatise, Clausewitz spends the first twenty-eight sections defining and describing war as a whole. He asserts war as a passionate activity that self-perpetuates based on the desire of each side to bend the other to his will. It is here that he invokes the images of duelist and wrestler.²⁰ He outlines for the reader the resultant cycle of action-reaction-counteraction based on the following three logical thought progression: 1) My attack necessitates a violent reaction by my opponent. 2) Now that he has reacted, I must win. If I do not, he will dominate me. 3) How can I create an asymmetric advantage to ensure my own victory? As an act of passion, war should drives extremes – and only extremes.²¹

But this is not the case.

Here Clausewitz faced his first glitch in his quest to understand the nature of war. In short, despite the nature of war driving each side to a continuous loop of action / counter-action that feeds itself until one side wins (Figure 1), war did not practically work out this way.²² In fact, at times such as along the trench lines during both world wars, it seemed as if each belligerent were taking no action whatsoever. How could this be possible? Some other, unattributed force must be resident in the system for this to occur.

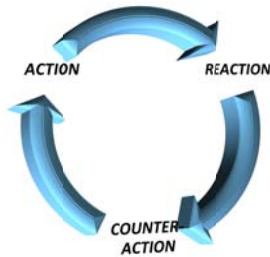


FIGURE 1.

He concludes that inaction occurs for two reasons: the possibility of advantage and the presence of uncertainty in war (Figure 2). Both cases are compatible with the passion that initiated conflict.²³ If waiting to attack will gender better results for a commander than immediate reprisal to either initial or subsequent actions will yield, it is not only prudent but logical for the commander to follow this altered course of action (a time-based decision). On the other hand, uncertainty actively works against the commander, exemplified by the fact that he will only ever have limited information about the dynamic system in which he is engaged. Clausewitz points out the rather obvious but profound fact of combat – the commander only ever knows for certain what he is thinking himself. Everything else is an educated guess. This uncertainty bleeds energy out of the system, resulting at times in a re-balancing phenomenon in which two armies end up in trenches looking at each other across no man’s land.²⁴

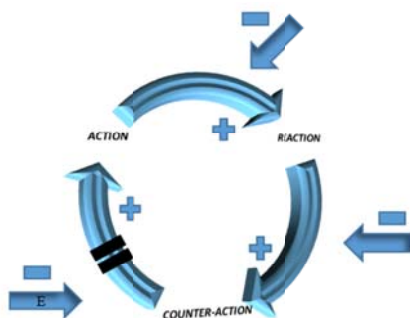


FIGURE 2.

E = Uncertainty; the “=” sign means a delayed reaction based on the external stimulus.

War as Probability (Intellect interacts with chance)

Clausewitz follows this reconciliation with an investigation into probability. Action is rooted in reality; the only time a commander can know what an enemy is doing is *while the enemy is doing it*. Any time before this point is not knowledge (although some may pass it off as such), but conjecture. The inaction spoken of earlier that forces the system into a wary equilibrium magnifies the impact of probability. Countering the temptation of his time to reduce war to a science which believed certainty were possible, Clausewitz resisted this human desire for certainty and rather portrayed war as he had both seen and studied. He lashed out at against this absurdity of purported certainty, positing instead that war is most like “a game of cards.”²⁵

War as Policy

Clausewitz spends the remaining seven sections discussing the impact of chance on and the preeminence of policy in war. Based on the fact that the system’s pace is reduced by uncertainty, a commander must drive the system by gauging probability and choosing courses of action that correspond to his necessarily skewed view of reality. The context of war, as opposed to business or sport, is one of danger, where the decisions of a commander are accompanied by the ominous sword of Damocles.²⁶ This ubiquitous reminder drives the need for will, exemplified most in the military virtue of courage that counter-acts the uncertainty.²⁷ Clausewitz then turns to policy. Policy starts war; guides it, and decides when it is complete.²⁸

In his first twenty-eight sections, Clausewitz has invited the reader to participate in his self-discourse on the nature of war. He sums up his conclusions in the final paragraph in which he posits the trinity – will (instinct), intellect (reason) and chance (see Figure 3). The passion that

begins the war and drives it to an extreme is the *will*; the probabilities which inform decisions in war are *chance*; the policy that guides the entire affair is the *intellect*.²⁹



FIGURE 3.

The Nature of Time

Time is one of those ideas that people take for granted until they attempt to define it. Is it fixed or transitional based on the observer? How does one define time without referring to time in the definition? What is it really? According to Robert Leonhard in *Fighting by Minutes*, time is composed of four qualities: duration, frequency, sequence and opportunity.³⁰

First, duration is a measurement of the length of the event – from the beginning to end of hostilities. It answers the question of how long will the war continue? Second, he denotes frequency as the “pace at which things happen.”³¹ He also refers to this as “tempo”, which will be covered later in the paper. Suffice it to say here that you can determine who is dictating the tempo of the battle by observing who is reacting to whom. Third is sequence, which deals with the “order of events.”³² As Clausewitz maintains in *On War*, commanders spend their time more concerned with probabilities and judgment.³³ Postulating the most likely and most dangerous courses of action as well as any other peripheral actions that will transpire due to the next tactical

play is an example of the order of things. An example from history is the deliberate plan by the British and American leadership in 1942 to conduct Operation Torch in North Africa prior to attempting any cross-channel mission. This assisted in the orderly, systematic dismantling of Hitler's forces.³⁴

The fourth element of time, according to Leonhard, is opportunity. This is the condition that arises from that elusive third aspect of Clausewitz's triangle – chance. Exploiting opportunity requires certain qualities in a commander; he must first be able to recognize opportunity for what it is. This involves anticipation and the employment of instinct (“gut”) that is developed through training and a detailed understanding of the enemy system (intelligence). Second, a commander must be prepared to exploit opportunity. Centrally locating all decision-making limits the ability of tactical exploitation of opportunity; whereas, decentralized freedom of action with certain bounds allows tactical commanders to exploit the situations on the battlefield as they occur. The presence of a reserve creates the ability to take advantage of opportunity. But opportunity is fleeting. The duration of a conflict depends on what it takes to make the two parties stop fighting, and the sequence and frequency change often throughout campaigns. Created by momentary interactions between events, opportunity disappears as quickly as it arises.³⁵

These four aspects of time offer a map whereby one may observe how time interacts with humanity in general and war in specific. Duration measures how long something lasts, sequence describes the order in which things unfold, and frequency measures how often an event occurs. Opportunity is partially borne of chance and partially borne of setting conditions by previous actions. These four make up the individual components of time. Perhaps the most useful description of time as a whole was conceived by Ray Cummings in his 1922 book *The Girl in the*

Golden Atom, where he states, “time is that thing that keeps everything from happening all at once.”³⁶

Time as Context

Time is the context, not just of war, but of life itself. Imagine conducting an experiment in which you have a person slap his hand on the table with a constant, unvaried rhythm (if this were possible). Each time he hits the table is one beat. You, as the individual conducting this test, then establish 30 beats (slaps on the table) as a standard of measurement that you call a “pop” and 10 “pops” as a “kip.” Prior to him getting tired and losing rhythm, you build a mechanical device that keeps up this rhythm. You have, in one experiment, developed a manner in which to measure “time.”

Now that the mechanical device has taken over the rhythm, you hand your assistant a horn and tell him to blow as long as possible. You count the beats as 20 and write down “Two pops” or “20 beats” on your paper in a column labeled “duration.” You then tell him to sound the horn as many times as possible in the same number of beats. He successfully accomplishes 13 times. You mark this in the column labeled “frequency.” If you expand this mechanical device to be used as the baseline for all actions in this experiment, you can calculate how long the experiment itself lasts, how often you conducted it, what the time was between each experiment, etc. For all intents and purposes, you have created a “clock” – a device that measures time. Time is not the clock; time is “behind” the clock.³⁷

If the measuring system is more or less considered constant for the purpose of human interaction within the confines of earth as in the experiment above, it then follows that the

rhythm is constant. If the rhythm is constant, three other principles arise regarding limitations on human interaction with time:

1. Time cannot be stock-piled (saved for later). The “beats”, or “pops” or seconds or minutes continue without respite. There is no capacity for stock-piling time to save for a later date when you need it. If time is the sequence of events measured either by their relation to each other or their relation to some external standard of measurement, how can one stockpile it? One can change the order of the events or develop personal habits to get the most out of time, but a single day remains only 24 hours.

2. Time cannot be managed. The popular books on time management are mislabeled. Time refuses to be managed. How would one manage time? The beats continue amorally in a rhythm according to the frequency of the universe (or at least this planet). Despite the plethora of materials written regarding “time management”, this concept is a myth. For one to manage time, one must possess the ability to control it or at least make it conform to one’s desires. What is typically termed “time management” is really not; a more appropriate term would be “self-management.”³⁸ Time is central to the human experience; it dominates not only action but thought. For one to exist outside time, one would have to live outside the bounds of sequence, resulting in the ability to see everything at once. This is known as the condition of omniscience, and you would *de facto* be God. Authors sometimes use this technique to show what is happening in multiple locations at the same time, but real life does not play out that way – not even in the information age. *Time itself cannot be managed.*

3. Time cannot be manipulated. After all the tricks that a person uses to squeeze the most out of his/her day, the reality still remains. Because time is not a thing that can be turned this way or that for our benefit. Time is a construct – the construct of life itself. The moment is the moment; it is never more than that. A day is a day; it is never more than that. However, this is not the end of the story. While time cannot be manipulated, the perception of time *can* be manipulated. *Perception of time can be manipulated, but not time itself.*

Time as Language

Time is not only the context of life – behind everything man does, but it is also more specifically behind war. Warriors consistently use time in their explanations of operations. Time is so embedded in the vernacular that operations, battle drills, and even tactical tasks refer to time in their definitions. Other terms in the military lexicon are also based around the idea of “time.”

Military tactical tasks that include inherent time references include ambushes, demonstrations, feints, raids and spoiling attacks. An ambush seeks to attack the enemy when he is in kill zone. Both demonstration and a feint seeks to drive the deception plan and force the enemy either to over-react or hesitate for a period of time to keep the enemy from recognizing the main attack. A raid is based on limited time on the ground and has a planned exit at an appointed time. A spoiling attack attempts to circumvent the actions of the enemy by attacking him first. Battle Drills are also expressed in terms of time. Reaction to contact, mine and Improvised Explosive Devices all reference time (sequence) as they happen *after* the attack takes place. Hasty ambush also addresses time (sequence). Finally, tactical tasks are often captured by

time or include a reference to time in their definition (see Figure 4). So, from operations down to tactical tasks, time exists as a core concept defining parameters.³⁹

TEMPORAL ASPECTS OF TACTICAL TASKS	
Counter-attack	A form of attack by part or all of <i>a defending force against an enemy attacking force</i> , with the general objective of denying the enemy his goal in attacking. <i>This occurs during the enemy's attack.</i>
Follow & assume	A tactical mission task in which a second committed force follows a force conducting an offensive operation and is prepared to continue the mission <i>if the lead force is fixed, attrited or unable to continue</i> (this is the "when"). A follow & assume force is not a reserve but is committed to accomplish specific tasks.
Bypass	A tactical mission task in which the commander directs his unit to maneuver around an obstacle, position or enemy <i>force to maintain the momentum of the operation</i> while deliberately avoiding combat with an enemy force.
Canalize	A tactical mission task in which the commander <i>restricts enemy movement</i> to a narrow zone by exploiting terrain coupled with the use of obstacles, fires or friendly maneuver. (The purpose of canalization is to restrict the enemy to a certain throughput (time).
Cover	A form of security operation that protects the force from surprise, develops the situation and <i>gives commanders time and space</i> in which to respond to the enemy's actions.
Defeat	Defeat occurs when an enemy has <i>temporarily or permanently</i> lost the physical means or the will to fight. The defeated force is unwilling or unable to pursue his course of action, thereby yielding to the friendly commander's will and can no longer interfere to a significant degree. Results from the use of force or the threat of its use.
Delay	A form of retrograde (operation) in which a force under pressure <i>trades space for time by slowing down the enemy's momentum</i> and inflicting maximum damage on the enemy without, in principle, becoming decisively engaged.
Destroy	A tactical mission task that physically renders an enemy force combat-ineffective <i>until it is reconstituted</i> . Alternatively, to destroy a combat system is to damage it so badly that it cannot perform any function or be restored to a usable condition without being entirely rebuilt.
Disrupt	A tactical mission task in which a commander integrates direct and indirect fires, terrain and obstacles <i>to upset an enemy's formation or tempo, interrupt his timetable or cause his forces to commit prematurely or attack in a piecemeal fashion.</i>
Fix	A tactical mission task where a commander prevents the enemy from moving any part of his force from a specific location <i>for a specific period</i> . Fixing an enemy force does not mean destroying it. The friendly force has to prevent the enemy from moving in any direction.
Guard	A form of security operation whose primary task is to protect the main force by <i>fighting to gain time</i> while also observing and reporting information and to prevent enemy ground observation of and direct fire against the main body by reconnoitering, attacking, defending and <i>delaying</i> . A guard force normally operates within the range of the main body's indirect fire weapons.
Neutralize	A tactical mission task that results in rendering enemy personnel or materiel <i>incapable of interfering with a particular operation.</i> (Hence, the duration is the length of the operation.
Screen	A security task to maintain surveillance; provide <i>early warning</i> to the main body; or impede, destroy and harass enemy reconnaissance within its capability without becoming decisively engaged.

FIGURE 4.⁴⁰

If time is existent at both operational and tactical levels, then why are operations often divided into "event-based" and "time-based" operations? Does this infer that only certain operations comply with the underlying idea of time? Some have posited the presence of significant unknown variables (such as enemy will, difficult terrain or weather) as the line of demarcation between the two kinds of operations. Time-based operations work much more

effectively when dealing with inanimate objects –such as dropping bombs on known enemy positions. Maneuver, on the other hand (especially when accomplished on foot), is generally best supported with event-based operations. A closer look; however, reveals that both types of operation rely on time, at the fundamental level, in terms of sequence, frequency, duration and opportunity. The difference is that a so called “time-based” operation will have a definite start and finish time and perhaps specific times for certain milestones, while an “event-based” operation both transitions between phases and conclude operations based on the progress of each event. Rather than “attack at 1700”, the event-based plan will say, “attack *after* confirmation that support has fixed the enemy.” Time is still behind the task itself. More accurate terms would be “event-based” and “*clock-based*” operations. Time is thus the construct through which man views reality (in peace and in war) – regardless of measuring device.

This brings the conversation to the point at hand: how does time relate to war? If time really is behind everything, what does this look like in battle? How does an investigation of time deepen one’s understanding of combat?

Recall for a moment the boxer from the introduction and how he trained his response (not reaction) to the opponent. An understanding of counter-punch strategy is critical for understanding the role of time in combat. To the untrained eye, it seems as if the counter-puncher is just really fast. While this is partially true, it is not a logical necessity. If all he does is react quickly, he is doing nothing more than reacting to contact and then taking the initiative from the enemy. But it is here that the unseen is more important than what is seen.

“Start after and arrive before” - Peter Ralston ⁴¹

Time is perceived in relation to the enemy

Time in combat is measured in relation to the enemy. This condition is commonly known as tempo, and it is the key condition that sets apart combat from most other temporal experiences. The warrior always operates in a time-competitive environment against another who is seeking to achieve his goals as well. Tempo is that condition; it is what drives the battle. Combined with chance, tempo is one of the most significant driving factors in war. Tempo can create opportunity, threaten risk or apply leverage. Tempo is the use of time (or, more correctly, the enemy's perception of time) as a weapon to catch the enemy at the "moment of his helplessness."⁴²

The counter-puncher sets the conditions for the counter-punch. Based on probabilities such as "your opponent will mimic moves that you make" etc, and confirmed by feints early in the battle to determine the enemy's move, he draws a particular action out of his opponent and then, essentially, *ambushes him*.⁴³

Time as the critical factor

So time and war are inextricably linked. But, does this mean that time should be listed as part of the fundamental nature of war? Could not the same argument be made for friction, or danger, or eating dinner? All three of these are part of the makeup of war and could be traced through history consistently. Does their consistent presence make them just as valid as time in candidacy for being deemed a fundamental quality?

It does not.

Notice the nature of the three alternate fundamentals. Friction is actually not a thing in itself. Friction is the coefficient that occurs in any given reaction.⁴⁴ In war, friction is the

coefficient of humanity (will and intellect) and chance. And what about danger? Danger is also a contingent factor of humanity and chance. As Clausewitz so expertly points out in Book 1, danger arises from probability and probability increases due to imperfect information based on inaction on the battlefield.⁴⁵ If these two are contingent, then how could they be fundamental? And eating dinner? Time, on the other hand, is behind everything; as such, it is a fundamental quality of nature, human interaction and war. But this is not all; the rabbit hole goes deeper. Time is categorically distinct for two other reasons.

First, time is even behind the friction and the danger, but the inverse is not also true. What is the nature of friction? Friction “makes that which seems easy in war difficult in reality.”⁴⁶ So, essentially, friction makes the mission harder to accomplish. Why does this matter? Look at it from another lens – that of performing a mathematical problem in math class. Let’s say you are good at addition but have limited ability to perform multiplication. Does the fact that “ 574×63 ” is much more difficult for you than “ $574 + 63$ ” really matter? No, it does not – unless the teacher only gives you 25 seconds to do it. This changes everything. And, in war, there is always a “25 second” rule.

Second, a gain or decrease in time is the result of either the induction or reduction of friction in a system.⁴⁷ When a combatant (or chance) increases the friction of his enemy, he reduces the enemy’s ability to respond appropriately (with the right tool, at the right time). One does not merely increase friction for friction’s sake. The end is temporal advantage, which, in turn, may lead to temporal superiority/dominance.⁴⁸ Using feints to increase the friction in the mind of his opponent, the counter-puncher then capitalizes on the hesitation or over-reaction (whichever occurs) to take momentary advantage.

Hence, as time is not only the context of life itself and the language of war, but also behind war, time must be seen as a significant factor in the fundamental nature of war. This brings the conversation to the first iterative adjustment of the trinity in response to the current discourse. Perhaps the triangle is not a triangle at all, but a square (Fig 5).

FIGURE 5.



EMERGENCE

“The whole is more than the sum total of its components.”⁴⁹

But what does this matter? Does subscribing to this alternate view result in a systemic change in the manner in which the soldier approaches war? If time really is behind everything as stated earlier, then how is it even possible for a soldier to approach war without at least implicitly

acknowledging time? And, if he already implicitly acknowledges time, how does changing time from a contingent to fundamental factor quantifiably (or qualitatively) change his understanding of war?

The answers to these questions transcend an understanding of the nature of time itself, and are anchored, rather, in an understanding of the interaction between time and the other fundamental qualities of war (will, intellect, chance). This interaction between all four of these qualities gives rise to a condition known as “emergence” – a point in which the interaction of elements within a given system results in new qualities and characteristics.⁵⁰

A short anecdote will illustrate the general idea of emergence. Picture Jim, a competitive marathon runner and cyclist and respectable swimmer. One day, his buddy Bill asks him to compete in an Ironman triathlon with him (2.4 mile swim, 112 mile bike, 26.2 mile run). Jim agrees, conducts his normal training, and arrives at the starting line twelve weeks later. Jim begins the race with a bang, falling slightly behind on the swim but beginning to make up for it on the bike, where he lands an impressive bike split (time). He starts off the final marathon at a fairly quick clip.

At mile 10, he slows to a walk.

What happened?

Emergence.

Jim thought (and trained as if) he were facing three races in series – a swim, bike and run. It seemed quite rudimentary based on his history of racing, but he failed to realize two things. First, he failed to realize that a triathlon is not a swim, a bike or a run; it is all three. Second, he failed to realize the existence of a hidden set of skills absolutely critical for success: the art of transition; conservation of energy on the bike to save legs for the run; and the limited relevance

of race positioning until the last 13 miles.⁵¹ These ideas not only escaped him; they never would have occurred to him. Why not? Jim assumed a triathlon to be merely all three sports combined. However, the combination of each sport into one race changed the nature of the race itself.

Perhaps in this current multi-sport, multi-philosophy, multi-polar era, the idea of emergence seems logical, almost common sense. However, to truly make the concept of emergence useful, one must delve deeper than a mere anecdote about a triathlon. At a minimum, one must investigate basic complexity theory, the nature of interaction itself and the volume of probable interactions.

The very nature of those raised in the shadow of the Hegelian dialectic may pre-suppose at least an underlying search for synthesis. But it was not always this way – even in science. As late as the 20th century, scientists believed that one could reduce an entity to its constituent parts and thereby explain its actions by studying the individual parts. This was known as reductionism.⁵² According to Herbert Simon, this view was not effectively countered until shortly after World War I when holism appeared on the scene. In stark contrast to reductionism, holism purported that an entity was worth more than its individual parts and must be studied as a whole. Simon goes on to state in *The Sciences of the Artificial*, “Applied to complex systems in general, it [holism] postulates new system properties and relations among subsystems that had no place in the system components; hence it calls for emergence, ‘a creative principle’.”⁵³ In other words, the mechanistic method of disassembling a clock to determine how all the pieces function is no longer enough. It does not explain the weather. It does not explain traffic. And, it does not explain human beings.⁵⁴

Actually, it never has.

While it took until the 1960s for this thought process to be accepted in the scientific community, this new brand of understanding became part of what is known as “complexity theory.” Complexity has been defined as “the study of the behavior of macroscopic collections of such units that are endowed with the potential to evolve over time.”⁵⁵ While complexity appears in science, this is only a starting point. Complexity theory crosses all disciplines; it sees the world as a conglomeration of systems that provide clues to the orderliness of the universe. Time and non-linearity are the two key ingredients of complexity. Time generates the idea of irreversibility, the notion that time moves in a certain direction, giving rise to the ideas of past, present, future. Nonlinearity generates the note of disproportionate effects within a system.⁵⁶ In the world of non-linearity, two plus two does not always equal four. After the initial conditions, it is hard to tell where all the pieces are going to fall. This is what scientists today call a complex system, and it is very hard to predict. War is not only unpredictable; it is a complex system. Complex systems adapt, changing conditions continually. War is like this. The interaction of the fundamental characteristics of war create new, emergent characteristics that are as different from the individual characteristics as a triathlon is from a marathon.

But what is the nature of interaction? Often, people look at the interactions of a system in a very linear, step-by-step fashion. For instance, one might observe the impact that time has on intellect, time has on will and time has on chance. This is the first level, but it is only the first. In the same manner, a boxer may use a feint to drive an over-reaction that plays into his counter-punch strategy. This is one facet, but it warrants a closer look. The boxer strikes at the face with a straight lead, which causes his opponent’s to throw his hand up as a guard to shield his face. In response, the boxer strikes with his lower hand at the opponent’s belt, connecting a straight on body shot to the opening that was created by the opponent raising his hands in defense. What has

he done? He has thrown a feint (deception) that attacks the intellect at a subconscious level (especially if he already confirmed his opponent's immediate reaction). Knowing there to be a high probability that his opponent will respond with raising his guard and attention, he launches a second attack a split second after his feint *either before or during his opponent's movement*. If he waited until he saw the opponent raise his hands, the opening (opportunity) would have disappeared by the time he struck the second blow. However, because he threw the technique when he did, the strike lands on the half-beat. The opponent is now thinking, "How am I getting hit? How did he get through?" The boxer has, in two beats, successfully placed himself inside the head of the opponent. This is time impacting intellect. But this is only the first level in counterpunching.⁵⁷

What if the opponent intuitively sensed the incoming body shot and pulled his center back from the engagement, *making the boxer miss*? Concurrent with this evasion, the opponent circles to the right with a right hook to the open liver and then explodes with three to four punches to the face, punishing the boxer for his "sneaky technique." Perhaps this happens two or three times in the early stages of the fight. After the boxer has been counter-punched by his opponent once or twice *in time*, the boxer will be reticent to perform that move anymore for the remainder of the fight. This, then, is the second level in counter-punching. While the boxer used time to impact intellect, the opponent used time to impact will. This is an example of a complex, adaptive system at work. Once the boxer has shown the cue, the opponent picks up on the cue (which could also be exploited as the basis for further deception) and adapts accordingly. But what if the opponent slips on a banana peel in the middle of this? Chance has now entered the arena, followed by opportunity. This has now become a multi-level, interactive investigation. In

the quiet of the classroom, office, or sand table, this is the level of attention that must be paid to all elements of the nature of war and the emergent qualities that arise from their interactions.

And this leads to an observation. Recall the square from section one that improved upon the traditional triangle that had not considered time as a fundamental. In that diagram, time was given its own corner, or domain. But real life is not like that at all. Time permeates everything. In the example above, both boxers maneuvered in time on each other. One used time to attack the intellect, while the other used time to attack the will – counter-punching the counter-puncher. If time permeates all, then the earlier model may not be the best representation of reality. Perhaps the one below will better facilitate an understanding of how things are.

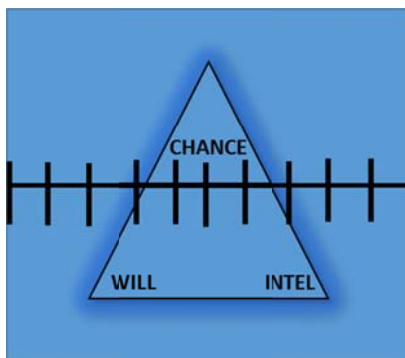


FIGURE 6.

In the figure on the left, the trinity exists as Clausewitz purported in his work, *On War*. Additionally, the box symbolizes the domain of time. The added lines that intersect the triangle demonstrate that time bisects each one of the other three fundamentals of war.

This leads to a question of the volume of interactions. The scenario above was fairly simplistic and limited, but it gives a glimpse of the nature of interaction between time, intellect and will. But this is just the beginning. The volume of possible interactions available for investigation is mind boggling. Positing time and the trinity (intellect, will and chance) as the four key fundamentals in war yields 24 possible interactions ($1 \times 2 \times 3 \times 4$). Going further, time can be further divided into its four aspects of duration, sequence, frequency and opportunity.⁵⁸ Add the trinity (3) to this number, and the starting number is 7. The result is exponential – 5040

possible interactions (1x2x3x4x5x6x7). While it is true that this is only a math equation, math is a reflection of probability in the known universe.

How does this work out in the real world? When seeking how to take the advantage over one’s enemy, one cannot merely look at time as an addition to the equation but must investigate the possible reactions between all of the fundamentals of war and all of the cross-associations. Does this mean one should study 5040 interactions? Perhaps it does mean this. But often there is not enough time for that – even when taking time away from operations to reflect. One thing is for certain: one should not limit his investigation to 24 interactions or he will miss over 5,000. As Marshal de Saxe quoted in *My Reveries Upon the Art of War*, “War is a trade for the ignorant, a science for the expert.”⁵⁹ Still, this level of investigation lies outside the scope of this paper and ought to be pursued by the reader at another time. The chart below depicts the seven interactions:

THE SEVEN INTERACTIONS OF THE “SQUARE”			
1	2	3	4
ImpactING Force	ImpactED Force	ImpactING Force	ImpactED Force
TIME	CHANCE	CHANCE	TIME
TIME	INTELLECT	INTELLECT	TIME
TIME	WILL	WILL	TIME
TIME	WILL / INTELLECT	WILL / INTELLECT	TIME
TIME	WILL / CHANCE	WILL / CHANCE	TIME
TIME	CHANCE / INTELLECT	CHANCE / INTELLECT	TIME
TIME	WILL / CHANCE / INTELLECT	WILL / CHANCE / INTELLECT	TIME

FIGURE 7.

One note about interactions: they are a two way street. In other words, not only does time impact intellect, but intellect impacts time, etc. This is the reason the chart looks like it duplicates itself. Hence, the seven actions under review are really 14 actions.

Time and chance

How does time, either positively or negatively, affect chance? How does chance impact time? Time affects chance mainly by its impact on probability of operational success. *Sequence* increases probability because if one can determine the necessary sequence, one can capitalize on it, which increases the probability of successful operations. For instance, if one can determine what preparation steps an enemy requires before conducting an attack (the process), one can employ a spoiling attack. *Frequency* is what allows one to take advantage of pattern; it is the manner of discerning pattern. For an opponent to become pattern-less, he must change normal movements so that pattern cannot be ascertained, or he must change the frequency so that he cannot be ambushed despite the consistent sequence of his actions. To attack the pattern-less, one must target sequences that cannot be changed, thus increasing the probability of success. For instance, Montgomery beat Rommel in North Africa in 1942 by attacking sequences that could not be changed; he destroyed his supply lines.⁶⁰ *Duration* increases risk. The longer an operation continues, the greater the likelihood of chance rearing its head. At the same time, chance opens the door of *opportunity*. Regardless of what one does, chance will not go away and cannot really be managed. Probabilities can be weighed and uncertainties reduced by pre-engagement actions, but chance will always remain. As Clausewitz said, it is that element that most makes war like a “game of cards.”⁶¹

Time and intellect

The crux of the interaction between time and intellect centers around two questions. First, how does time subvert or benefit the intellect? Second, how does the intellect use time to its advantage or to its enemy’s disadvantage? To answer these questions requires a review of the decision making process itself. Three ideas, while not exhaustive, will grant a useful overview of

decision-making. These three ideas are values, conscious thought (analysis) and subconscious thought (intuition).

Values drive the decision-making process. The word “values”, as used here, does not refer to a list of ideas to which a person gives mental assent, but the deep-seated driving forces that impact not only thought, but action. It is not what one claims he would do but what one actually does – in the adrenal state – that matters. Humans have a specific set of needs that they will seek in order of priority.⁶²

Perhaps the most basic value that humans hold is the value of self-interest/survival. Hold your hand your nose and mouth and try to make yourself pass out and this truth becomes apparent. Whether self-interest generates an entity’s drive for survival or vice versa does not really matter to the discussion. The fact is that both are driving forces. But what about the existence of self-sacrifice? Does this nullify the idea of self-interest/survival being the most basic of human interests? Actually, the possibility of sacrifice merely illustrates an individual who has made his own interests subservient to a particular idea, cause or to the needs of another individual. As a rule, a person does not treat himself as if he were not himself unless he is mentally ill. The second value is really a list of prioritized values elucidated by Maslow and bearing his name. These values include the need to feel safe, the desire to belong, the condition of self-esteem, and the capability of self-actualization.⁶³

The next two ideas speak to the process itself. Decision making is generally regarded as being composed of two kinds: intuitive and deliberate, also termed “System 1” and “System 2.”⁶⁴ For the sake of this discussion, this paper will assume these positions to be pure rather than mixed as they would be in the real world. Deliberate decision-making, or conscious choice, depends on analysis to guide itself while intuitive decision-making (sub-conscious choice) relies

on appropriate reading of existing cues to achieve its end. Time is the quintessential factor that determines which system is appropriate for each occasion.

This brings the discussion back to the two questions: how does time subvert or benefit the intellect, and how does the intellect use time to its advantage or to its enemy's disadvantage?

Sequence can benefit or subvert the intellect. Read aloud the numbers below and fill in the blank:

1-2-3.....12-13-14...20-21-22.....43-44-_____ .

What number did you place in the blank? Was it 45? Why did you place that number in the blank? Your brain saw a sequence and acted on it. As a matter of fact, your brain probably filled in the blank subconsciously before System 2 was ever engaged. Because the mind operates based on patterns, the mind is always looking to tell itself a story that makes sense.⁶⁵ Try this next phrase. Read it aloud and fill the blank with the first thing that comes to mind:

“Never in a million _____.”

Did you say “cars?” Most likely, you said “years”. Why? There was no context given to the statement, yet you assumed you knew what came next. This is because you “smuggled” outside information (a lifetime of reference to the phrase in question) into the present scenario to interpret what was occurring. People do this all the time. What if the context were a license plate where the letters spelled out “DUMM-E”? And, what if the full sentence were actually, “Never in a million cars would you see a license plate like that.” Right now, even as you are reading this, you may be justifying why the phrase could never be “Never in a million cars.” Perhaps you are saying the scenario doesn’t make sense or that no one would ever say that particular phrase. The justifications are not really important; the act of justification is. Why? The act of justification is the indicator that your brain has accepted a certain story about the way the world is (“filled in the blanks”) and will not let it go. If the answer really is “cars”, *sequence has become your enemy*. If

the two jabs and a cross that you have seen so often suddenly become two jabs and a right hook to the body, sequence has not only hindered you but driven you deeper and more quickly into the trap. If your response to a small arms ambush is to jump into the ditches along the road for cover while you return fire, and if that move is met with the sounds of mines ripping through your soldiers who have taken refuge there, sequence has betrayed you. In this last case, you were countered by your own sequence, anticipated by the enemy, and set up for a counter-punch. The “ambush” was really only a feint.

All of these situations occur because the brain is attempting to make sense of the world. But filling in the blanks has benefits as well; this ability is what makes possible investigations, novel writing and even science. The search for pattern is a useful tool for the curious mind. But it is also dangerous. The possibility of subversion arises when an opponent deliberately sets up a pattern that creates expectation and then suddenly changes the ending. The pattern-seeking brain has already accepted one story, which almost guarantees the person will fall for the ruse.

Frequency can be controlled to create a specific result, as well. Increasing the frequency of strikes (boxer) or engagements (unit) can reduce the enemy’s ability to respond and force him to respond out of intuition. He has no time for anything else. Even more devastating than pure speed is change itself. Decreasing frequency to a point at which the opponent believes he has time to analyze the situation with System 2 and then suddenly increasing the pace can catch the enemy flat-footed. He will be too slow with System 2 and unprepared to engage System 1 until after the first salvo.

Time and will

How does time erode or reinforce the will?

Duration is the fundamental aspect of time that can deliberately affect the will. The question of how long one can hold on does not come in the initial days of conflict but near the end. The fall of the British garrison and surrender of the island of Singapore to a bluffing Japanese General exemplifies this concept.⁶⁶ Time could also be on the side of the defender if he can endure the way the Russian outlasted the Germans on the Eastern front during Operation Barbarossa beginning in 1941.⁶⁷

Frequency of engagement at the outset, like punishment received from a boxer's fists in the opening rounds can raise doubt regarding sustainability. This doubt must be countered by will. The overcoming of frequent danger requires courage that is driven by the will. Disregard for one's own life in accomplishment of the mission requires the engagement of the will. But still, the frequency of time may instigate doubt. This doubt may awaken the fear that eventually erodes the will.⁶⁸ Lord Moran states in his remarkable work that chronicles his first-hand account of trench warfare in World War I, "When I write of the birth of fear I have in mind something more deeply rooted....It appears only in men who have been scarred by months of war....At first he has a strange feeling of invulnerability – a form of egotism – then it is suddenly brought home to him that he is not a spectator but a bit of the target, that if there are casualties he may be one of them."⁶⁹

The next three areas of investigation involve the interaction of three traits. The chart below lists a couple of questions to initiate self-study for the reader.

TIME, INTELLECT, WILL	How does time impact a combatant's understanding and drive?
	How does a combatant employ both understanding and drive to circumvent the effects of time
TIME, WILL, CHANCE	How does time exploit chance or anticipate chance and what will is required to carry out the resultant plan?
	How does will or lack thereof drive a combatant's ability or inability to capitalize on chance due to will or lack thereof?
TIME, CHANCE, INTELLECT	How does time impact the intellect with regards to cueing on opportunity (good or bad) that arises based on chance?
	How does intellect make sense of chance or "abide" in chance to take advantage of opportunity <i>in time</i> ?

FIGURE 8.

Time, will, chance and intellect

Finally, the interaction of all four fundamental characteristics work together to generate their own emergent qualities. Time interacts with all of them concurrently, and they interact with time (see Figure 6). Time acts as the linkage between the other three aspects of the triangle. Time assaults the intellect when what is expected does not occur based on the broken rhythm or misdirection by the enemy. Multiple counter-time assaults by counter-attack, ambush and spoiling attack awaken an emotional response and may cause one to react rather than respond to the situation at hand. Once the situation is laden with emotional content that is magnified by chance's indiscriminant hand, the balance falls out of the system and time seems to move faster. The faster time seems to move, the more frantic the mind becomes. The more frantic the mind becomes, the faster time seems to move. And, the more frantic time becomes, the more difficult it is to stop and get off the train. This is what John Boyd called folding the enemy "back inside himself."⁷⁰

EXPLOITATION

These are great concepts, but how does one really fold an enemy on himself? Is this even possible? Often, in discussions like this, the story only goes so far. Concepts sound reasonable but are not useful. How does one put these principles into practice?

This section will consider exploitation in three areas: exploitation of time, exploitation of humanity (will and humanity), and exploitation of chance. Each one of these has very specific aspects that can be targeted. And then there is, of course, emergence. The point is not to create an actionable checklist but to demonstrate application of the concepts presented in this paper. Not all concepts will be useful at all times, but if you come away with a greater appreciation for the context of war and the mindset required both to engage in and train for the non-linear phenomenon that it is, that will be enough.

Exploiting Time

As stated previously, time refuses to be manipulated or managed; time exists as the construct that is behind everything. However, perception of time can be manipulated. To understand how to manipulate perception, the discussion must now turn to how human beings perceive time. According to Michael Flaherty in *The Watched Pot*, human beings experience time (on earth) in one of three ways: synchronicity, temporal compression, or protracted duration. *Synchronicity* is the idea that a person's perception of time matches closely with actual reality. This is the normal experience in everyday life of human beings – one hour feels like one hour; one day feels like one day. *Temporal compression* is the perception that time is passing quickly. *Protracted duration* is the perception that time is going in slow motion.⁵³ Obviously, the two categories that are of most interest with regards to exploitation are temporal compression

and protracted duration. The first will take time away from the enemy, while the second will make time slow down for oneself.

Temporal Compression is akin to making the enemy fall behind in time and keeping him at that place. He should always feel like he must catch up. Musashi called this “holding down the pillow.”⁷¹ He goes on to explain, “You inhibit an opponent’s attack from the letter a so to speak; you inhibit an opponent’s leap from the letter l, and inhibit an opponent’s cut from the letter c...To manipulate opponents in this way is mastery of the art of war.”⁷²

Protracted duration, on the other hand is the idea of slowing time down for oneself. Flaherty found in his studies that protracted duration took place in six different scenarios: suffering and intense emotions, violence and danger, waiting and boredom, altered states, concentration and meditation and shock and novelty. Based on his investigation of 705 cases, he calculates that 75% of the experiences in protracted duration are caused by suffering and intense emotions, violence and danger, and waiting and boredom.⁷³ These can be grouped into the three categories of arousal, emotion, and focus. The condition is also known by the term “tachypsychia.”⁷⁴ Eastern literature calls it by many terms, including the term “mushin”, which is Japanese for “No-Mind.”⁷⁵ While this condition may or may not be available in combat to the point of being able to rely on it, the application of the concept is particularly useful in the development of using the six scenarios as a baseline for training.

Language

To appropriately exploit time, one must change his language. Often terms are used in a fragmented manner that does not lend itself to the coalescing of information in useable form. In

other words, soldiers speak of things in terms of their current specialty rather than in the language of time. Four particular areas exist that are the most susceptible to this fallacy – and hence, subject to a simple change with immediate consequence on the battlefield. Space, speed, resources and weather all suffer from the segmented view of knowledge.

Space holds value to the warrior in many ways, not the least of which is the temporal aspect. For a commander, the valuable aspect of knowing the enemy’s position with regards to maneuver is that it gives him an idea of the length of time it will take to close with his opponent. The same applies to the enemy reinforcements. The number of miles or kilometers away is not quite as important as understanding how long it will take after notification for the enemy reinforcements to impact friendly forces and thus interdict the commander’s efforts to take his objective. To accurately predict this, the commander must translate *space into time*. It is then that the facts gain tactical and operational relevancy.

EXAMPLES OF SPACE – TIME TRANSLATION FOR OPERATIONS	
ENEMY FORCES	Reinforcement times, closure rate, and withdrawal speeds
FRIENDLY FORCES	Reinforcement, closure rate for attack with respect to use of fire support assets and spoiling attacks
ENVIRONMENT	Terrain analysis, ascertaining movement rates, and determining the difficulty of movement through mobility corridors.

FIGURE 9.

Speed has many definitions and is used many different ways. The speed that matters in battle is relative speed – speed relative to the opponent. This is also known as “tempo.”⁷⁶ What matters is not that a particular platform can move at 70 kilometers per hour (kph) but that the platform can move 70kph with a range of 300 miles before needing fuel and has a carrying capacity of 20 troops. This can be translated one step further after taking the aggregate of all

platforms that can be used to develop a picture of force inflow *over time*. The story that the commander then tells himself begins with “I have the ability to move 4,000 combat troops from point A to point B within 30 hours and can be ready to being offensive operations within 12 hours of arrival.” If this build-up of forces is faster than what the enemy can muster in the same period, the result could be local, numerical superiority.

Resource levels are normally reported without reference; they are given in terms of gallons or pallets or tons. On the battlefield, the important thing is not that the commander has a certain number of rounds but that he has available a certain amount of suppression for a particular period of time based on the number of rounds. The rounds must be translated into *units of time* before they are usable. The same goes for pallets of gear or food. The resources do not exist for themselves; they exist to provide the commander with something of value. They provide time. Notice, for instance, Frederick the Great’s translation of resources into units of time as follows: “The fortress could hold eight days; if the enemy is in the vicinity, it will be necessary to build a strong entrenchment, to amass food there from Olmutz for three weeks and to take the place. The city will not be able to resist a long time; the chateau may be able to hold you for twelve days. This requires that the magazines follow.”⁷⁷ In Singapore, the length of time the garrison held out was directly proportionate to the amount of resources available. According to Churchill’s account, when the garrison surrendered, only twenty-four hours supply of water remained.⁷⁸

Weather claims a place beside the other three as it governs many things in war. Weather can determine whether or not a foot-borne force can actually move that through mud-soaked ground to arrive at the place of battle in time (or reinforcements), whether or not air support will be available, or whether or not a beach landing or ocean transit is tenable. The Normandy landings were significantly dictated by weather and the anticipated closing of the weather window

influenced decisions at the highest levels.⁷⁹ Weather reports must also be translated into time for a commander. They give an idea of operational windows, possible launch and recovery times, landing times, air flow, reconnaissance capability, resupply windows, and much, much more.

When all four of these aspects of the battlefield are translated for the commander, he has a more accurate picture of what is really occurring in his operating environment. Once the facts regarding the enemy force are also translated into time, he has a much more accurate picture of capabilities and limitations of the enemy he is facing. This is perhaps the closest a modern day commander will get to the “*coup de oeil militaire*” of old.⁸⁰ This is the embodiment of Sun Tzu’s admonish to know oneself and the enemy.⁸¹

Training

Training must include the temporal aspect as a fundamental aspect if an army is to be true to the nature of war. Individuals should not only be forced to make decisions on a shortened timeline, but also should be rewarded for making decisions that create more time. Time always accompanies the warrior. It is neither for nor against him; *time* is merely time – the context of life and engagement. The warrior must make time his ally, attaching to its nature and using it as it is to achieve his desired ends. Training must involve teaching leaders to find multi-effect efficiencies – that both increase time on their side and decrease the amount of time available to the other side. Decrease the amount of preparatory actions required prior to execution. Increase the number of senses engaged in training scenarios so that the soldiers are totally engaged. Conduct digressive training in which the situation worsens at an increasing rate if decisions are not made within a certain period of time.

Make leaders study sequence in history with a focus on the cues. Study not only the main battles in order to understand sequential patterns, but also study the outlier battles to understand

anomalies that may be clues of an enemy's attempt at misdirection. Develop the ability to use frequency against the enemy by understanding how to build momentum. Momentum is not only built with attacks but with threats, feints, draws and demonstrations. Tell the story from the opponent's standpoint and force leaders to do the same; then plan your counter-punch.

Fighting

Deflecting a punch as it approaches one's face is good. Placing oneself just outside of fighting range (threat rings) is better. Watching a fist stop short while beginning one's own is even better. Attacking first to draw a particular reaction and capitalizing on the enemy's reaction is even better. All four are desirable actions and provide a level of security, but the final two actions actively create an advantage and prepare a fighter for his next move. Train to this and test this in exercises. Spoiling attacks should be practiced; counter-attacks should be practiced. Be ready to use these in your own fighting in addition to using a set of simple deceptive techniques.

Perception manipulation, both protraction and compression, can be illustrated with the game of football, specifically with the position of the quarterback. What are the conditions that exist to create extra time in the "pocket" for a football quarterback to make good calls regarding their plays? Numerous aspects can be investigated such as:

1. Defense – What are the obstacles in the path of the other team that give him the space he needs to create the optimum time for making good decisions?
2. Space from the front line – This is akin to running slack on patrol instead of point in order to retain the ability to direct rather than be forced into a gunfight in which one is totally consumed by the two or three enemy soldiers directly in one's field of view.

3. Creating multiple options off one play – This gives the ability of deception, develops flexibility, increases the uncertainty of the enemy and ensures the team is prepared to play off an audible at the latest possible moment.
4. External Focus– When every man is actively looking at how he can get in position to positively affect the outcome of the play, a team is quite mature and externally focused. The same goes for a warfighting organization.
5. Planned play - Unless something better comes up, he is going to choose that play. This is like a deliberate attack.

Exploiting Humanity

Training

Two ideas that arise out of an understanding of humanity is that people operate chiefly out of self-interest, and that they react to both external and internal stimuli. A third idea also arises: people are finite - *and they know it*. It is fanciful thinking to assume that one will achieve the protracted duration described earlier and somehow find oneself outside of the realm of the chaos of conflict. This is almost never the case, if it ever is. Training then, must focus as much on building resiliency in the friendly force as learning to apply time against the enemy. This brings up the question of interaction. If war is fundamentally an interactive game with chance involved, how is it possible that one train for war without dealing with the effects of interaction or chance? And what kind of interaction is required? Is there room for multiple types of training with graduated effects or should all training be unscripted? What about the kinds of chance / enemy counter-punches that a force may never encounter in unscripted exercises? If all training is unscripted, one gains the ability to deal in time with a thinking enemy, but one is also limited

by the ingenuity of that enemy. Have you ever done an exercise in which you lose 1/3 your force during initial insert in your first landing zone? Is it viable? Perhaps. Is it possible in an unscripted exercise? Perhaps not.

Fighting

For fighting, see the following chart. The chart is not a checklist but a mere collection of ways to attack the intellect/will on the one hand or, on the other hand, to diminish the effects of time.

ATTACK INTELLECT WITH <u>TIME</u>	
ACTION (TIME)	IMPACT ON INTELLECT
SUBVERT (1): Severely reduced time FORCES the opponent to act instinctively.	<i>REACTIVITY</i> : The mind only has time to respond subconsciously. It may respond appropriately or inappropriately depending on prior established conditioned responses.
SUBVERT (2): Reduced time DISRUPTS the mind and convinces it to deliberately think through response.	<i>SLUGGISHNESS</i> : The mind thinks it has time to deliberately think through options and is lulled into slowing its process down until it is too late.
SUBVERT (3): Establishing a sequence that makes sense to the mind but changing the end so the effect is misdirection. ⁸²	<i>MISDIRECTION</i> : The familiar-seeming sequence lulls the mind into pattern completion – “filling in the blanks” and results in response to wrong action.
SUBVERT (4): Attack on multiple lines; Combined Arms; Attack by Combination ⁸³	<i>HESITATION</i> : The amount of response time is directly proportionate to the number of choices available. (Hick’s Law is in effect). ⁸⁴
SUBVERT (5): Counter-time/counter-punch the enemy. ⁸⁵	<i>SURPRISE</i> : The mind believes it is conducting an attack but the body (or unit) finds itself being hit.
SUBVERT (6): Attack in manners that do not fit a paradigm.	<i>CONFUSION</i> : The mind does not understand what is going on. It tries to tell itself a story but cannot fit it to any pattern.
BENEFIT (1): Sequence allows one to make assumptions.	<i>ANTICIPATION</i> : The mind observes the pattern and responds accordingly. Conditioned response allows one to arrive in time when analysis would be too late.
BENEFIT (2): The existence of frequency (consistency of beats) or rhythm allows one to adjust from there.	<i>BROKEN RHYTHM</i> : The mind hears the pattern and then breaks the pattern – attacking on the half-beat. ⁸⁶
SLOW TIME PERCEPTION THROUGH <u>INTELLECT</u>	
ACTION (INTELLECT)	IMPACT ON TIME
<i>SUBCONSCIOUS</i> : Develop habits in the “adrenal state” that act as immediate buffers to enemy action.	The immediate action gains time for the soldier. It can also lead him into a trap if he shows a pattern.
<i>CONSCIOUS</i> : Calmness and relaxation	Relaxation allows one to see more in a shorter amount of time.
<i>CONSCIOUS</i> : Learn the cues that indicate opportunity (and danger).	The early recognition leads to the ability to counter-punch.
<i>SUBCONSCIOUS</i> : Develop the ability to read cues in the adrenal	This bridges the gap between knowledge and ability <i>in time</i> .

state (and to respond).	
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FIGURE 10.

Note on Subvert (2): If the action occurs too close, the opponent will automatically use the intuitive sense. If it is too far away, he will use an analytical approach, thus engaging the conscious mind. When the pace suddenly changes, he will find he is too slow to react with his analytical mind and he is too late to react with his intuitive mind. This is the purpose for the “interview” in attack recognition methodology (“Hey man, you got the time?”)⁸⁷. The interview is disarming. When one believes he has time, he takes time. When all time is taken away, one just reacts. But, when the event occurs between the two speeds, the person in question is really unsure of when to “turn it on.”

Note on Subvert (4): Hick’s Law states claims that the more options one has, the longer his decision time.⁸⁸

ATTACKING THE WILL WITH	
<u>TIME</u>	
ACTION (TIME)	IMPACT ON WILL
Increase duration of a contact	Doubt about sustainability invades the mind. Possible capitulation follows.
AFFECTING TIME THROUGH THE <u>WILL</u>	
ACTION (WILL)	IMPACT ON TIME
Determine to hold out longer than the enemy (in defense).	The defense can become unassailable (to a point).
Engage so often at the outset of a battle that the enemy does not want the punishment.	The frequency of strikes makes the enemy want to make peace – or at least to stop hostilities.

FIGURE 11.

Note: It appears the intellect chart has many more opportunities for execution than the will chart above. This is true. The purpose of war is to impose one’s will on his enemy and to thwart the enemy from imposing his on you. So, it is difficult to say how to attack the will outside of using all methods at one’s disposal to achieve that end.

Exploiting Chance

Is this even possible? Can chance be exploited? The ones who are comfortable in the chaos will find themselves better able to deal with chance. Why? If the bedrock belief that is intellectually explained and physically trained is that war is a non-linear, dynamic system, the organization will adapt and continue to follow on with its mission. If war; however, is seen as a

linear phenomenon, the organization will falter at the onset of reality. The organization will find itself falling further and further behind as the pace escalates. Chance often dictates the end of things in a manner that could never be foreseen. Chance can cause a German commander to disregard direct orders that quite possibly would have cut off the British forces prior to the famous Dunkirk evacuation.⁸⁹ The aspect of chance must be duplicated in training or soldiers will begin to believe that two plus two always equals four, when veteran soldiers know this is almost never true.

Training

Bad things happen that cannot be explained and that may carry the day – which creates the opportunity for those prepared and results in catastrophe for those unprepared. The killing of a key leader in the middle of an exercise is crucial to determine how the unit will respond and adapt. The destruction of a key piece of equipment or a capability at the most inopportune time is valuable training and great material for insight into an organization. In chess, it would be akin to playing without one's queen. To adequately prepare for the nature of war, uncertainty, catastrophe and contradiction must exist – must be embedded in training. Drills are developed to build and rehearse specific hard skills. This is the science of war. Exercises are built to train adaptation and capitalization of advantages over the enemy.

Fighting

As Clausewitz said, chance cannot be eradicated from war. The inactivity on each side decreases knowledge to conjecture, resulting in each commander having to make an educated guess.⁹⁰ Because of this, he takes the information available, tries to paint a picture, and then

designs operations to take advantage of the gaps that he supposes to exist in the enemy’s defenses. The lack of certainty introduces the role of probability in planning operations.

One could break probability down further into two specific aspects: that which would increase the probability of success and that which would decrease the probability for failure. At first blush, this may seem like semantics, but the two categories are actually very different. When actions increase the probability of success, one is focused on the outcome, the enemy, the mission and in stacking his own advantages in his favor. When one is focused on decreasing the probability of failure, one is focused internally and determined to stave away hindrances and obstacles. In boxing, an example of increasing the probability of success would be throwing combinations with the goal of getting through the opponent’s defenses. Focusing on decreasing the probability of failure would be maintaining range, head movement and coverage of the jaw to keep from getting knocked out. The chart below illustrates what this looks like in battle.

	<i>INCREASE PROB SUCCESS</i>	<i>DECREASE PROB FOR FAILURE</i>	
	SEQUENCE: Spoiling Attack SEQUENCE: Change pattern of attack SEQUENCE: Target sequences that cannot be changed FREQUENCY: Increase the number of near simultaneous attacks	SEQUENCE: Mask own sequence if possible; reduce patterns FREQUENCY: Reduce the number of times conducting the same operation the same way (ambush) DURATION: Reduce time on objective	

FIGURE 12.

Putting it All Together – Systems of Exploitation

At this point, an admission is fitting. The analogy of a boxer fighting an opponent has value for speaking about combat as it boxing also correlates to Clausewitz’s reference to two wrestlers.⁹¹ However, this idea includes an inherent fallacy – it is one dimensional.

A great example is the normally one-dimensional game of chess. The game of chess has very specific rules that govern it and that stand as a basic structure whereby the game is played. Some will only ever play chess in this manner. Add two more players to the game, establish two teams of two people each, and the game morphs into something else entirely. Beneath the surface the pieces still act in the same manner, but points of reference change as the number of possible angles increases due to the existence of four rather than two players (Fig 13).

			x	x	x	x	x	x	x	x			
			x	x	x	x	x	x	x	x			
x	x											x	x
x	x											x	x
x	x											x	x
x	x											x	x
x	x											x	x
x	x											x	x
x	x											x	x
x	x											x	x
			x	x	x	x	x	x	x	x			
			x	x	x	x	x	x	x	x			

The chess board on the left is an example of a four way chess board that is typically played by four players –two teams of two.

To make it even more realistic, add a time limit to decisions. Connect electrodes from an electric-shock producing machine to each individual so that each time an opponent removes a player’s piece from a table, the losing player is shocked. Additionally, set the device so that it also randomly shocks players in an imperceptible pattern. Now, the scenario is closer to war.

The additional uncertainties and ambiguities, the presence of other members with whom communication must occur and the existence of random punishment changes the game dramatically. Note that the uncertainty and the communication aspects are emergent qualities that arise based in the addition of two more players. So, when viewing these principles against

the backdrop of reality, some adjustments must be made to make the observations fit. This does not mean the observations are invalid, just that they were naturally limited to a particular elementary scenario to allow a deeper investigation.

OODA (Observe-Orient-Decide-Act) Loop

The “OODA Loop” cycle, as it is commonly called is the philosophy of thought that sees combat as a matter of time-competitive decision-making in dangerous circumstances. It was born out of Colonel John Boyd’s experiences as a fighter pilot. He was struck by the fact that the US pilots did so well and began to inquire into the reason for the difference. He noticed physical differences between American jets and the MIGs against which they were flying. What he eventually came to understand; however, was the underpinning idea for the better execution of the American pilots.⁹²

Although his study was not limited to this and actually went well beyond this simplified description, the process for which he is known and into which much of his philosophy has been distilled is called the “Boyd Cycle.” The Boyd Cycle consists of four stages of decision-making that result in effective action: Observation, Orientation, Decision and Action (OODA loop). Boyd realized the system to be a self-reinforcing system that increased with speed over time. He posited that if a fighter pilot could complete his own decision-making cycle faster than his enemy, he could effectively out-cycle him. And this is merely the beginning. Once he out-cycles the enemy, he continues to cycle at a faster rate of speed (tempo). This results in a two-fold increase on speed – retarding the enemy’s ability to act appropriately while increasing one’s own ability to respond faster. As the cycle is reinforcing success – increasing speed of action, so it is reinforcing of failure – increasing the entropy that faces an opponent. In the time-constrained

environment of combat, this two-fold increase on speed seems to fold time upon itself in the perspective of the enemy. Perhaps the enemy would choose properly if he had enough time to properly observe and decipher the facts, but time seems to get away from him. Over time, the entropy facing an enemy increases exponentially, resulting in eventual defeat.⁹³

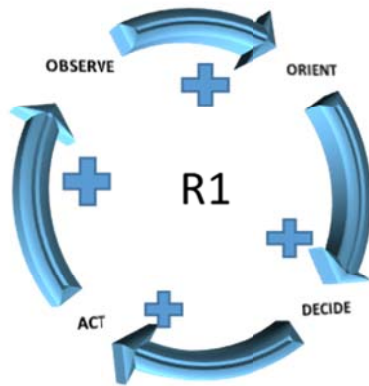


FIGURE 14.

LIMITATIONS OF THE OODA LOOP

Return for a moment to the four-way, time-compressed, electric-shock stimulated chess match mentioned at the beginning of this section. Once again, command in real combat adds another aberration, another level of friction. Not only do all the conditions exist as described previously, but as a commander, you are no longer the chess player. You just tell the chess players what to do – while sitting on the other side of the room from where you only have a skewed vision (if at all) of the board. Does the OODA loop still apply? How do the steps of the cycle apply to the commander – the person on the other side of the room?

Observe – What is the commander observing? Can he really observe anything? If multiple engagements are occurring, what can he really see? And if observation is the first step to running a cycle, doesn't this create an inherent drive within commanders to move to the point of contact so they can "see" what is occurring? In unit combat, does this speed things up or slow things down?

Orient – many have stated that this is the most important step of the loop.⁹⁴ This is the step that you try to keep your enemy from accomplishing. If he can never orient, he will just continue to cover up. But. Is orientation enough? In the one-on-one boxing match, orientation is enough. The one getting punched turns toward his opponent while still covering up and then explodes in that direction, turning the tide (Decide-Act). But what if the individual were being hit from multiple directions *by multiple opponents*? This is now much more like the four-way chess game than the boxing match. And what if, once again, the commander were directing his players from across the room?

Decide – Who is deciding? Are decisions being made on multiple levels? Which ones are made on each level?

Act – Is this the appropriate word? Does the commander "act" from the other side of the room? He may or may not, depending on the nature of the battle. He may command; he may direct. He may do many things. The players definitely at, but that is only a description of part of the battle.

Can the OODA be made to fit unit combat? It has been made to fit and can be used effectively. One can dismiss the aberrations of actual unit combat, or one can confront them and attempt to revise the model to more accurately depict conditions.

*PACE (Perceive-Act-Decide-Communicate)*⁹⁵

These very questions plagued Lieutenant Colonel Trent Gibson after having served in Desert Storm, Operation Iraqi Freedom and Operation Enduring Freedom. While the OODA loop was useful as a tool, it did not seem to “fit” unit combat. He struggled to make sense of the decision-making process as it relates to combat, specifically as it relates to the fact that in actual combat, the commander often finds himself out of position to effectively complete any of the OODA loop steps. Further complicating his understanding was his time as an instructor in the Infantry Officer Course, whose motto was “Decide, Communicate, and Act.” He concluded there must be a solution that took into account the commander and set about to discover it. He decided to attempt to meld the two models to create a kind of synthesis that would accurately describe the manner in which a commander could drive tempo on the battlefield. The result is a construct aptly labeled “PACE”, as the desired end is to out-pace the enemy.

Perceive is the first step. At first blush, perception seems like merely a nuance of observation, but it is not. Perception may occur whether the commander is in or out of position. This could be termed the modern *coup d-oeil*. The “sweep of the eye” may occur on a map upon which the commander, having translated space-speed-weather-resource into units of time, understands what he sees. It may also occur in his imagination as he is pinned down at one particular portion of the battlefield. Does this work with the illustration of the commander sitting across the room?

It does.

Adaption is the second step. Orientation is a factor of linear or solo combat. The nature of war is non-linear, even more so than the four-way chess board. Adaptation naturally follows perception as the planning horizon continually shifts. Once you input energy into the system, the

system changes.⁹⁶ Adaptation occurs simultaneously at many levels. At the engagement level, specific units (squads, platoons, companies, battalions, regiments, divisions) are conducting local adaptation. Concurrently, the leader is adapting as able in mind and in position. The organization as a whole, and in its constituent parts, adapts as a response to the situation in which it finds itself.

Communication is the third step. This step existed in the Infantry Officer Course model but not in the OODA Loop. This is where synthesis of the two systems and actual combat occurs. Communication distinguishes unit combat from individual combat. Communication is the players around the obscured board yelling out their board positions to the commander in the corner of the room as he draws them on the pad of paper he holds in his lap. Communication is also the commander applying this ever-changing data to his current mental model of the situation, updating his perception and communicating adjustments to the players around the board. In this manner, the communicate step adds a second reinforcing loop (R2) to the system.

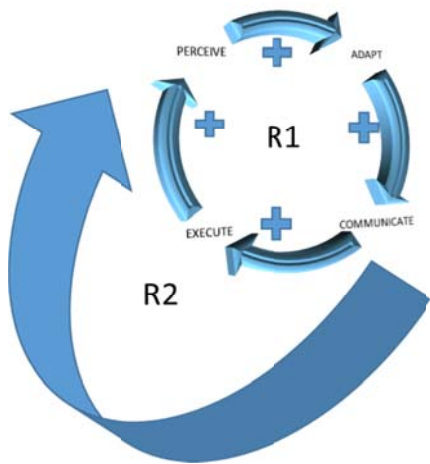
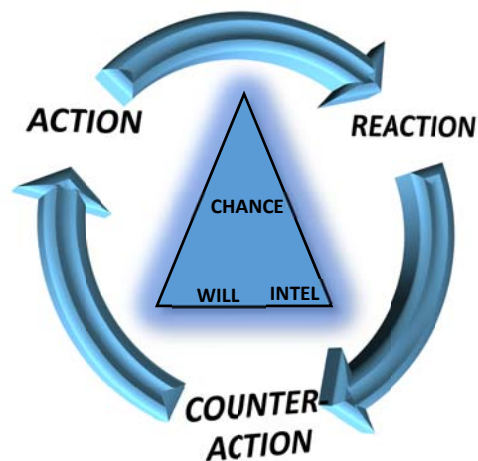


FIGURE 15.

Execution is the final step. At the conclusion of the initial action, where is the commander? Where must he be? Must he be around the board with the players? This is not a commentary on where he should be driving to go, it is merely a description of where he must be

to generate effective response. Effective, local response is based on adaptation to what is occurring *as it occurs*. Effective, unified response (using the entire unit to bring to bear on a situation) is based on perception. Perception is driven by clear communication of the situation. Execution is based on clear communication of orders. The term “action” works for boxers and fighter pilots, but it loses some of its utility when speaking of unit combat. The commander may or may not act, but he must communicate if he wants to affect unified response (execution).

Time can be a weapon. Developing skills at using this weapon, translating the battlefield into the language of time, and practicing exploitation of time at individual and unit levels will increase one’s capability in the complex system called war. This is exploitation of the very nature of war itself. And, this brings us to our most accurate diagram to date (Fig 16). On the last diagram, time was depicted as a line that bisected the trinity. This demonstrated that time permeates all events in combat. However, time is thus rendered as linear and external to the workings of friend or foe. How then is tempo depicted? In the last model, it was not depicted at all. This diagram below depicts tempo by way of action, reaction and counter-action.⁹⁷



CONCLUSION

In this paper, the author has attempted to demonstrate that time really is a fundamental characteristic of the nature of war, that the addition of time as a fundamental yields emergent qualities, and that training for and conducting an exploitation of time in concert with the other three fundamentals will yield specific abilities with regards to battle. All four fundamentals together create the model described on the previous page. This is the nature of war.

Perhaps immediate increase in capability on the battlefield will result from applying the ideas in this paper. Perhaps not. Over the long run, however, the ideas contained in this document have far reaching effects for five reasons. First, viewing time as a fundamental changes the way we view history. As demonstrated earlier, space, speed, resources and weather can all be translated into the language of time. Read history from this point of view and one gets a single story rather than a litany of scattered principles. Second, it changes the method of education at all levels from private soldier to general. If time is a quintessential element, time must be studied at all levels with the view of applying it as leverage on an enemy. Third, the study of time develops an understanding of dilemma. *Time* is critical as the purpose of dilemma is to deny the enemy the luxury of the same. When teaching the dilemma, one must teach from the aspect of time rather than of specific actions or maneuvers. The result will be students who understand rather than memorize. Fourth, the study of time exposes vulnerabilities, especially in modern war. Over-reliance in technology can become a vulnerability. The interconnectedness of all systems creates the possibility of pulling the single plug that derails the system. Science fiction is no longer fiction. When the system falls, *time* changes. Can the military play chess without its queen? Fifth, the study of time opens the understanding to new possibilities in future war. Globalization has changed the relationship to time. Simultaneous, instantaneous feedback at

all levels has led to the near-death of sequence and an increasing possibility of frequency as the weapon of choice.

In the modern framework of military education, what students take away from the German's methodology of World War II is maneuver, but maneuver was not the issue. The issue was the manipulation of time.⁹⁸ The lesson of Frederick the Great is time.⁹⁹ The lesson of Napoleon is one of time.¹⁰⁰ The lesson of the Germans in WW2 as they blitzed through Poland and Norway and then simultaneously attacked Belgium, Holland and France was one of time. More specifically, it was one of frequency: Too many stimuli to deal with at once, followed by local, numerical superiority and temporal superiority – up to 40 miles a day- as they breached France.¹⁰¹ The attack of the Japanese on Pearl Harbor was based on time and their subsequent engagement of half of the Pacific was based on time. Specifically, it was frequency (too many attacks for the US to handle) and sequence (interrupting of the US sequence by killing the Navy at Pearl Harbor).¹⁰²

A lesson of history and of Clausewitz is this: If you push the envelope, be sure you win. If you win, you take the country, subjugate the people and win the war. If you fail to complete it, you realize a possible changing of hands of the initiative and a possibility for defeat due to overextended lines.¹⁰³ *Time* is THE factor in all of these scenarios, and it is fundamental to the nature of war.

The evolution of our understanding together has been iterative and compounding. Building on the paradigmic foundation of Clausewitz's trinity, we necessarily began with a triangle. After establishing that time is indeed a factor that exists in all of war, we then adjusted the diagram to make room for a fourth corner, resulting in a square. After further investigation, our understanding morphed again from a corner in the square to a line that bisects the triangle,

demonstrating its permeating influence throughout human experience (emergence). But then, our search took another turn as we explored the possibility of exploitation – the use of time as a weapon. And this is where we leave off with the discussion for now. This may not be as far as it goes. But for now, it is as far as I can see.

Returning to the boxer, we watch with expectant eyes, now seeing what we could not before see. And suddenly we realize that the “counter-punch” is not a counter-punch at all, but an ambush...an ambush *in time*.

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