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**TEMPORAL DOMINANCE
Military Transformation and
the Time Dimension of Strategy**

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ABSTRACT

Military transformation has gripped all major modern armed forces in recent times. Most importantly, the significance of the demonstration of conventional power in Operation Desert Storm has convinced all concerned of the need for change. Yet the discourse has been fractitious, and the current discourse is divided over both guiding philosophy and application. The recent literature invoking Effects Based Operations and Network Centricity does not clarify strategic concepts, but rather operational and tactical concerns. Hence this paper attempts to address the imbalance accorded to mastering time, that all-important and oft-ignored dimension in warfare, by arguing that military transformation really needs to seek not simply rapid dominance, but temporal dominance. A deeper understanding of how time affects strategy, along with a nuanced exploitation of perceptive differences of time will help explain how operational rapidity alone is insufficient for strategic success.

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TEMPORAL DOMINANCE

Military Transformation and the Time Dimension of Strategy

Technological change is the catalyst in the current Revolution in Military Affairs (RMA). What are essentially theoretical debates – whether or not the current RMA is more an evolution rather than a revolution, whether military transformation (referred hereafter as Transformation) is a more useful concept, or that there has been no change at all – these have little consequence to practitioners. This paper will focus on how Transformation has affected the temporal dimension of strategy, not simply on operational tempo, but at the strategic and tactical levels of war. Policies and doctrines must transform alongside platforms and systems in order to realize Transformation’s benefits more completely. Criticism that Transformation is the “most oversold military-strategic concept since deterrence”¹ may be exaggerated, but is not without basis. Effects-Based Operations (EBO) and Network-Centric Warfare (NCW) may promise the application of precise, accurate and timely force while minimizing the risk of fratricide and collateral damage.² Nevertheless, the process can short-circuit, because there are inherent limitations to Transformation.

First, humans are physically and cognitively fallible, and this places immense strain on the operating capacities and battle management abilities of time-sensitive commanders, combatants and remote operators. Machines can work around the clock, but humans get tired, and this is especially important for deployments with severe manpower restrictions. Second, bureaucratic jealousies and acquisition processes can hamper rapid and innovative development of cost-efficient, highly capable new platforms and systems. Institutional interests and budgetary limitations place arbitrary roadblocks to Transformation, even when specific allocations are made. Third, Clausewitzian fog and friction seem immutable even today, not least because technology bequeaths merely a transient advantage,³ which only invites competitors to seek equivalent counters, a dynamic that is repeated *ad infinitum*. Fourth, assumptions-based crystal ball-gazing of the conduct of future wars hints strongly at a carelessly optimistic approach to strategic problems which sidesteps fundamental

¹ Stephen J. Cimbala, “Transformation in Concept and Policy”, *Joint Forces Quarterly*, no.38, Summer 2005, p. 28.

² Arthur K. Cebrowski and John J. Gartska, “Network-Centric Warfare: Its Origin and Future,” *US Naval Institute Proceedings* 124, no. 1, January 1998, pp. 28-35; Bill Owens with Ed Offley, *Lifting the Fog of War*, (New York: Farrar, Straus & Giroux, 2000).

³ Jacob W. Kipp and Lester W. Grau, “The Fog and Friction of Technology”, *Military Review*, September-October 2001, pp. 88-97.

stumbling blocks.⁴ For instance, Giulio Douhet may eventually be right about strategic bombing's decisiveness,⁵ but being right about the future at the wrong time is fatal and wasteful.

As an example, the U.S. is on the verge of deploying energy weapons on Stryker combat vehicles in Iraq in 2006, hoping this provides better crowd control and nonlethal defenses in urban situations.⁶ On the surface at least, this is a technological approach to a tactical problem. Yet in a little-quoted contact in Iraq, a single U.S. Army battalion seized and held a bridge over the Euphrates River for 24 hours, beating off an Iraqi force of 8000 Iraqi soldiers backed by 70 tanks and vehicles that military intelligence had failed to spot.⁷ How this had happened is a question of particular gaps in time, or rather, in exploiting it, that left counter-asymmetries for an adversary purportedly on the disadvantaged side to exploit. Tying all these possible asymmetric advantages together is time. The promise of Transformation through the RMA has often focused on firepower and on exploiting technology to harness the benefits of a quicker decision-cycle, so an assessment of how Transformation advocates seek to exploit time to build a continuous asymmetric advantage over putative adversaries is necessary.

On Transformation

The U.S. conception of Transformation focuses primarily on combat terms. Donald Rumsfeld defines Transformation as

a process that shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people, and organisations that exploit our nation's advantages and protect against our asymmetric vulnerabilities to sustain our strategic position, which helps underpin peace and stability in the world.”⁸

⁴ A sensationalistic attempt is recently made by a physicist about the “revolutionary” impact of future deployments of directed energy weapons. See Doug Beason, *The E-bomb: How America's New Directed Energy Weapons Will Change the Way Future Wars Will Be Fought*, (Cambridge, MA: Da Capo Press, 2005).

⁵ Giulio Douhet, *The Command of the Air*, (New York: Coward-McCann, Inc., 1984).

⁶ “U.S. could use Energy Weapons in Iraq Next Year”, Reuters in *DefenseNews.com*, Sep 8 2005, available from <http://www.defensenews.com/story.php?F=1090951&C=america> (accessed December 18, 2005).

⁷ Greg Grant, “Network Centric Blind Spot: Intelligence Failed To Detect Massive Iraqi Counterattack”, *DefenseNews.com*, Sep 12 2005, available from http://www.oft.osd.mil/library/library_files/article_468_Defense%20News.doc (accessed December 18, 2005).

⁸ *Elements of Defense Transformation*, October 2004, p. 2, available from http://www.oft.osd.mil/library/library_files/document_383_ElementsOfTransformation_LR.pdf (accessed November 14 2005).

Incidentally, the U.S. Army in its *2004 Army Transformation Roadmap*, proposes the same definition, but focuses on three aspects; culture, processes and capabilities.⁹ U.S. naval Transformation will build a joint Navy-Marine Corps warfighting capability incorporating “increased speed, precision, shared awareness, persistence, and employability”, emphasizing seabasing and networked awareness to increase force response speed and the range of available capabilities.¹⁰ The U.S. Navy envisions an “inherently maneuverable, scalable aggregation of distributed, networked platforms that enable the global power projection of offensive and defensive forces from the sea.”¹¹ Joint Forces Command, reflecting its desire to integrate traditional combat roles and evolve new ones defines Transformation as “the process of changing form, nature or function.”¹² Rumsfeld has been able to generate a successful top-down impetus to U.S. Transformation, or at least to get the process underway, and the similarity of these planning roadmaps indicate that radical organisation change is Rumsfeld’s primary intent, as a consistent recognition of the need to respond to the changed global socio-economic landscape.

Others criticize Transformation however. For example, Douglas MacGregor criticises Transformation as a murky and undefined concept that means different things to different institutions and other interested individuals. MacGregor makes the point that simply transforming by equipping current organisations with new equipment and technology “is a hazardous affair”.¹³ Consequently, MacGregor proposes the following definition:

Transformation involves reorganisation and reform to reorient military institutions, policies, doctrine, and thinking to the current strategic

⁹ *U.S. Army Transformation Roadmap 2004*, p. viii, available from http://www.oft.osd.mil/library/library_files/document_386_ATR_2004_Final.pdf (accessed November 13, 2005).

¹⁰ *Naval Transformation Roadmap 2003: Assured Access & Power Projection...from the Sea*, p. 1, available from http://www.oft.osd.mil/library/library_files/document_358_NTR_Final_2003.pdf (accessed November 12, 2005).

¹¹ *Naval Transformation Roadmap 2003*, p. 2, available from http://www.oft.osd.mil/library/library_files/document_358_NTR_Final_2003.pdf (accessed November 12, 2005).

¹² More specifically: “Within the United States military, transformation requires changing the form, or structure of our military forces; the nature of our military culture and doctrine supporting those forces; and streamlining our warfighting functions to more effectively meet the complexities of the new threats challenging our nation in the new millennium”. See *What is Transformation?* U.S. Joint Forces Command, available from <http://www.jfcom.mil/about/transform.html> (accessed November 13, 2005).

¹³ Macgregor had argued this point in 1997, while pushing for the reorganizing of divisional structures into smaller, brigade-sized, combat packages. See Douglas Macgregor, *Breaking the Phalanx: A New Design for Landpower in the 21st Century*, (Westport, CN: Praeger, 1997); Douglas Macgregor, “Transformation and the Illusion of Change” in Donald E. Vandergriff, ed., *Spirit, Blood, and Treasure: The American cost of battle in the 21st century*, (Novato, CA: Presidio, 2001), pp. 281-2.

environment, as well as to the future. Most important, transformation means effectively combining and integrating service capabilities within new joint operational structures. This is because “jointness” is the mechanism through which the national command authorities achieve unity of effort from a diversity of service means.

In other words, concepts such as “dominant battlespace knowledge” and “information dominance” are precluded by assumptions about total information superiority; hence transformational change may be more illusory than real. While the “omniscient quality” of U.S. C4ISR¹⁴ might allow it to wage unhindered information warfare and control operational tempo to a fine degree, the dominance achieved by operationalising these concepts is somewhat fallacious (NATO airstrikes in Kosovo did little to dislodge Yugoslav forces),¹⁵ if Transformation is not matched by doctrinal and organisational change on a degree at least similar to German military reorganisation in the 1930s. As with the British and French in the same period, the acquisition of modernised platforms or systems do not constitute the necessary condition for effective operational deployment. Hence, MacGregor warns of the possibility of constructing “a kind of expensive high-tech Maginot Line that will inevitably be outflanked.”¹⁶

Two reasons for the perception of an RMA “Maginot Line” exist. First, potential adversaries do adapt to evolutions in military capabilities. Not only are these adversaries reactive, they are similarly placed to observe and orient, for no cost to themselves, the developments of others. Doing so allows them the choice of seeking either parallel material capabilities of their own, or developing asymmetric strategic and operational responses. Second, turf wars between status quo and change advocates may end up restricting the pace of change, barring the intervention of a higher force from within the national command authority. For example, without Hitler’s personal intervention, the general staff from *Oberkommando Heer* (OKH) would not have accepted Guderian’s ideas on new ways of warfare as well as

¹⁴ The term refers to command, control, communications, computers, intelligence, surveillance and reconnaissance.

¹⁵ Yugoslav forces manipulated the tempo of NATO daytime overflight surveillance, furnishing them with real targets to spot, then replacing them at night with decoys to strike. This weakens any argument that technological “information superiority” can supercede human judgement, observation, analytical skills and decision-making. See Macgregor, *Transformation and the Illusion of Change*, pp. 287-8; Timothy L. Thomas, “Kosovo and the Current Myth of Information Superiority”, *Parameters* 30, (Carlisle Barracks, PA: Army War College, Spring 2000), pp.13-29.

¹⁶ Macgregor, op. cit, p. 289.

Manstein's plan for the *coup de main* through the Ardennes in 1940 as a substitute to the modified Schlieffen Plan. Similarly, Vice Admiral Cebrowski opened doors through the "sheer force" of his name for the Office of Force Transformation (OFT) at the Pentagon.¹⁷ Incidentally, Cebrowski's retirement has provoked suggestions that the OFT could face pressures to restructure and return to the bureaucratic fold under the Joint Forces Command.¹⁸ But that does not mean militaries caught up in the RMA debate should not attempt to transform themselves to better reflect 21st century political and socio-economic conditions.

Identifying Transformation as the foremost concept driving revolutionary change in the information-age military provides an ideological impetus, but operationalising it is a different matter. One function of Transformation is enabling NCW, which in itself is identified not as a definition, but as a "concept" defying definitions, since definitions reduce NCW to a set of rigid doctrines that quickly nullify the potential for change.¹⁹ Consequently, Erik Dahl argues that NCW is more about a "collection of concepts about how the military should respond", which includes four elements: information and knowledge superiority, assured access, effects-based operations, and forward sea-based forces.²⁰ Of these, the first three are directly relevant to strategic considerations of states without power-projection commitments or capabilities, and the fourth to a limited degree.

Similarly, David Deptula characterizes Effects-Based Operations (EBO) as the capstone enabling NCW:

campaign-planning philosophy [through which] the military planner uses superior knowledge to avoid attrition encounters, applying force at the right place and time to achieve specific operational and strategic effects.²¹

Deptula considers these as the most prominent guiding concepts to emerge from RMA discourse. These concepts attempt to map a philosophy or doctrine that aims to

¹⁷ Roxana Tiron, "Military-Transformation Agency at Crossroads After Cebrowski" in *The Hill*, Sep 15 2005, available from <http://rempost.blogspot.com/2005/10/military-transformation-agency-at.html> (accessed November 10, 2005).

¹⁸ Ibid.

¹⁹ Erik Dahl, "Network Centric Warfare and the Death of Operational Art", *Defence Studies* 2, no. 1, Spring 2002, p. 4.

²⁰ Dahl, op. cit., p. 5.

²¹ David A. Deptula, "Air Force Transformation: Past, Present, and Future," available from <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj01/fall01/phifal01.html>, accessed (December 15, 2005).

produce the requisite “first- and second-order effects”²² to achieve a desired strategic effect. Plans drawn up to focus on achieving these effects must therefore necessarily consider the time dimension, but more often they revolve around achieving Boydian decision cycle rapidity, instead of examining time in greater detail. The question is not whether rapid decision cycles are desirable (they certainly are), but that the emphasis of transformational processes has not tackled the problem completely. Furthermore, Boyd’s original intent was to create a relative effect which “folds the enemy upon itself”, not simply speeding oneself up to create the illusion of rapidity. The key to rapidity in the strategic Boydian OODA (Observation, Orientation, Decision, Action) loop is one emphasising mutual trust and information abstraction, enacted through a decentralisation of decision-making such that unnecessary inputs do not hinder strategic reflexiveness. In this case, a lower quantity of information is paradoxically better for strategic level commanders. Hence the basis for strategic tempo is quality of information, and the ability for lower command levels to act independently in accordance with the general objective. Each higher layer of command thus requires its own abstraction layer to filter out unnecessary details. However, consciously or not, the attraction of achieving ever faster response times becomes addictive, and eventually leaves Boyd’s original intent to influence an enemy psychologically. Summarily, the ultimate goal is still operational velocity that is far higher relative to the enemy’s.

Another widely-read document, *Shock and Awe - Achieving Rapid Dominance*,²³ can claim to have influenced many opinions regarding future conflict rather similarly. Not only does the term “Shock and Awe” burn itself into memory easily, the connotations of speed and decisiveness appeal strongly to the desire of reducing duration in virtually any conflict. Ullman and Wade argue that Rapid Dominance is “aimed at influencing the will, perception, and understanding of an adversary rather than simply destroying military capability”, hence Shock and Awe is the desired outcome of Rapid Dominance operations that seek to alter “knowledge, rapidity, brilliance, and control”.²⁴ A refined version appears in a later document describing these four characteristics as full knowledge of self, adversary and the environment; rapidity; brilliance in execution; and control of the operational

²² Antulio J. Echevarria II, “Reining in the Center of Gravity Concept”, *Air and Space Power Journal* 17, no. 2, Summer 2003, p. 91.

²³ Harlan K. Ullman and James P. Wade, *Shock and Awe – Achieving Rapid Dominance*, (NY: NDU Press, 1996).

²⁴ Ullman and Wade, *Shock and Awe*, p. 33, 53.

environment.²⁵ Of these characteristics, knowledge (through improved situational awareness) and rapidity (through increased operational tempo) seem to have been exploited to a degree of success in *Desert Shield* and *Desert Storm*. However, ongoing Transformation initiatives need to address the Rapid Dominance thesis's original intent in influencing Clausewitzian will, forcing enemies to capitulate through induced psychological effects, instead of seeking to achieve predominance in battle alone.

Ultimately, what really matters is how to leverage these new means and innovations for strategic success. New tools are themselves “not sufficient for success” and have been useful only to those who can innovate on the intangible levels as well.²⁶ Advantages accrue to those who innovate simultaneously in political systems and military organisational structures, rather than to those who preserve the status quo. For instance, creating the Panzer division and a new rapid manoeuvre doctrine certainly gave “more organisational and conceptual than material” advantages to Hitler's Germany.²⁷ The Russians and French had conducted similar experiments prior to Guderian, but both Tukhachevskii and de Gaulle lost favour before they could achieve any redefinition of military doctrine.²⁸ Similarly, U.S. carrier-based airpower in the Pacific during World War II produced a new fighting paradigm that would not have been as successful had the carriers been stifled by “battleship admiral”²⁹ thinking. Hence many divergent research paths for “information-based military innovation” are possible,³⁰ but successful transformation has as its antecedent the political culture of a state. In this sense, incorporating new technologies itself is insufficient, since a certain level of political change,

²⁵ Harlan K. Ullman and James P. Wade, *Rapid Dominance – A Force for All Seasons* (London: Royal United Services Institute for Defence Studies, RUSI Whitehall Paper Series, 1998), p. 1-2.

²⁶ Jack S. Levy, Thomas C. Walker and Martin S. Edwards, “Continuity and Change in the Evolution of Warfare”, p. 31, in Zeev Maoz and Azar Gat, eds., *War in a Changing World*, (Michigan: University of Michigan Press, 2001), pp. 15-48.

²⁷ Ibid.

²⁸ Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory*, (London: Frank Cass, 1997), p. 169; Charles Williams, *The Last Great Frenchman: A Life of General De Gaulle*, (New York: John Wiley & Sons, 1997).

²⁹ Between both world wars “naval aviators used fleet carrier experiments to break free from the mindset of the battleships admirals whose thinking was clearly traceable to Royal Navy theory developed in the late nineteenth century”. Daniel Moor and Christopher Yunker, “The Carriers Pack the Airborne Cavalry”, in Donald E. Vangdergriff, ed., *Spirit, Blood, and Treasure*, p. 224.

³⁰ Levy, Walker and Edwards, “Continuity and Change in the Evolution of Warfare”, p.31; Andrew F. Krepinevich, “From Calvary to Computer: The Pattern of Military Revolutions”, *National Interest* 37, Fall 1994, pp. 30-42.

entrepreneurship and more flexible civil-military institutions may be necessary to act as an incubator as well.³¹

Transformation then implies radical changes to organisation, doctrine and capability, but the breadth and depth of any changes are beholden to a time-scale. Williamson Murray and Thomas O’Leary argue that to produce an end-date for complete transformation misses the point, since “by that time a host of factors will have changed – the strategic environment, technologies, defence budgets, and concepts that underlie peacetime preparation for war”.³² Yet to exempt Transformation from milestones and deadlines almost guarantees weak accountability and continuity, which in turn hinder progress assessments that are inevitably linked to regular budgetary allocations. Murray and O’Leary focus on “extending capabilities” of legacy forces through transformation, using technology as enablers to “maximize intangibles such as doctrine, training, and leadership”.³³ Consequently, the consensus at least in the U.S. Department of Defense (DoD) intimates that Transformation will produce “a joint, network-centric force ... capable of executing EBO, enabled by NCW.”³⁴ What this vision seems to gloss over is the relation between an effect created and its position in time itself, since intuitively the generation of effects occurs on a timeline, which can create both intended and unintended ripple effects. To examine how this is possible requires a closer look at what makes up the characteristics of time in war.

On the Temporal Characteristics of War

Military professionals and strategic thinkers agree on the importance of time as a dimension of war. Yet, scant analysis has been written about the effects of the RMA on the time dimension of war, apart from the harnessing of new technologies (stand-off range precision guided munitions or information and communication technologies) in order to “tighten the decision loop until an asymmetry created in time proves to be decisive.”³⁵ The key point here is clear. Technological advancements in Information and Communications Technologies (ICT) are the enablers that offer modern militaries the opportunity to *act* on timely information instead of being

³¹ Stephen Van Evera, “Primed for Peace: Europe after the Cold War”. *International Security* 15, no.3, Winter 1990-91, pp. 7-57; Stephen Biddle and Robert Zirkle, “Technology, Civil-Military Relations, and the Developing World”, *Journal of Strategic Studies* 19, June 1996, pp. 171-212.

³² Williamson Murray and Thomas O’Leary, “Military Transformations and Legacy Forces”, *Joint Forces Quarterly*, no. 30, Spring 2002, p. 20.

³³ Murray and O’Leary, op. cit., p. 21.

³⁴ *Elements of Defense Transformation*, p.10.

³⁵ Ajay Singh, “The New Dimension in War”, *Joint Forces Quarterly*, no. 10, Winter 1995-96, p. 57.

“overshadowed by the relatively large time required to act on it.”³⁶ Hence the possibility of pushing the human decision-making loop to its limits in battle management is now actually possible, and in a sense, comes closer to the claim of the Tofflers’ third-wave, information-dependent warfare.³⁷ Others, William Lind and Thomas Hammes in particular, argue that we are now entering the era of “fourth generation warfare” (4GW), where opponents operate on an evolved extension of manoeuvre warfare that forces adversaries to constantly react to asymmetric threats and actions targeting all aspects of society, hence causing adversaries to implode instead of annihilating their physical forces.³⁸ Information war, 4GW, EBO and NCW all exist as attempts by analysts to capture the baseline changes in warfighting that most have recognised as a manifestation of the post-Cold War epoch and present it as theory. However, when talking about baselines, the most obvious change would be that warfighting, battlefield events, media reporting and public reactions have all increased in tempo dramatically whether deliberately or coincidentally.

Robert Leonhard’s *Fighting by Minutes*, which forms the basis of this study, remains the most cogent and coherent study of time as a dimension in war.³⁹ In this study, Leonhard attempts to crystallize thought on how time affects strategic input and outcome, as well as operational art, into a simplified theoretical construct. He asserts that there are “compelling reasons” to consider the “fourth dimension” of time, even if thinking about warfare is usually restricted into three dimensions “length, width, height”.⁴⁰ The four temporal characteristics of warfare he identifies are as follows: Duration – Length of conflict; Frequency – Tempo or pace of events; Sequence – Order of events; and Opportunity – Time sensitive decision points. Walter Givhan adds a fifth dimension – synchronization.⁴¹ Givhan incorporates Leonhard’s characteristics of time into a larger set of temporal attributes, referring to these as the

³⁶ Singh, “The New Dimension in War”, p. 59.

³⁷ Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the Twenty-first Century* (New York: Warner Books, 1993). A critical assessment of the Tofflers’ work reveals some factual errors, as well as a good deal of over-generalising and over-simplification of ideas on national societies and communities. See R.L. DiNardo and Daniel J. Hughes, “Some Cautionary Thoughts on Information Warfare”, *Airpower Journal*, Winter 1995, available from <http://www.airpower.maxwell.af.mil/airchronicles/apj/dinardo.pdf> (accessed December 2, 2005).

³⁸ William S. Lind, Keith Nightengale, John F. Schmitt, Joseph W. Sutton and Gary I. Wilson, “The Changing Face of War: Into the Fourth Generation”, *Marine Corps Gazette*, 1989, pp. 22-6, available from http://www.d-n-i.net/fcs/4th_gen_war_gazette.htm (accessed November 23, 2005); Thomas X. Hammes, “The Evolution of War: The Fourth Generation”, *Marine Corps Gazette*, September 1994, available from <http://www.d-n-i.net/fcs/hammes.htm> (accessed November 23, 2005).

³⁹ Robert R. Leonhard, *Fighting by Minutes, Time and the Art of War*, (Westport, CN: Praeger, 1994).

⁴⁰ Leonhard, *Fighting by Minutes*, p. xviii.

⁴¹ Walter D. Givhan, *The Time Value of Military Force in Modern Warfare - The Airpower Advantage*, thesis presented to the Faculty of the School of Advanced Airpower Studies, 1994-95, p. 6-10.

“physical aspect” that determines the character of time, while adding a “physiological” aspect, which he explains, “stems from human perception”.⁴²

Leonhard asserts that time defines tactics, operational art, and strategy, possessing an inherent capacity to “usher in revolutions in military science.”⁴³ Hence time will also define the limits of all political and military power, altering the “meanings of victory and defeat”. Mastering war’s “spatial relationships” “without a fourth-dimensional view of warfare” may leave us “mystified at the results we see”.⁴⁴ This study seeks to explain how Transformation has affected the conduct of war with respect to time and its characteristics and aspects as established by Leonhard and Givhan. Accordingly, certain asymmetries can be found arising from the exploitation of time, primarily as a result of an opposing side behaving rationally, that is, as a complex and certainly very reactive adversary. To understand time and how transformation has or hopes to affect it, looking at its characteristics separately is helpful.

Duration – Shorter is Better?

The first characteristic is the most obvious one. *Duration* in war is fundamentally determined by *objective*, and generally a more “distant or ambitious objective” increases the duration of any conflict.⁴⁵ Conflicts can be either physically distant, or politically distant (ambition). The two extremes of duration are evident in existing approaches. The Western approach generally advocates fighting as short and decisive a war as possible, to avoid unnecessary casualties, maximize competitive advantages in technology and economic strength and harness individualist creativity and initiative.⁴⁶ On the other hand, Mao Zedong specifically advocates fighting a protracted war, in order to prolong conflict in an effort to overturn its own asymmetric disadvantage, recognizing that “the enemy’s advantage can be reduced and his shortcomings aggravated by our efforts”⁴⁷ over time. This difference in perspectives is rooted simply in an asymmetry of resources. A resource-rich state can build a

⁴² Givhan, *The Time Value of Military Force in Modern Warfare*, p. 8.

⁴³ More accurately, what Leonhard seems to suggest is that all levels of war have a definite temporal dimension, and any tactical insight or stratagem cannot avoid defining itself without some reference to time itself. Leonhard, *op. cit.*, pp. 2-12.

⁴⁴ *Ibid.*

⁴⁵ Leonhard, *op. cit.*, p. 56.

⁴⁶ This is of course a generalization. While not entirely accurate, nevertheless it does reflect Western tendencies. See Victor Davis Hanson, *Carnage and Culture: Landmark Battles in the Rise of Western Power*, (New York: Anchor Books, 2001).

⁴⁷ Mao Zedong, “On Protracted War” in *Selected Writings of Mao Tse-Tung*, (Beijing: Foreign Language Press, 1967), p. 208.

technically and qualitatively advantaged fighting force, but is beholden to the political, economic, and social costs of maintaining this force in the field. Conversely, a resource-poor state can offset its material disadvantages by appealing to the passage of time (by whose hand material advantages inevitably wear down or depreciate).

The primary decisive dimension remains the use of time for both approaches to war. Yet in the exploitation of time by modern technology, inevitably the focus is usually on “faster is better”, while “slower is better” seems anathema to Transformation advocates. Accordingly, Transformation advocates have focused on the ability to carry out rapid and decisive operations to maximise the potential benefits of the RMA. Recent efforts at advancing Transformation have recognized the advantages of fighting at an increased operational tempo enabled by enhanced situational awareness, though the verdict is still out on current efforts, especially considering the insurgency situation in post-*Iraqi Freedom* Iraq since the quick end of major combat operations.

Nevertheless, the RMA has contrived to produce the optimism that wars can be short-lived. Comparisons between the current conflict in Iraq and American involvement in Vietnam suggest that there are more differences than similarities, even though they resemble the same kind of insurgency quagmire.⁴⁸ The comparison is useful to highlight clear differences in strategic doctrine between Iraqi insurgents and Vietnamese fighters. A Clausewitzian political objective delineates the ultimate duration of conflict; an attritional conflict seeking to wear down an enemy implies using “*duration* of the war to bring about a gradual exhaustion of his physical and moral resistance”.⁴⁹ While the Vietnamese maintained a strictly Maoist model of three-stage protracted war,⁵⁰ with the clear political aim of unifying Vietnam, the Iraqis have fought an insurgency with a non-explicit set of war aims.⁵¹ Iraqi insurgents hardly seem to be attempting to impose any kind of political order, apart from seeking to plunge the country into a civil war between Sunnis and Shi’ites by hampering U.S.-led reconstruction efforts. This is clearly a situation where RMA-enabled conventional forces seeking to minimise duration are relatively helpless.

⁴⁸ See Jeffrey Record and W. Andrew Terrill, *Iraq and Vietnam: Differences, Similiarities and Insights*, (Carlisle Barracks, PA: Strategic Studies Institute, May 2004).

⁴⁹ Carl von Clausewitz. *On War*. Edited/translated by Michael Howard & Peter Paret, (Princeton: Princeton University Press, 1984), p. 93.

⁵⁰ Mao Zedong specifically states “The Three Stages of Protracted War” in his essay “On Protracted War”.

⁵¹ Record and Terrill, *Iraq and Vietnam*, pp. 2-3.

The example serves as an illustration of how intentions can differ from their actual implementations. The combat power of the U.S. military is without a doubt unrivalled, yet the duration of the conflict in Iraq seems to be dictated by considerations other than of military balances or superior battle doctrines. Hence Transformation initiatives might do well to address how capabilities can affect the political objectives, and not simply attempt to effect a simple reduction in duration through upgraded warfighting capabilities. Incidentally, in response to conventional rapidity and brilliance in tactical execution, a Chinese study has proposed widening the spheres of conflict to targets beyond conventional military targets.⁵² Doing so through electronic means such as viruses to cripple an adversary's technology-dependent public transport infrastructure is not only possible, but also increases the time pressure on those in the field to produce victory, almost to the point where victory on the battlefield becomes irrelevant to strategic success. Denial of these asymmetric possibilities is dangerous, but assuming these are protected against, the level of dependence on resources to succeed or maintain parity in a high-intensity conflict is high enough to warrant efforts to win faster and make wars shorter.

In an era of "spectator-sport warfare" where NATO's standoff efforts in Bosnia and Kosovo first highlighted a perception gap between the mass media-fed public and its involved professional military,⁵³ the changed nature of war seemed to act as a divisor between those voters and politicians deciding to go to war, and those who have to prosecute it. Earlier examples of this gap include the U.S. in Vietnam, or the British in the Falklands, where life went on normally for the public while their "representatives" engaged in high-risk armed conflict. The media acted as an alternate perceptual lens that magnified personal loss and sacrifice, yet ironically juxtaposed this most serious of endeavours next to sports and local interest stories. As Colin McInnes argues, society is limiting its "participation in wars of choice" in two ways; "placing fewer in harm's way or by demonstrating an unwillingness to become involved (or maintain involvement) once casualty levels mount".⁵⁴

Whereas conflict duration and public support are inversely proportional, duration and cost are directly proportional. A longer war simply costs more. Given its multiple global interests and commitments, the U.S. simply cannot afford to become

⁵² Qiao Liang and Wang Xiangsui, *Unrestricted Warfare*, (Beijing: PLA Literature and Arts Publishing House, 1999).

⁵³ Colin McInnes, *Spectator-Sport War: The West and Contemporary Conflict*, (London: Lynne Rienner Publishers, 2002).

⁵⁴ *Ibid*, p. 73.

involved in a long war. Givhan noted that a “significant time-induced tension existed between political and military imperatives”, as evidenced by Norman Schwarzkopf’s experience of being asked to provide an acceptable operational plan with minimum notice and strategic guidance.⁵⁵ Schwarzkopf specifically remembered the pressure President Bush placed on him for the shortest possible ground campaign. Some degree of time-induced tension between political objectives and military planning is encapsulated in the rationale for Transformation; militaries have to be flexibly structured and equipped to carry out a larger spectrum of tasks, including traditional warfighting.

Not surprisingly then, a large emphasis of U.S. Transformation involves reducing the overall theatre time, from the buildup and deployment time to the tail end of the effort. The U.S. Navy’s Naval Transformation Roadmap, dubbed Sea Power 21, pushes for the three pillars of Sea Strike, Sea Shield, and Sea Basing, to be enabled through the ForceNet initiative.⁵⁶ The goal is to integrate Navy and Marine Corps elements to provide “the joint force commander with dispersed, netted, and sovereign platforms”, through deploying expeditionary manoeuvre capabilities and providing inherent operational mobility from the sea itself.⁵⁷ These initiatives seek to further minimise the pre-conflict buildup, difficulties of obtaining overflight permissions through diplomatic wrangling, and are meant to provide further enhanced power projection capabilities through better networking with other service elements. At the same time, seabasing “minimises the need to build up forces and supplies ashore, reduces their vulnerability”⁵⁸ and generally allows expeditionary forces to shrink the gap between on-theatre capability and deployment times. Rapid and improved deployment, force projection, and tail logistics capabilities thus are meant to address one aspect of conflict duration, and accordingly the other aspect of duration to be reduced is through exploitation of the next, closely linked, temporal characteristic of frequency.

⁵⁵ Givhan, op. cit., p. 35; also see Norman Schwarzkopf, *It Doesn't Take a Hero*, (New York: Bantam Books, 1992), p. 370.

⁵⁶ See *Naval Transformation Roadmap: Power and Access...from the Sea*, available from <http://forcenet.navy.mil/Guidance/NTR.pdf> (accessed December 12, 2005). Incidentally, this document is a precursor to the final document. Department of the Navy Report to Congress on FORCENet 16 May 2003, available from http://forcenet.navy.mil/Guidance/RTC_16May03.pdf (accessed December 14, 2005). ForceNet can be located online here http://forcenet.navy.mil/What_Is/what_is_fn.htm (accessed December 14, 2005).

⁵⁷ Charles W. Moore Jr. and Edward Hanlon Jr., “Sea Basing: Operational Independence for a New Century”, U.S. Navy, and U.S. Marine Corps, *Proceedings*, January 2003, available from <http://www.usni.org/Proceedings/Articles03/PROseabasing01.htm> (accessed December 12, 2005).

⁵⁸ Ibid.

Frequency – Shifting the Baseline, but is Faster necessarily Better?

While duration is determined and limited by political objective, thus belonging to the strategic level, frequency – a concept borrowed directly from physics that describes a baseline of behaviour or occurrence of events, one that correlates in war with operational tempo – as a temporal characteristic seems to belong to the operational level of strategy.⁵⁹ Events that occur during warfighting have a “normal” frequency, in which fighting forces operate accordingly. The significance of this concept can be seen in the U.S. Army’s FM-100-5, which explicitly states: “high-tempo operations set the conditions for battle and allow the commander to strike the enemy while prepared to adjust while conditions change.”⁶⁰ FM-100-5 further stresses not only that “high-tempo operations can put soldiers at risk”, but also that modern weapons “coupled with the high intensity and rapid tempo of the battlefield, increase the likelihood of fratricide,”⁶¹ and that “sustaining the tempo of operations is especially important.”⁶² The flip side of this ideal is slowing down the enemy’s tempo of operations. This can be seen by Patton’s emphasis during World War II on the use of tactical air power, not so much as a means of destroying enemy assets, but as a means of slowing down enemy tempo through attrition, disruption, prevention of timely movements and junctures of units.⁶³

This desire to move the baseline frequency to a higher “normal” pace is not shared by all military thinkers. Divergent viewpoints can be seen from the concept of “low-intensity conflict (LIC), which most succinctly captures this other extreme of the frequency concept, finding voices amongst the Marine Corps⁶⁴ who recognised very early on that high operational tempo was not a norm shared universally. The opposite of high-tempo conventional warfighting, LICs reflects the conditions – including resource limitations, asymmetric advantages or disadvantages, as well as geopolitical conditions – that shape an actor’s preference to fight in said manner in the theatre of operations. The Vietnamese struggles against the French and Americans, Somalia in 1993, the Columbian drug wars, and the Sri Lankan Tamil Tigers’ insurgency are

⁵⁹ Leonhard, op. cit., pp. 70-1.

⁶⁰ See *FM100-5*, (Washington: Department of the Army, June 1993), 2-2 to 2-3, pp. 16-7, available from www.dtic.mil/doctrine/jel/service_pubs/fm100_5.pdf (accessed December 16, 2005).

⁶¹ *FM100-5*, 2-11, p. 25.

⁶² *FM100-5*, 3-11, p. 49.

⁶³ Martin Van Creveld with Kenneth S. Brower and Steven L. Canby, *Air Power and Maneuver Warfare* (Maxwell AFB, Ala.: Air University Press 1994), pp.205-6.

⁶⁴ The Marine Corps set up a Small Wars Centre of Excellence, devoted to this particular frequency of operations, which can be accessed online at http://www.smallwars.quantico.usmc.mil/sw_today.asp See also, *FM 100-20 / AFP 3-20 Military Operations in Low Intensity Conflict*, (Washington DC: Headquarters Departments of the Army and Air Force, 1990) available from <http://www.globalsecurity.org/military/library/policy/army/fm/100-20/> (accessed December 21, 2005).

pertinent examples of such conflicts, where the natural conditions necessitate operating at a so-called, low-intensity frequency. There is no place for a conventional, force-on-force, high-tempo conflict here. It remains to be seen if a counter-LIC strategy is indeed possible for a high-tech military yet.

Still, locking on to the baseline frequency is not an easy task, albeit necessary, in order to measure success at increasing tempo, or to detect unforeseen changes in an adversary's tempo. The difficulty of capturing the correct frequency norm is clearly presented in Max Boot's call for the U.S. military to emphasize irregularity.⁶⁵ While recognizing the U.S. military's unmatched "panoply of advanced strike, surveillance and communications systems," Boot notices that Transformation needs to address not simply the change in tempo through leveraging advanced technology, but also "organisational and cultural changes".⁶⁶ The continuing involvement in Iraq after the end of major combat operations in the form of a countrywide OOTW (operations other than war) operation represents a significant demand on the existing force levels. The effective force of infantry made up of only 51,000 Army and 20,000 Marine Corps personnel (4.6% of the entire active-duty military) exists within the context of the 1990s reduction of military manpower pursuant to the Goldwater-Nichols Act.⁶⁷ Quite clearly, the shift from high-intensity, high-tempo combat to that of a low-frequency LIC, emphasizing civilian policing, counter-insurgency, stability and support operations, requires a different set of priorities, equipment and training than what U.S military forces currently have.

Frequency thus has an operational emphasis; during high-tempo operations, militaries need to be able to continuously operate within the decision loop of an adversary in order to achieve battlefield dominance. Yet, following the cessation of high-intensity combat, the same in-theatre military personnel are expected to shift into a low-intensity mode, and be ready to shift back at any time into high-intensity warfighting mode. Accordingly, some call for flexible and adaptable armed forces⁶⁸ capable of dynamic operational modes and handling sudden changes in tempo as the situation dictates. These doctrinal recommendations inevitably induce service

⁶⁵ Max Boot, "The Struggle to Transform the Military", *Foreign Affairs* 84, no. 2, (Mar-Apr 2005), p. 103.

⁶⁶ Ibid.

⁶⁷ Ibid.

⁶⁸ Brian Dickerson, *Adaptability - A New Principle of War*, (Carlisle Barracks, PA: Army War College, April 2003); Robert S. Frost, *The Growing Imperative to adopt "Flexibility" as an American Principle of War*, (Carlisle Barracks, PA: Army War College, October 1999). Dickerson proposes enshrining adaptability itself as a doctrinal principle of war, along with existing ones, Frost advocates flexibility, instead of adaptability; but both possess similar intentions aiming to skirt the inherent limitations of rigidly structured organisations.

resistance, but the significance of a baseline change in frequency has been noticeable ever since *Desert Storm*. Battles are fought at a higher but more rapidly fluctuating pace. The explosion of public media outlets has created near-instant information access, and a democratising of media creation and publishing mediums has created the need and desire for quicker reaction times to human crisis events. No longer does it take months or days for news to filter, but hours and minutes. The same applies to battlefield events, and whichever side can control this temporal characteristic best vis-à-vis the adversary will dictate that all-important pace of battle. Instead of Mao's idea of trading space for time, the maturing of precision guided munitions and deep-strike now necessitates the manipulation and exploitation of time for the domination of space.

Not surprisingly then, frequency is the most directly targeted of all temporal characteristics for any radical military changes. Boot describes a "New American Way of War", one that relies on rapidity and precision to achieve decisive victory.⁶⁹ Boot's analyses of U.S. operations in Afghanistan and Iraq point to the increasing dependence on information technology, along with increased usage of both psychological and information operations that allow more effective combined arms operations achieved through improved networking capabilities.⁷⁰ This echoes Cebrowski's argument that building these network-centric force packages enabling the filtering of combat power down to lower organisational levels,⁷¹ creates the necessary conditions for "rapid dominance of any battlefield."⁷²

This high-tempo, high-volume capability requires Transformation to implement efficient theatre-based C4ISR for "decentralized execution" of missions that inhibit the adversary's ability to maintain anti-access defensive measures.⁷³ This particular argument emphasizes the vulnerability of the enemy's mechanized assets to attack by dominant airpower assets.⁷⁴ As a consequence, joint surveillance, target

⁶⁹ Max Boot, "The New American Way of War", *Foreign Affairs* 82, no.4, Jul/Aug 2003, p. 42.

⁷⁰ Boot, "The New American Way of War", pp. 42-5, 53, 57.

⁷¹ Speech given by the Director of the Office of Force Transformation to the Network Centric Warfare Conference, January 22, 2003, available from

http://www.oft.osd.mil/library/library_files/speech_143_CEBROWSKI%20SPEECH%20TO%20NETWORK%20CENTRIC%20WARFARE%20CONFERENCE.doc (accessed September 19, 2005).

⁷² Thomas P.M. Barnett and Henry H. Gaffney Jr., "The Top 100 Rules of the New American Way of War", available from <http://informationclearinghouse.info/articles3193.htm> (accessed December 26, 2005).

⁷³ Price T. Bingham, "Transforming Warfare with Effects-Based Joint Operations", *Aerospace Power Journal*, Spring 2001, available from

<http://www.airpower.maxwell.af.mil/airchronicles/apj/apj01/spr01/bingham.htm> (accessed December 30, 2005).

⁷⁴ Ibid.

attack radar systems (JSTARS), airborne warning and control systems (AWACS), and unmanned aerial vehicles (UAV) have become *de rigeur* to the U.S., and on the wish-list of other similarly inclined militaries. The “eventual goal is the migration to an overarching, interconnected family of systems for processing intelligence data known as the Distributed Common Ground-Surface System (DCGS)”, capable of posting all collected data on a common web-based platform, from which individual end-users can decide for themselves how best to use the available intelligence.⁷⁵ C4SIR capabilities may still remain bogged down by teething problems even for the U.S., with full implementation reportedly delayed till at least 2010-2015.⁷⁶ Furthermore, interoperability problems, specifically incompatible data formats, transmission protocols and platform interfaces, have not been resolved, so full-blown NCW-enabled high-tempo operations are not fully mature.⁷⁷

This desire for increased frequency is not restricted to the U.S. planners, but is shared by other, lesser powers. For instance, with more rigorous intelligence assessments of targeting options and consequently more detailed targeting plans, even small states can hypothetically exercise strategic coercion via limited airpower assets, because the availability of PGM can make every mission count.⁷⁸ Hence nations other than the U.S. currently engaged in Transformation would need to address these issues differently as their requirements dictate, even though the general goal of rapid efficacy remains.

Transformation’s influence on frequency thus primarily impacts the baseline pace of events on a battlefield. The assumption is that acting faster and more precisely than an adversary confers an operationally decisive advantage. Although adversaries can use asymmetric means to offset this advantage, it still represents a substantial deterrent effect if a conventionally equipped adversary is forced to use its acquired hardware and training for purposes other than what they were designed for. Presumably then, a military force operating on slower OODA loops is “unable to generate mental images or pictures that agree with the menacing as well as faster transient rhythm or patterns they are competing against.”⁷⁹ Strategically however, one

⁷⁵ General Accounting Office, Report no. *GAO-03-329*, “Defense Acquisitions: Steps Needed to Ensure Interoperability of Systems That Process Intelligence Data”, available from <http://www.gao.gov/htext/d03329.html> (accessed December 26, 2005).

⁷⁶ Ibid.

⁷⁷ *GAO-03-329* “Defense Acquisitions”.

⁷⁸ Shaun Clarke, *Strategy, Air Strike and Small Nations*, (Fairbairn, Australia: Air Power Studies Centre, 2000).

⁷⁹ John R. Boyd, “A Disclosure on Winning and Losing” (unpublished set of briefing slides) (Maxwell AFB, AL: Air University Library, Report No.:mu43947, 1987), p. 5.

must also consider how to exploit the RMA to gain advantages in another temporal characteristic, that of the *sequence* of events.

Sequence – Not simply a straight line nor a planned order of events

A rapid pace of battle and decision-making can create the necessary psychological impact required for victory, at least in theory. The Rapid Dominance thesis best represents this new recognition of intangible effects.⁸⁰ The resulting perceptual effects create a state of paralysis that “short-circuits the need to physically defeat the enemy by deceiving him into believing that further resistance is futile”.⁸¹ The key to achieving this desired state of paralysis and helplessness in the adversary lies not simply in imposing a rapid pace of events upon the adversary, but also through controlling the *sequence* of events.

Sequences are not simply causative, temporally conjunctive relationships between events. Conceiving a sequence of favourable tactical events leading to a favourable strategic conclusion is a mistake. Rather, as Leonhard suggests, warfare should be perceived holistically as a resolution of “multiple, discrete events”.⁸² Essentially, military planning must prepare for both protective and dislocative phases of conflict. Exploiting initial tactical success is a necessary condition to attain the final political objective, and this is where planning for post-conflict operations *before* the end of hostilities shines. Once again, the spectacular initial victory in *Iraqi Freedom* provides an example for the evident lack of detailed postwar planning, as seen by the widespread looting and destruction of property that have led to criticisms and pessimistic assessments of the reconstruction agenda.⁸³ Planned sequences overlooking a full, *gestaltic* strategic picture of discrete events are invariably faulty, opening loopholes that can risk overall strategic success despite any operational and tactical successes. Yet that is exactly how the public is set up today, where events lead one to another in logical progression, viewed dispassionately from the living room. Planners cannot afford to be blinded by linearity if they are to guard against strategic failure, but trying to track many discrete events in real-time has not been possible

⁸⁰ Ullmann and Wade, *Shock And Awe*, pp. XXIV and XX.

⁸¹ David A. Gibson, *Shock and Awe: A Sufficient Condition for Victory?* (Newport, RI: Naval War College, Feb 2001).

⁸² Leonhard, op. cit., pp. 91-2.

⁸³ See Bob Drogin and Warren Vieth, “Looting will hamper postwar effort in Iraq”, *Los Angeles Times*, April 18, 2003, available from <http://www.post-gazette.com/World/20030418lootingdocumentsworld6p6.asp> (accessed December 21, 2005). See also David L. Phillips, *Losing Iraq: Inside the Postwar Reconstruction Fiasco*, (Boulder: Westview Press, 2005).

until the advent of computers, electronic data communications, and a massive increase in information processing capacity.

This consideration of sequence is not confined to strategic overviews. Leonhard's law of increasing, not diminishing, returns argument is enlightening. Essentially if the commander follows up initial positive actions with other subsequent positive actions, such as in the aftermath of a tactical victory, this effectively allows him to "multiply his effects against an enemy".⁸⁴ Failure to do so results in an opportunity for enemy rest, recovery and preparative work. Every additional tactical success increases the probability of strategic success; unlike economic theory, it is a case of increasing, not diminishing returns. Hence, the anticipation of sequence and preparation for follow up action is vital to final operational success, since each subsequent action carried out in consideration of the previous positive action builds upon the success of the last. However, Clausewitz warns us that "in war the result is never final", and a vanquished opponent "often considers the outcome merely as a transitory evil".⁸⁵ This simple exhortation reminds planners to always consider outcomes based on broader sequential relationships. Simply following a planned linear sequence of conflict and anticipating a cause-and-effect outcome for one's actions does not assure the final strategic outcome.

Rapid manoeuvre and PGM may have been the popular understanding of the RMA. Certainly the U.S. Joint Chiefs of Staff recognise this, going so far as to state that "media portrayal of military activities prior to hostilities can help to deter actual hostilities and/or build public support for inevitable hostilities."⁸⁶ Crucially, this concern over operational security does actually indicate that external media exert significant pressures on military activities, to the degree of affecting the military's planned sequence of events. Indeed the Joint Chiefs of Staff do not rule out the possibility of directly manipulating the media to positively "demonstrate the readiness, commitment and resolve ... to commit military forces to battle if necessary."⁸⁷

To this end, an adversary *expecting* a particular sequence, or order of events which is supposed to culminate in decisive battle, may be totally dislocated by psychological and information operations. The U.S. has been using intensive discreet

⁸⁴ Leonhard, op. cit., pp. 103-4.

⁸⁵ Clausewitz, op. cit., p. 80.

⁸⁶ Joint Chiefs of Staff, *Joint Pub 3-54: Joint Doctrine for Operations Security*, I-3, available from http://www.iwar.org.uk/rma/resources/opsec/JP3_54.pdf (accessed December 21, 2005).

⁸⁷ *Joint Pub 3-54*, I-4.

psychological operations in a variety of theatres ever since Vietnam, including Haiti, Nicaragua, and recently in Iraq.⁸⁸ In Iraq, media outlets complain of the intentional planting of “favorable stories about the war and the rebuilding effort”.⁸⁹ Some of these stories have been presented as “unbiased news accounts”, used “to advance the objectives of a military campaign.”⁹⁰ These “information operations” characterise an increasingly heavy but sophisticated use of the media to attempt to drain the “sea” of insurgents (borrowing Mao’s analogy), targeting both insurgent morale and interrupting fresh recruitment efforts.

This increasing reliance on ICT presents an at least hypothetical warfighting scenario, revolving around the attainment of “electromagnetic dominance”. This is an area that the Chinese military’s Computer Network Operations (CNO) sees as critical in a hypothetical campaign against the U.S., through the “integrated use of electronic warfare, CNO, and limited kinetic strikes against key C4 nodes to disrupt the enemy’s battlefield network information systems”.⁹¹ Although details are sketchy over the veracity of real doctrinal change, this is nevertheless an interesting experimental endeavour, at least to the Chinese military searching for an asymmetric counter to its conventionally powerful U.S. counterpart. Changes of this type will not come through previously developed organisations, weapons or platforms, simply because these means have not existed before in history. Doctrinal changes of this type reflect a strong emphasis on seizing initiative at the outset of active conflict, using whatever means necessary short of nuclearising the contest.

This validates the idea that dependency equates with vulnerability.⁹² With reference to Clausewitz’s centre of gravity, the simplest understanding of this concept intuitively explains why information systems constitute a “critical dependency”,

⁸⁸ Lawrence C. Soley and John S. Nichols, *Clandestine Radio Broadcasting*, (New York: Praeger, 1987), p. 267; “Onward Cyber Soldiers”, August 21, 1995 *TIME* 146, no. 8; Tom Clancy, Carl Stiner and Tony Klotz, *Shadow Warriors: Inside the Special Forces*, (New York: G.P. Putnam's Sons, 2002); Joint History Office, *Operation JUST CAUSE – The Planning and Execution of Joint Operations in Panama*, Office of the Chairman of the Joint Chiefs of Staff, available from <http://131.84.1.34/doctrine/jel/history/justcaus.pdf> (accessed December 14, 2005).

⁸⁹ Lolita C. Baldor, “Pentagon Investigating Charges it Paid for Favorable Press on War”, *Associated Press*, Dec 1, 2005, available from <http://www.mercurynews.com/mld/mercurynews/news/local/13300050.htm> (accessed December 6, 2005).

⁹⁰ These articles report a distinct link between the Pentagon itself and a contracted firm named the Lincoln Group that is used to translate and write these “planted” stories, which are then given to Iraqi newspapers who publish them in exchange for a fee. See Mark Mazzetti and Borzou Daragahi, “U.S. Military Covertly Pays to Run Stories in Iraqi Press”, *Los Angeles Times*, November 30, 2005, <http://www.latimes.com/news/printedition/la-fg-infowar30nov30,0,3132219.story?track=hpmostemailedlink> (accessed December 6, 2005).

⁹¹ *Ibid.*

⁹² Lawrence Freedman, “The Revolution in Strategic Affairs”, *Adelphi Paper 318*, (Oxford: Oxford University Press for IISS 1998), p. 52.

although these systems are actually the “key to a modern military’s effectiveness.”⁹³ Whether recent attempts at hacking into U.S. DoD networks are purely coincidental or planned, these clearly will replace traditional first-strike measures, including strategic air attacks or Special Forces on deep-strike missions.⁹⁴

Accordingly, when William Owens pushes a vision identifying the three key areas of technological change for the military as intelligence, command and control (C2), and precision force,⁹⁵ he is advocating as broad a concept as possible, but also emphasizing the need to secure both intelligence gathering, analysis, and dissemination, as well as securing C2 assets from probable CNO attacks. The critical area of change required of transformation plans then is to protect military assets and infrastructure from a “disabling first blow”.⁹⁶ Because of the perception of “non-violent sabotage” that electronic warfare produces, these first blows are decoupled from normal calculations of perceived risk and even appear flippant; none of the normal attending escalation-detering effects of nuclear or conventional war are present.⁹⁷ Just as Transformation allows the older sequence of events in conventional conflicts to be carried out more efficiently, adversaries of a high-tech army will also seek to transform and change the sequence of conflict to their favour by replacing the first significant combat event with a technically “non-combat” electronic one. In what Luttwak calls a “new, much less restrained culture of war” that is emerging and spreading following the Cold War, the propensity to make demonstrative effects has increased,⁹⁸ especially via these electronic means. By Luttwak’s logic, this release of superpower-induced restraint allows seemingly non-violent demonstrative effects

⁹³ Lawrence Freedman, lecture given at the Launch of ICSA, 14 October 1996, available from <http://www.kcl.ac.uk/orgs/icsa/Old/larry.htm> (accessed December 8, 2005).

⁹⁴ In the protective phase, CNO will attempt to obscure the vision of a high-tech enemy dependent on sensor systems and electronic information networks, using relatively cost-free payloads of viruses, Trojans, decryption and direct cracking attacks. This secures protection for the initially-disadvantaged side and allows more of its capabilities to operate, although not completely without harassment. During the dislocative phase, one’s own sensor assets can be deployed more easily and can provide better information since there is less interference from disinformation, signal interception and general paralysis from electronic attack. Bradley Graham, “Hackers Attack Via Chinese Web Sites, U.S. Agencies’ Networks Are Among Targets”, *Washington Post*, August 25, 2005, available from http://www.washingtonpost.com/wp-dyn/content/article/2005/08/24/AR2005082402318_pf.html (accessed December 21, 2005).

⁹⁵ Owens, William A. “The Emerging U.S. System-of-Systems”. *Strategic Forum*, no.63, 1996, pp. 1-2, available from <http://www.ndu.edu/inss/strforum> (accessed December 15, 2005).

⁹⁶ Levy, et al., *op. cit.*, p. 32.

⁹⁷ Zeev Bonen and Eliot A. Cohen, “Advanced Technology and Future Warfare”, *Security and Policy Studies* 28, (Ramat Gan, Israel: BESA Center for Strategic Studies, Bar-Ilan University, 1996). See also Eliot A. Cohen, “A Revolution in Warfare”, *Foreign Affairs* 75, no. 2 (March/April 1996), pp. 37-54.

⁹⁸ Edward Luttwak, “Blood and Computers: The Crisis of Classic Military Power in Advanced Postindustrialist Societies and the Scope of Technological Remedies”, in Maoz and Gat, *War in a Changing World*, p. 57.

such as electronic sabotage to become even more viable over a show of force, because these effects take place in the non-physical world and may not induce as much outright remonstrance from the global community as physical acts of destruction. These electronic probes and attacks will likely also blur the line between peace and war.

The option of electronic disruption introduces a new point in the sequence of battle events, one that was prominently demonstrated in the 1997 “Army After Next” wargame pitting the U.S. against a peer competitor. The wargame apparently opened with a surprise “laser attack on US space-based satellite reconnaissance, GPS, and communications capabilities, followed closely by a nuclear electro-magnetic burst in space”, whose combined effects reduced the “military information infrastructure [by] 50%”.⁹⁹ For a high-tech military openly dependent on this type of infrastructure to leverage on information superiority to achieve decisive success, clearly the possibility for disruption is high enough that warrant the undertaking of protective measures. Because the sequence of conventional attack on a high-tech power inevitably includes attacking information systems infrastructure critical to national communications and transportation, no military can afford to ignore ICT’s double-edged nature. The question of allocating resources to protect or capitalise on information superiority is better dealt with in other discussions but suffice to say, a balance between the protective and dislocative abilities of networked C4SIR and battlespaces must be maintained.

Opportunity – Identify, Decide and Exploit Possibilities

Because even remotely distant events in an increasingly connected battlespace can have far-reaching effects, any event – even the most apparently unlikely – can be presented as an opportunity. This is the final temporal characteristic, which is a modern interpretation of *Auftragstatik*, or mission tactics. While sequences describe orders of events within a battlespace, opportunity is a “time-sensitive decision point”.¹⁰⁰ The German *Auftragstatik*, a C2 philosophy that maximized their operational effectiveness through devolution of authority, was contingent on the *absence* of perfect information.¹⁰¹ Since each level of command within the order of battle (army, regiment, division, brigade and further down) introduces command delays, the logical

⁹⁹ Ryan Henry and C. Edward Peartree, “Military Theory and Information Warfare”, *Parameters*, (Carlisle Barracks, PA: Army War College, Autumn 1998), pp. 130-32.

¹⁰⁰ Leonhard, op. cit., p. 108.

¹⁰¹ Ibid, pp. 112-19.

step would be to either increase the amount of information available at all levels, or to reduce these layers so as to capitalize on any emergent tactical opportunity. The time-sensitive nature of opportunity requires decision and action in order to benefit from exploitation, but is ultimately dependent on which level controls the resources (engineer assets, artillery support, air strikes).

A good decision may be untimely, and a timely decision may be bad. This is by no means an exercise in semantics. Commonly misconceived as superior to centralised control, *Auftragstatik* can also be abused by committing direct acts of disobedience to superior orders, leading to a jeopardising of overall operational aims.¹⁰² An opportunity typically presents itself as fleeting, usually losing value over time. A transport or armoured column might present a high-value target, but persists in the target area only for as long as it takes to complete its movement. An undefended objective may offer resistance by the time an attack is agreed on and prosecuted by all the various levels of command involved. Curiously enough, the success of German panzers in World War II persuaded many of the superiority of this form of opportunity-based C2. Patton in southern France, Sharon in the Negev, Schwartzkopf in southern Iraq, all purportedly carried the banner for devolved decision-making. Presumably, the commander closest to the opportunity as it presents itself is best placed to make the necessary decision to exploit it. Increasing the ability of commanders to observe, decide and act upon opportunity implies increasing the information available to them and extending their exploitation capabilities.

Opportunities thus can be seen as events that present themselves for a limited time. The value of exploitation *decreases proportionally* to the time taken for exploitation, and should be seen as a temporal characteristic in this manner. As long as time does not run backward, opportunities are always fleeting in nature. Transformation initiatives invariably seek to dominate these characteristics and tilt the balance favourably, so an overview of current efforts will reveal some ways in which militaries are seeking to control the time dimension.

While sequence is affected by the occurrence or inducement of events, often more relevant at the strategic and operational levels, opportunity presents itself more

¹⁰² Rommel and Guderian, vaunted as tactically brilliant commanders, seemed notorious in this respect, the former in the drive across the Meuse River, and the latter in rapidly advancing towards Dunkirk. Contrast the failure of both to secure victory in a different theatre at higher level of commands, using the same operational rapidity and principles of decisive maneuver, with Rommel failing at El Alamein and Guderian in Russia. See Heinz Guderian (1952), *Panzer Leader*, (New York: Da Capo Press, reissue edition 2001); B. H. Liddell Hart, *The German Generals Talk* (New York: Morrow, 1948); Erwin Rommel, *The Rommel Papers*, ed. B. H. Liddell Hart, trans. Paul Findlay (New York: Harcourt, Brace, 1953).

readily at the tactical level. Planning at the higher levels of war can never rule out the influence of serendipity, a notable example being the abrupt change in weather that gave the Allies the window of opportunity to invade Normandy in 1944.¹⁰³ These are typically beyond human control. At the tactical level however, opportunity suddenly becomes available in copious amounts to the highest bidders in transformational change, if one understands that the key prerequisite to opportunity is knowledge and situational awareness.

Not surprisingly then, from knowing what is on the other side of the hill, to knowing what is on the entire battlefield or theatre represents a significant improvement in discovering opportunity. Whereas Wellington had relied on hand-drawn maps and spies in Portugal,¹⁰⁴ now satellites, UAV, blue-force tracking and other sensor platforms allow commanders to obtain detailed real-time intelligence of both friend and foe.¹⁰⁵ Advanced C4I adapted to this purpose intends to create a networked battlespace and subsequently Dominant Battlespace Knowledge (DBK), enabling the collection and dissemination of accurate and timely intelligence to support decisive operations within an enemy's decision cycle through acute awareness and focused planning. While electronic assets are invaluable, these do not diminish but in fact, increase the importance and relevance of Human Intelligence (HUMINT). To translate raw data from sensors and signals into meaningful knowledge requires also good HUMINT, since signals intelligence and HUMINT invariably exist in a particular symbiotic relationship. DBK covers one side of the hill, that of knowledge, but the exploitation of this knowledge, especially fleeting opportunities, compels a modern military to be extremely flexible and responsive.

Acting upon opportunity rapidly hence requires flexible and modular combat packages, something that a transformed 4th Infantry Division has done in the U.S. Army. Operational brigade combat teams, or "units of action" mirror each other across divisions, and functional assets have been placed into separate brigades including an aviation brigade, fires brigade and support brigade.¹⁰⁶ A life-cycle managed concept means troops stay in brigades for three years, allowing them to train, deploy and fight in a fashion similar to regimented British units in Victorian times, reducing turnovers while enhancing cohesion. The divisional headquarters can

¹⁰³ "Guide to Normandy 1944 - The Decision to Go", *Encyclopaedia Britannica Online*, available from <http://www.britannica.com/dday/article-236178> (accessed December 21, 2005).

¹⁰⁴ See Mary, McGrigor, *Wellington's Spies*, (Pen & Sword, 2005).

¹⁰⁵ McInnes, op. cit., p. 121.

¹⁰⁶ Matt Garner, *4th Infantry Division Goes 'Modular'*, available from <http://www.defenselink.mil/home/articles/2004-12/a121504a.html> (accessed December 23, 2005).

now function also as a joint task force headquarters. Transformation to a modular configuration is carried out at all levels. What these changes are meant to allow is the ability to build functional teams from smaller units, something that a larger unit such as a division may find more difficult to achieve, given the necessary inertia and lag-time inherent in larger, division-sized structures. Smaller units put together as such are still relatively new, and may actually have the reverse-effect of reducing cohesion instead if the familiarity of a divisional structure's assets and human contacts are diminished. Building trust between personnel then would be the key to counteract the resultant loss of familiarity with the older structures, either through integration exercises or reformed training of higher-level staffs.

Since opportunities are almost always time-limited by definition, and eventually disappear, the issue of command and control over those flexible assets needs to be addressed. Most simplistically, there are two extremes of command and control, and very little in between; one can either have centralised, or decentralised control, never both simultaneously. The size of modern armed forces has necessitated decentralised command and micro-management, since no commander, even a tactical genius such as Napoleon himself, can exercise complete control over all of his assets at once.¹⁰⁷ However, with the introduction of ICT, the temptation for the central authority to exercise detailed control or pass directives to the lowest denominated unit is great, and may place unrealistic limitations or expectations on field commanders. However, these concerns should not override the potential advantages of quicker processing time and the potential for greater performance from data-sharing combat units, since as with any new technologies, there will always be some initial problems. The sufficient condition for attempting to move to a new networked model remains its potential for minimising the time required to identify, prepare for, and exploit opportunities that are inherently fleeting in nature.

Conclusion

All four temporal characteristics of duration, frequency, sequence and opportunity are thus important considerations for any warfighter. Time imposes

¹⁰⁷ Certainly the idea that Napoleon's genius ensured his success through all his campaigns is flawed, although his talent lay in the recognizably makeshift quality of his successes. However, some have also argued that the even Napoleon's extraordinary talent and workrate could not have coped with the massively increased size and scope of the changing nature of war, set in motion by the great man himself. See R.M. Robert M. Epstein, "Patterns of Change and Continuity in Nineteenth-Century Warfare", *Journal of Military History*, 56, (July 1992); Russell F. Weigley, *The Age of Battles*, (London: Pimlico, 1991); Owen Connelly, *Blundering to Glory: Napoleons Military Campaigns*, (Delaware: Scholarly Resources Inc, 1984).

difficult limits upon militaries. Currently, the roadmap for progression towards a networked-centric and EBO-enabled military is a common objective among militaries, and most militaries have recognised the need to change following the demonstration of U.S. fighting power in both Gulf Wars. Those who can afford Transformation find themselves embarked on a roadmap familiar to U.S. Transformation advocates, while the discourse on the subject has also bandied about similar, in-vogue terms. To derive the potential benefits of these change processes, they have to be addressed with reference to their effects on the temporal characteristics.

This study considered some of the developments in the transformation process most modern militaries are undertaking, utilising the cognitive framework provided by the temporal characteristics of strategy. The myriad of transformational initiatives cannot be comprehensively listed, but a general trend of attempts to assert some form of temporal dominance has been established. Far from being a semantic exercise, the importance of time should be emphasised in more detail rather than simply categorising it as a line of events.

Some caveats should be taken from the recent war in Iraq, since it has been the most potent and recent demonstration of the power of a modern military force engaged in conventional conflict. Firstly, the transformational concepts bandied by Joint Vision 2020 were in existence before the Bush administration came into office, and much of the work actually took place during the Clinton administration.¹⁰⁸ The war in Iraq hints at, but does not fully substantiate, claims of the effectiveness of a transformed or network-centric force. Secondly, the ability to fight faster and lighter is not new at all, and is a logical but trivial ideal that all militaries aspire towards, at least on the tactical level.¹⁰⁹ But its implications on the operational and strategic levels receive a bare coverage. Thirdly, while transformational concepts have been proposed and formulated, no clear and “detailed doctrines and force plans” for “long-term transformation” exist in the U.S. military, let alone other militaries.¹¹⁰ The extensive list of presentations and case studies of a multitude of equipment and costs on several transformation websites hints at an incomplete process, where no unifying doctrine can be elucidated as yet, while time frames are similarly undefined. This implies that

¹⁰⁸ Chairman of the Joint Chiefs of Staff Vision Statement, *Joint Vision 2020* (Washington, D.C.: Government Printing Office, June 2000). Also see Jim McCarthy et al., *Transformation Study Report: Transforming Military Operational Capabilities*, prepared for the Secretary of Defense, (Washington, D.C.: Office of the Secretary of Defense, April 27, 2001).

¹⁰⁹ Contrast the preference for lighter and faster to Mao’s protracted war doctrine, or guerrilla and irregular conflict, which both naturally prefer a slower pace of events but at the operational and strategic levels of war.

¹¹⁰ Cordesman, *The Iraq War*, p. 165.

planners and senior military leaders must engage in the “painful but necessary intellectual process of thinking through and overcoming unexamined assumptions, opinions, and prejudices about themselves and their enemies”, because in avoiding it, “defeat becomes a certainty”.¹¹¹

These should not, however, hinder the risk-taking attitude of innovators in transformation planning in any way. Certainly there are benefits to achieving dominance over time in war, in the basest, most commonsensical understanding. As in other endeavours, velocity exists in a trinity with mass and cost. To justify transformational plans and their budgets, a complete and unified joint-service doctrinal concept should be worked out, in order to prevent experimentation into new systems and platforms from being wasted.

Finally, the ability to do everything faster does not always mean better. Strategy in itself remains an elusive and difficult process, something that is not overridden by tangible material changes, but requires an accompanying intangible change. Hew Strachan warns of the optimism success can bring, when he writes:

Kabul fell within 40 days. The United States had prevailed in Afghanistan (or so it seemed) without it having had to formulate strategy. Action had generated its own results. The rapidity of the success bred more than surprise; it bred its own confidence, a ‘can do’ mentality which put more premium on taking the initiative than on learning lessons for the formulation of strategy.¹¹²

When new technology becomes available, beneficial exploitation can only take place when the attendant, necessary changes are made to existing organisations and systems. This almost certainly also means painful adjustments must be made such that transformative processes are not outpaced by technological change.

¹¹¹ Barry Strauss and Josiah Ober, *The Anatomy of Error: Ancient Military Disasters and Their Lessons for Modern Strategists* (New York: St Martin’s Press, 1990), p. 246.

¹¹² Hew Strachan, “The Lost Meaning of Strategy”, *Survival* 47, no.3, Autumn 2005, p. 51.

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