War as We Knew It

The Real Revolution in Military Affairs/Understanding Paralysis in Military Operations

Jan S. Breemer

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I. Introduction

This is an exploration, a speculation if you will, on the nature of war in the future.[1] It explores in particular the symptoms of what appears to be a transition, in thought and practice, from a way of warfare that is centered on the notion of destruction to one that has paralysis as its "center of gravity." At this stage of research, the idea that future war will be "paralysis-based" provides a framework for discerning, interpreting, and organizing a collection of seemingly disconnected phenomena. It is not an argument for a "kinder and gentler" way of war per se.

There has been a great deal of discussion inside and outside Washington, DC in recent years about the emergence of a so-called "Revolution in Military Affairs" (RMA). The transition that this essay claims to be at hand will not be the product of a deliberate design for a RMA design, but will instead be the outcome of a confluence of seemingly disparate societal, technological, and intellectual transitions, of which the RMA is merely one symptom.[2] This is not new.

The prevailing destruction-based model of war did not become fully mature until the eve of World War I, when a series of developments converged. This convergence included the intellectualization of war as a destructive process by Carl von Clausewitz and many of his latter-day interpreters; the Industrial Revolution; the expansion of popular participatory government; the growth of rampant nationalism and the attendant cultivation of hatred of "outsiders;" and the popularity of the social-darwinistic conception of war as a societal re-juvenating necessity.[3] These and other factors were necessary for Clausewitz's intellectual construct of "absolute" war to become a reality.

This essay starts with a discussion of the Clausewitzian roots of the modern destruction-based model of warfare. It goes on to explain how the Industrial Revolution enabled the "idea" of war to be turned into the material reality of two world wars. Next, the discussion turns to the effect of nuclear weapons on "conventional" military thought, and how the professional military and civilian defense intelligentsia came to grips with the nuclear "anomaly." It then explores how the end of the Cold War has

led to a security environment whose symptoms and characteristics are increasingly at odds with the familiar destruction-based model. To paraphrase Thomas S. Kuhn, "normal" war is "in crisis."[4]

The argument is that the "post-crisis" model of war will be centered on the idea of paralysis. While the next step in this research will be to operationalize this concept within the context of war making, it is useful to offer a preliminary definition of paralytic warfare:

> Paralytic warfare is aimed at incapacitating the opponents war-making system by causing a complete or partial loss of function involving the power of motion or of sensing in any part of his system. Paralysis-based warfare is precision warfare; it relies on a combination of physical and psychological means to incapacitate critical physical and/or sensory sub-systems in order to immobilize the opponent's war-making system short of its destruction. Whereas implicit in the destruction-based model of warfare is a presumption Jar destruction, paralytic warfare is based on a presumption against destruction.

There are several kinds of questions that must be addressed, including: What is paralysis as it pertains to military operations? How is it induced? And how is it sustained? What are its characteristics and how is it different from destruction? What are the en deal nodes in a military system which, when incapacitated, produce complete or partial paralysis? How does one define an opponent's military "system?" And what might a competition between destruction and paralysis look like? A forthcoming paper will address these and other questions.

II. The Revolution in Military Affairs

Considerable ink has been spilled in recent years over what many in the professional military and the civilian defense establishment claim is an impending "Revolution in Military Affairs." or RMA for short. Defense Secretary Cohen's recent Annual Report offered this definition of what is involved:

> A Revolution in Military Affairs (RMA) occurs when a nation's military seizes an opportunity to transform its strategy, military doctrine, training, education, organization, equipment, operations and tactics to achieve decisive military results in fundamentally new ways.[5]

He cited as historical examples the creation of the French Revolutionary *levee en masse, blitzkrieg iii* the late 1930s and early 1940s, and the U.S. Navy's development of carrier task forces and amphibious capabilities in World War II.[6] Today's RMA, he claimed, is embedded in the ''dawning of the Information Age in particular "leap-ahead advances in information technologies and information processing capabilities." The Secretary went on the acknowledge that, while the technical ingredients for an RMA were clearly at hand, there is "no definitive answer as to how the U.S. military should take advantage of the information revolution and its attendant potential to realize a genuine RMA."[7] In other words, the promise of technological ingenuity had yet to be matched with conceptual innovation.

Mr. Cohen nevertheless went on to cite the Joint Chiefs of Staffs "conceptual template," called Joint Vision 2010, as the basic conceptual framework for focusing and channeling the militarization of the information revolution and other emerging technologies. That document rests on the four key operational concepts of dominant maneuver, precision engagement, full-dimensional protection, and focused logistics.[8] These labels are suggestive of the key underlying themes of precision, accuracy, minimization of casualties and collateral damage, force dispersion and mobility, and the notion of compelling the adversary to "either react from a position of disadvantage or resign from the conflict."[9]

These and related themes are symptomatic of the essential nature of the RMA, which is indicative of a transformation in warfare that moves away from the prevailing destruction-based Clausewitzian model of war toward one that will be centered on the notion of paralysis.

The next section of this essay explores the origins, characteristics, and maturation of the Clausewitzian model of war through World Wars I and II. It then traces the attempts of post-World War II military planners and civilian strategists to grasp the first major "crisis" in the destruction-based model of war that was brought about by nuclear weapons, it argues that the model "survived," mainly because of the apparent all-or-nothing nature of the U.S-Soviet competition. However, the end of the Cold War has forced us to confront the question of whether the Clausewitzian model of war is still pertinent. Others have done so before, notably Martin Van Creveld in his *On future War*, who proposed that the demise of conventional war and strategy in its "traditional, Clausewitzian sense" is the result of the end-of-the-state as the sole purveyor of armed violence.[10] This essay assumes that the state will remain the dominant war-making organization, but that the way such wars are fought will be very different from the Clausewitz-imbued "style" that has guided planners and practitioners for nearly two centuries. This study concludes by examining some of the "symptoms" of this revolution, or "transformation."

The Clausewitziau Model of War

There are two Clausewitzes. The first is the Clausewitz of the "ideal" and "absolute" war that aimed at nothing less than the complete overthrow of the adversary. This is the Clausewitz that was lionized before World War I and reviled as its philosophical instigator afterward. The other Clausewitz, who was "discovered" by limited war theorists in the 1950s, was the disciple of moderation who reminded us that "real" war is and must be guided by political goals. The debate continues over which is the "real" Clausewitz.

On one issue, however, there is only one Clausewitz. He had little patience for so-called "principles" of war, except one: the principle of destruction (Verichtunsprinzip), specifically the destruction of the enemy's forces. As noted later, Clausewitz was aware that this had not always been the objective (and means) of war, but he unequivocally

believed that destruction had proven to be the superior way of war, regardless of whether one's goals were limited or unlimited.[11]

Having established that the destruction of the enemy's forces is the central end and means of war making, Clausewitz operationalized the concept as attrition, specifically attrition through battle. "What do we mean by the 'destruction of the enemy's forces?'" he asks. The answer: "A reduction of strength relatively larger than our own." And he explains that, "only the direct profit gained in the process of mutual destruction may be considered as having been the object."[12] Clausewitz's prescription for achieving a favorable balance of mutual destruction was a simple one. The key was numbers, the ability to field more forces than the opponent, mass them at the "decisive point," and begin "the slow process of mutual attrition that will reveal which side can first exhaust its opponents."[13] To be sure, Clausewitz did not claim that victory turned strictly on achieving a favorable balance of killed and wounded. He was quite aware that both sides could suffer equally, and that it was not uncommon for the victor to lose more men. Battle was about attrition because, to Clausewitz, it was the only means for "testing" and breaking the opponent's stamina and morale.[14]

Surprise, deception, and mobility - the key ingredients of maneuver warfare, which aimed at shocking and dislocating the opponent - played little or no role in Clausewitz's scheme of war. To "prove'" the superiority of mass and firepower over mobility and maneuver, he went so far as to claim-wrongly - that the "God of war." (i.e., Napoleon) "never engaged in strategic envelopment."[15] Clausewitz had seen how the French emperor had harnessed the energy and seemingly limitless manpower resources of the French revolutionary levee' en mass, but as one observer wrote his conception of the Napoleonic art of war was largely a myth..."[16] This leads us to consider what it was about the Napoleonic wars that prompted Clausewitz to claim that Europe had experienced a transformation of war so fundamental that the potential for unlimited violence which, he claimed, had always been latent in the abstract phenomenon of war, had now been realized and become the practice of war.

The Napoleonic Transformation of War

Clausewitz drew much of his inspiration from the French Revolutionary and Napoleonic wars. Napoleon's ''pulverizing course through Europe,'' he claimed, had inaugurated a new kind of warfare, which "rather closely approached its true character, its absolute perfection."[17] Its novelty, he wrote, lay in the mobilization of a seemingly endless supply of resources and the limitless "vigor and enthusiasm shown by governments and their subjects." War had become the "business of the people," the nation-in-arms.[18] He repeatedly emphasized that this phenomenon had nothing to do with the invention of new weapons or new ideas per sé, but instead the birth of a new, symbiotic relationship between the state, the army, and the people, in short a wholesale transformation of the nature of national politics.[19]

It is important to note that Clausewitz was fully aware of the fact that his notion of war as a symptom of prevailing social and political circumstances was not a novel phenomenon. Throughout history, he claimed, prevailing social conditions, notably the connection between the people and their government, had shaped the dominant ''model'' of war. "The semi-barbarous Tartars, the republics of antiquity, the feudal lords and trading cities of the Middle Ages, eighteenth-century king us and the rulers and people of the nineteenth century-all conducted war in their own particular way, using different methods and pursuing different aims."[20] The difference between history's "old models" and the new warfare by the nation-in-arms was that the latter had shown how "real war" could be fought with near-perfection. With the genie of absolute war out of the bottle, the chances were slim, Clausewitz thought, that war would ever resume its older, more limited, form.

Yet, Clausewitz was worried that false prophets would persuade their leaders that the Napoleonic experience was an anomaly ("brutalities, almost blunders"), and that the proper, civilized, and rational way to fight was to revert to the pre-revolutionary wars of "strategic maneuver." Clausewitz referred to the latter as a "limited and constricted form of war" in which the two sides, instead of seeking battle and the opponent's destruction, attempted to out-maneuver each other by occupying key strategic positions. At the time, this "game" of war without battle, he wrote, "was rated the highest form of skill, and a product of ultimate

perfection."[21] Recent history had shown, however, that the idea of winning war without battle is "nonsense." Nevertheless, he wrote in a significant passage, given that society would continue to change and given the theoretical possibility of a future "gradual separation taking place between government and people,... (T)here can...be little doubt that many previous ways of fighting will reappear."[22]

Clausewitz's portrayal of warfare under Europe's ancien régime as an exercise in maneuver and moderation is shared by most, if not all, modern historians of the period. Destructive battles certainly took place, but the overall tendency of military operations was a "whole drift away from battle."[23] historians differ over the reasons for this - some claim the belligerents' limited resources and capabilities, others an "enlightened" conception of war, and still others have cited a societal reaction to the devastating religious wars of the Counter-Reformation. Whatever the reason, there can be no doubt that the theory and practice of war centered on the destruction of the enemy's armed forces as the goal and means of warfare and strategy involved a revolutionary transformation. Clausewitz thought that in Napoleon he had seen this transformation in action; however, the perfection of trinitarian war -- with the people, army, and government -- fully merged into single combatant, had to await the Industrial Revolution.

The Industrialization of War

Clausewitz died in 1831. The Industrial Revolution had already begun to affect commerce and industry; which set the stage for the "industrialization of war."[24] Clausewitz can be forgiven for disregarding how material -in contrast with political-upheavals can transform the nature of war. Before the 1840s, technological change in the means of warfare had been slow and mostly evolutionary, and the armies of the Napoleonic wars were not armed substantially different from their predecessors one century before. The Industrial Revolution spawned three major material changes, which collectively, enabled the practice of absolute war. First, discoveries in chemistry and metallurgy permitted significant increases in the lethality of weapons. Secondly, mass production techniques allowed the rapid manufacture of very large number of weapons and do so cheaply, which had two broad implications.

To begin with, the mechanization of manufacture and agriculture meant that productive work required fewer people, so that more could serve under the colors. Next, the mass production of arms meant that this "surplus" could indeed he armed. However, huge armies have little value if they cannot be moved and supplied. This is where the Industrial Revolution had its third major impact on war: railroads and machine-powered ships enabled the rapid and reliable movement of men and materiel on an unprecedented scale, which had profound implications for war.[25]

Millions went to war in 1914 and, again, in 1939. The two conflicts went a long way toward demonstrating what war as a competition in destruction can achieve when the belligerents believe that the very existence of their societies, their "way of life." is at stake. Clausewitz did not need to fear the political "contamination" of his ideal war, for as Martin Van Creveld has remarked, when war is about national survival, politics no longer matter. Instead, war "merges with policy, becomes policy, is policy."[26] Napoleon's battles, which inspired Clausewitz, produced roughly 900,000 casualties, including the dead, wounded, and missing.[27] The battle on the Somme River in 1915 alone resulted in more than one million casualties.[28]

In World War I, destruction and "wastage" (the term then used for units destroyed in battle) still mainly affected the uniformed combatants. Civilian factory workers on both sides had become de facto combatants, but technical limitations (i.e., the limited reach and bomb-carrying capacity of aircraft) compelled both sides to limit their war-making against the opponent's home front to "non-destructive" means, i.e., economic blockades. This restriction was eliminated in the next global conflict. Early air power enthusiasts advocated strategic bombing as a humane alternative to the indecisive attrition of World War I. They acknowledged that civilians would be victims, but believing that civilian morale would be fragile, maintained that such a war would be short and therefore the overall level of suffering would also be less. Between the wars, the U.S. Army Air Corps made valiant attempts to devise a doctrine of "precision bombing" against the enemy's key industrial nodes, and indeed, during the war itself, made some noteworthy attempts in the European theater to put this theory into practice. However, technical limitations and other factors forced it to team up with the British Bomber Command and switch to area bombing against cities and industries, which were commonly co-located.

In the war against Japan precision bombing was not even tried. There, the "absolutist doctrine" held sway.[29]

The practice of World War II exceeded even Clausewitz's vision of what the absolute and theoretical "ideal" looked like. Indeed, on some levels the conduct of World War II no longer "fit" the Clausewitzian model. Recall that his ideal war entailed the complete overthrow of the opponent by way of the complete destruction of its armed forces. Clausewitz offered a few instructions on how to deal with "popular uprisings" (i.e., guerilla war), but he never suggested that violence might deliberately he aimed against the opponents civilian population, whether in conjunction with a military campaign or as the dominant locus of war. Strategic bombing in World War II "civilianized" the Vernichtungsprinzip, as destruction-through-attrition was re-directed from the enemy's military morale to that of his civilians. The British called it "de-housing."[30]

Escaping the Nuclear Anomaly

The extension of the Vernichtungsprinzip to a competition in civilian attrition triggered the emergence of the first critical anomalies to beset the destruction-based model of warfare. The Hiroshima and Nagasaki atomic bombs represented-to use a good Clausewitzian term-a culminating moment. If two world wars had threatened to destroy the political and economic institutions in whose defense they were ostensibly fought, a global conflict with nuclear weapons would be the war-to-end-all wars, including the societies that made war.

War with nuclear weapons violated the Clausewitzian model in another critical way. Clausewitz's "perfect" war was embedded in what he called the "remarkable trinity" of the government, the people, the army, and the rational and irrational forces, he said, they represent.[31] The speed and surprise with which nuclear war was expected to occur (the nuclear "bolt-from-the-blue") meant that the "people" had effectively been taken out of the equation. Worse, it became possible to imagine "doomsday machines," which, without the intervention of the trinity's second element, i.e., the government, would automatically trigger retaliation when the first enemy bomb exploded.

Initially, a few half-hearted attempts were made to portray the weapons as no more than a "modern," normal progression from old-fashioned bombs. However, by no later than the mid- to late-1950s, it had become widely agreed (in the West, at least) that nuclear weapons were different; that the familiar, experience-based model of war could not accommodate their capacity for destruction. Morris Janowitz summed up the professional soldier's dilemma as follows:

> Each increase in the destructive power of weapons has raised grave questions about the inevitability of war in the minds of the military profession. The most revolutionary step-thermo-nuclear weapons-seriously weakened the principle… The military profession must now recognize the fact that the power of destruction is now so great that it is dangerous to generalize from past experience.[32]

During the l950s and 1960s, civilian and military thinkers sought to come to grips with the nuclear "anomaly." One effort involved the creation and elaboration of a complex body of "deterrence theory," which proposed to lay down "rules" for the "safe" use of the threat of nuclear force. One problem with this "deadly logic" was that it hinged on the rationality of both the threatener and threatened; it could not cope with a "irrational" war when the existence of one or both belligerents is at stake.[33] The notion of rationality, or at least rational behavior on the part of the leadership of the war-making nations, was central, of course, to Clausewitz's conception of war because without rationality, war could not be a political pursuit. The deterrence theorists proposed that this problem could be "solved" as long as the two nuclear belligerents foreswore the goal of the opponent's complete overthrow and communicated their less-than-total aims to the opponent.

The rehabilitation of limited war-"limited" in the sense of goals and/or the use of force — amounted to another attempt to make war "safe" for conventional force. It was in this context that the Clausewitz of moderation, the one who insisted that war must at all times be the servant of politics, was discovered. Of course, even this Clausewitz remained adamant that the military aim of a war in pursuit of limited political goals must be the complete or partial destruction of the opposing military.

Modern limited war theory (and recent practice, for that matter) has not deviated from this prescription.

As the 1980s drew to a close and fears of a nuclear war between East and West receded into the background, a reasonably stable "balance of prudence" seemed to prevail.[34] To be sure, American and Soviet military planners still worried about a large-scale war on Europe's Central Front, but both sides seemed to have concluded that, initially at least, a war would be fought with conventional means. Yet, both sides also understood that, as long as nuclear weapons were held in reserve, even the conventional phase of an East-West war could not be truly "conventional." Indeed, American planners made clear that a no first-use strategy was contingent on the failure of Soviet conventional arms to overrun NATO's defenses. In short, as long the Cold War endangered the West's most vital interests, the anomalies that had beset the destruction-based model of war could be evaded.

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III. Toward a New Kind of War?

Ian Clark in his hook, Waging War, contends that, "the practice of war is grounded in a distinctive conception of the nature of war itself."[35] If this is so, the implication is that the prevailing, destruction-based conception of war is being transformed into a new, paralysis-based model. The paralysis-based model of war does not claim that destruction will no longer be a feature of war; neither did Clausewitz's much-maligned positional warfare of eighteenth century Europe exclude extremely bloody battles.[36] The portrayal then and now of warfare tinder the ancien régime as an exercise in-relatively-bloodless maneuver is a generalization, or a model. For that matter, Clausewitz's depiction of the Napoleonic wars also was a distillation of what he saw as their dominant characteristics. He understood that his model did not fit all the cases, notably Napoleon's bloodless victory at Ulm in 1805. But he could fairly dismiss the Austrian surrender as a "unique event" that did not negate the overall pattern of the new warfare.[37]

The proposed paralysis-based model of war is exactly that-a model. As such, it can be no more than an abstraction of what war in the real world and the real future will look like. This is perfectly acceptable as long as the model highlights the dominant tendencies of future war. The concluding portion of this essay summarizes the symptoms, or the "indicators and warnings," that point toward this transition.

The End of the Nation-in-Arms

The end of the Cold War and the emergence of an international security environment that, from the Western perspective at least, is devoid of imminent threats to territory or sovereignty have spurred the demise of the nation-in-arms. More particularly, the "invention" which was at the heart of the French Revolutionary and Napoleonic revolution in military affairs, and which was central to Clausewitz's image of war, i.e., national military conscription, is becoming a "legacy system." Only a handful of nations still ostensibly rely on sonic form of the draft. Those that do, for example Germany argue its necessity less on military grounds than its democratic socializing value, but this has created its own anomaly.

Namely, practical military purposes, such as the need to fight so-called "non-Article 5" wars outside the national or Alliance boundaries, require a military that can be used as a tool-of-statecraft in cases that are short of a national emergency. The "solution" (for Germany and Norway) has been to effectively create two armies-one made up of short-term (less than one year) conscripts for territorial defense, and a second, composed of long-term volunteers, for extra-territorial operations.

The nation-in-arms was transformed into a practical proposition thanks to the Industrial Revolution and the invention of mass production techniques. The latter reached a high point in World War II, when the United States manufactured 100,000 aircraft in a single year.[38] The post-Cold War safety of the West's survival interests has motivated the decline of the nation-in-arms, while the doubtful ability of Western industry to reconstitute and equip mass armies with modern weapons has been its material undoing.

The professionalization of the Western military has been paralleled by large personnel cuts and the growing cost of the remaining numbers of troops. One small indication of the latter is what has happened to the cost of American soldiers, sailors, and airmen. Accordingly to one source, the constant (FY1998) cost of the average soldier in 1968 was $31,000, while 30 years later it was equal to $52,000.[39] As another example, France's chief of army staff, General Yves Crène, announced that the end of conscription means that the average annual cost of a soldier will go up from $3,666 for a draftee to nearly $20,000 for a professional.[40] The same trend-smaller forces at greater unit cost also applies to military equipment. While the $2 billion cost of the B-2 bomber is arguably an anomaly, the fact that the 20 or so aircraft in the U.S. arsenal are named individually (e.g., "Spirit of Indiana") suggests that bombers have become as scarce and precious as battleships.[41]

As smaller, more expensive military forces are used in wars for less-than-vital interests, which we might consider "wars of choice," national decision-makers will search for ways to minimize the risk of loss. In this sense, at least, one is reminded of the era in European warfare that preceded Napoleon, when the then-prevailing view of battle as a strategy-of-last-resort rather than the general's preferred option, was motivated, in part, by the risk of losing one's expensive investment in men and materiel.

It made more sense to lose a province or two, which, as long as the army was not destroyed, could perhaps be recaptured in the next round of fighting. Admirals have been criticized for their reluctance to risk their "high value" units - battleships, aircraft carriers. Have today's small professional armies become the new high value units? Is this why the American military leadership is so preoccupied with "force protection" and is reportedly more "casualty-shy" than the public at large? [42]

Looking for Smarter Ways to Fight

Smaller, more expensive military forces commonly compel a rethinking of the ways in which one will go about fighting future wars. Add a lost war (Vietnam in the case of the United States) and the stage is set for a soul-searching re-appraisal of the old strategic and doctrinal verities. The Germans went through this process during the two decades that separated World Wars II, and I and produced armored blitzkrieg. The U.S. Army embarked upon a similar self-appraisal in the 1970s and 1980s, which concluded with the rejection of what, had effectively been an attrition-based concept of operations (called "active defense") in favor of one that highlights (operational level) maneuver. The Marine Corps and Navy have followed suit.

This is not the place to discuss the advantages and disadvantages of attrition versus maneuver warfare-the central concern here is the elevation of maneuver warfare as the preferred fighting style. Current U.S. military service doctrine identifies attrition, i.e., destruction-based warfare, with indecisiveness, high casualties, large material losses, and, as Navy doctrine puts it, "unwanted political and economic consequences."[43] It could be that attrition alone is, in fact, a dubious measure of success and failure in battle. In the first place, there is no evidence that a particular level of "unacceptable damage" compels defeat.[44] And history is replete with military encounters in which victory went to the side that suffered the most casualties. Trevor Dupuy's study of the causes of military defeat suggests an important reason why this may be the case. After studying 52 battles in World War II and after, he concluded that, "the principal condition associated with defeat appears to have been the use of maneuver by an enemy, which was present in 64 percent of the cases."[45] Military

professionals have long know or, at least suspected that this is the case. Yet it has only been in recent years that Pentagon planners began to look for alternatives to the attrition-based models that have traditionally been used to "measure" effectiveness in battle.

Maneuver warfare certainly does not exclude destruction-indeed its object, in part, is to create conditions in which opposing forces can be destroyed at a lower cost to ones own forces. But maneuver warfare aims to defeat (note, not destroy) the opponent first and foremost by inflicting shock, surprise, dislocation, and paralysis, but these are very un-Clausewitzian concepts.

The U.S. Navy's key doctrinal publication. Natal Warfare, cites a few of Clausewitz's concepts (e.g., "center of gravity"), but does not mention his name once. By contrast, it approvingly credits Sun Tzu as one of the great philosophers of maneuver warfare. Since 1983, at least 12 translations of Sun Tzu's prescription that, "the supreme art of war is to subdue the enemy without fighting" have appeared. Even more volumes purport to apply Sun Tzu's stratagems to business and professional athletics. Is this remarkable surge of interest in the "non-destructive" strategies of the ancient Chinese mere chance, or is it symptomatic of an intellectual revolution in military affairs?

War Without Casualties?

The "dual-army" system of some of the European countries-a conscription army for national defense and a professional force for extra-national "peace support" missions-will not alleviate the contemporary aversion to casualties. It is simply not true that, because they are made up of professionals who presumably know the occupational risks when they sign up, today's professional armies can be put in harm's way more easily and with less concern for casualties than conscription forces, Like it or not, concern over holding down casualties has become "a constant" in American planning for wars that involve less-than-vital interests, as it has for Western militaries generally.[46] Whether or not this is "good" or "had" from the traditional perspective of military effectiveness is irrelevant.[47]

The search for strategies and capabilities that minimize casualties has not been limited to friendly forces. Not so surprising perhaps were the extraordinary efforts by allied forces in the Persian Gulf War and in Kosovo to avoid civilian damage. The more novel thought is the concern over enemy military casualties. The dramatic case in point was President

Bush's reaction to press reports during Operation Desert Storm that the allies were killing retreating Iraqi soldiers in a "Turkey Shoot" on the "Highway of Death." In a highly un-Clausewitzian decision, the President concluded that the price of a complete victory, i.e., a "slaughter of Iraqis," was too high.[48] It is also revealing that post-strike damage reports from Operation Allied Force never cited estimates of Serbian military casualties.[49] In sum, there has come to be, as one author put, "an unwritten expectation that military operations conducted by democracies, especially under United Nations auspices, will involve as little bloodshed as possible."[50]

Precision and Non-Lethal Weapons

An age-old military question is whether a military capability motivates the intent, or whether intentions spur the creation of capabilities. This question is relevant to the connection between the wish to minimize destruction and having the technological wherewithal to do so. A case in point is precision-guided missiles. Was precision guidance invented to meet a desire to do the job with less damage, or has minimal damage become a requirement because it is technically possible? For the purposes of this essay, the answer does not matter. What matters is the empirical coincidence of the two phenomena.[51] The "effectiveness" of a precision-guided missile is normally calculated with reference to the number of weapons required to achieve a high probability of kill. Highly accurate "smart" weapons require fewer strikes, whereas "dumb" bombs rely on numbers to compensate for individual inaccuracies. It may be speculated that the "true" measure of effectiveness will be the numbers of friendly and enemy lives spared.

A closely related symptom of a conceptual shift in the way that we think about war is the expanding list of so-called "non-lethal" weapons (which may not always be exactly that) that are under development for the arsenals of police and military forces.[52] Most systems, which range from "slickum" anti-traction agents for halting vehicular traffic, to "information warfare," are still embryonic; military usage so far has mostly been limited to special operations i.e., when civilian lives are at risk. An important exception in this regard was the American use of graphite-and carbon-filled "soft bombs" that were to disrupt electrical power in Baghdad and, more recently, over Serhia.[53] It is worth noting also that the U.S. Marines

do not rule out the use of non-lethal weapons as a way to minimize enemy military casualties.[54]

Is it conceivable that non-lethal weapons will be the primary weapons of future wars? As one author, who is probably representative of contemporary opinion, wrote:

> In a large scale military conflict, where the credo might be describes as kill, or be killed, if a non-lethal weapon proposed for use is even 1 percent less effective than a lethal weapon, the non-lethal should not be used. The non-lethal must have exactly the same capabilities before confidence in the use of that weapon could be assured. Policymakers and the public in general will not accept a high number of casualties on 'our' side while the enema has few.[55]

The statement warrants several observations. First, it does not automatically dismiss the possibility that non-lethal weapons may play a key role in major combat operations. Next, the suggestion that this could only occur on the condition that non-lethal force is as effective and has the "same capabilities" as "traditional" lethal force is not self-evident. "Effectiveness" in this case is evidently measured in terms of the numbers of casualties caused by lethal versus non-lethal means: it is proposed that a mere one percent "imbalance" in favor of lethal force is sufficient reason to reject non-lethal force.

There are several problems with a blanket statement of this sort. To begin with, the calculation of success and failure in war is simplified as competition in attrition-a "body count." By contrast and for the sake of argument, would the loss to enemy fire of 100 American soldiers be unacceptable if the enemy suffered none, but had his armored divisions immobilized by non-lethal means? Consider also that "effectiveness" without a consideration of cost is meaningless. We may not admit it, but whenever we reject a more effective weapon because the improvement is marginal relative to its cost, we implicitly put a price tag on the life of a soldier. Again for the sake of argument, what would be the choice if calculations showed that non-lethal means could achieve the same objective as lethal means at one-half the dollar cost, but at the expense of one percent more casualties?

While non-lethal systems as currently understood may not become the dominant capability of future military forces, they will almost certainly assume a more prominent role.[56] How and when non-lethal capabilities are used will depend, in good pail, on the prevailing overall framework for military operations. The question is whether they will be seen as non-destructive alternatives to traditional destructive capabilities and tactics, or whether they be treated as part and parcel of post-Clausewitzian paralyzing capabilities.

The End of Trinitarian War?

Clausewitz himself offered perhaps the best "warning and indicator" of military change. In Book 8, he asks the question (which, he says, he dare not answer) whether the societal transformation that "bonded" the people with their government and army, and gave rise to war "untrammeled by any conventional restraints," might not t-un its course. He wondered whether, "we (shall) again see a gradual separation taking place between government and people." which, he claimed, was the source of the "limited, constricted form of war" of the eighteenth century.[57]

Some authors, notably Van Creveld, have argued that Clausewitz is obsolete because exactly the opposite has occurred.[58] Clausewitz's definition of war, according to Van Creveld hinges on a clear-cut distinction between the people, the state, and the army each of which contributes an essential "tendency." The people represent the "irrational" force of hatred and enmity, which the government seeks to channel through "rational" policy, while the army manages the "non-rational" forces of friction and chance. Together, these constitute the aforementioned "remarkable trinity." Van Creveld says that "trinitarian war" has become a thing of the past because war has progressively become the business of non-state actors in which the distinction between people and army has become meaningless. Hence, he concludes, Clausewitz has become irrelevant.[59]

This essay acknowledges that war is not a state monopoly, and never has been. But it also proposes that the end-of-the-nation state is not quite at hand, which implies that states will continue to be key war-making actors. However, when it comes to the decision to make war, we may be experiencing the kind of transformation in the relationship between the government and the governed that Clausewitz thought could bring a return to wars of moderation. In this transformation, there are signs of alienation

between the state and the people on the importance of war-making decisions.

There is a potentially troubling side to the notion that the American people will not tolerate many casualties when the importance of the interests at stake is not patently obvious. It is that an electorate, which has become used to wars without much American bloodshed and which do not obviously affect national prosperity, will insulate itself from the business of war and allow decision-makers a free hand. Warfare in eighteenth century Europe has been dubbed the "sport of kings." Is it possible that war in the next century will he the "virtual" sport of presidents and prime ministers? One author, at least, has suggested a development along this line. In reflecting on the meaning, of the "new breed of warfare" seen in Operation Desert Storm, this observer raised the specter of a Scientific Warfare State in which the "Military-Technological Revolution" has rendered mass participation in war obsolete. In that case, he warned, the possibility was "distant, but not remote" that a new scientific aristocracy with both a monopoly on the tools of war and a lock on political power would arise.[60]

It is not necessary to share this vision to recognize some disturbing symptoms of a declining popular "involvement" in America's wars. One is the near-disappearance of the term "war" itself -instead. US military forces arc routinely engaged in "crisis operations" and "peace support" missions. In the decade since Operation Desert Storm, the United States and its allies have engaged in "risk-free" war-like actions against Iraq, for example. Missile and air strikes have been conducted at "stand-off" distances, have incurred no friendly casualties, and have not triggered an analogous Iraqi response. The popular response in the United States and elsewhere in the West has essentially been limited to one of "monitoring." The same can be said for popular attentiveness, or its lack, with respect to the succession of American and allied peace support missions in recent years. How many people are concerned that Western forces have been placed in harm's way almost continuously since the end of the Cold War?

It could be argued that "binarian" (i.e., government-army versus the trinitarian people-government-army) war is not a novel phenomenon for democracies, and that democratic governments have a long history of using military force as a discretionary military-diplomatic tool. There is important difference, however, between old-fashioned gunboat diplomacy and modern crisis response. News of the former usually did not reach the public until after the fact, but today, citizens are "virtual" participants.

Does a way of fighting that keeps casualties at low levels translate into greater leeway for decision-makers? One study suggests that this could be the ease. Based on the finding that there was a significant negative correlation between casualties and public support during the Vietnam conflict, one author has suggested that "presidential freedom of action could increase substantially," if the United States fields RMA capabilities which minimize casualties.[61]

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IV. Conclusion

In his book, Waging War, Ian Clark contends that, "the practice of war is grounded in a distinct conception of the nature of war itself." An interesting question raised by this observation is, how does a new conception of the nature of war come into existence? Thomas Kuhn's classic study of the nature of paradigm change in the physical sciences cites the crucial role of the crisis, which he defines as a period of "pronounced professional insecurity," when familiar, accepted scientific theories and methods prove incapable of solving a growing number of "anomalies." and a new, better problem-solving theory has yet to emerge. When it does, a scientific discipline is re-conceptualized, leading to new explanations, new instruments, and new experimental methods.

Today, Western military institutions are experiencing the equivalent of Kuhn's scientific crisis. The societies and economies in which they are embedded are in the midst of a transformation from post-industrialism to a globally networked information age. This transformation cannot but re-shape how and by what means the military will be expected to do their business. The problem is that the prevailing image of war is still in many ways a hold-over from a past era the age of the industrial societies, of cheap labor and cheap conscript soldiers, who fought in mass armies, which, as Clausewitz argued, could only be defeated, i.e., destroyed, by even larger armies.

For the military profession, the mismatch between the familiar destruction-based model of warfare and the reality of military experience today has become the source of a "pronounced professional insecurity." The controversy over the use of "war-fighters" as peacekeeping constables is symptomatic, while closely connected is the debate over the use of military force for less-than-national interests. From the traditional perspective, military intervention on behalf of "humanitarian interests" is highly anomalous. Traditionally, the decision to use armed force in support of the national "will" has been looked upon as a last resort; because people were almost certainly to be killed, national decision makers have traditionally justified prospective losses by invoking the "national interest," The expectation of few casualties on both sides thanks to new precision weapons, new non-lethal capabilities, and restrictive rules of engagements-has made the anomaly "normal."

The debate over what some people clam is the American military's excessive "casualty-aversion" is another symptom that the dominant destruction-based model of war is in crisis. To be sure, critics do not claim that minimizing friendly losses is not a desirable goal. The concern, however, twofold: first, it is feared that the day will come that not even truly important interests will be defended for fear of casualties. Second, that a perception abroad of a U.S. aversion to casualties could actually provoke opponents to risk aggression they would not otherwise.

Wars for less-than-national interest and the elevation of the desire to minimize casualties to the level of an operational objective are anomalous when interpreted within the framework of the dominant destruction-based model of war. These become "normal" and expected outcomes if war is re-conceptualized as a competition in paralysis in which the aim is to deny the opponent the ability to move, sense, communicate or decide short of his physical destruction,

The great American orator and reformer, Wendell Phillips, commented in 1852 that, "(R)evolutions are not made; they come." If this is true for the business of war, the military success in the future will depend on the ability to recognize when momentous changes are at hand, understand its main features, and re-tool intellectually and materially. Finally, it is worth citing Azar Gal's concluding remarks to his study of some three centuries of change in military thought:

> New and significant intellectual constructions usually emerge at times of fundamental change or paradigmatic shifts, when prevailing ways of interpreting and coping with reality no longer seem adequate.

Notes

1.   The main title of this paper is borrowed from General George S. Patton's 1947 Book, War as I Know It.

2   In a paper on the nature of revolutions in affairs, Alex Roland compared two kind of changes: self-conscious, "directed" revolutions and autonomous, undirected ones. The latter, he said, "arise" unintended from the aggregate consequences of multiple, individual, self-referent acts, and they change society at large. No one sets out to achieve these revolutions; they simple arise naturally from the course of events. "Comparing Military Revolutions," paper presented at the Conference on the Revolution in Military Affairs, Monterey, CA, August 1996, p. 3.

3.   The phrase "cultivation of hatred" is borrowed from the title of Peter Gay's book, The Cultivation of Hatreds: The Bourgeois Experience Victoria to Freud, Vol. III New York: W.W. Norton & Co., 1993).

4.   Thomas S. Kuhn referred to the emergence of scientific "anomalies." i.e., new and unexpected phenomena that cannot be explained by accepted theories and methods, as the "crisis" in "normal" science. See his The Structure of Scientific Revolutions (Chicago: University of Chicago Press, 1962).

5.   Annual Report to the President and the United States (Washington, DC Government Printing Office (GPO), 1999, p. 122.

6.   Ibid.

7.   Ibid.

8.   Chairman of the Joint Chiefs of Staff, Joint Vision 2010 (Washington, DC, 1996).

9.   Annual Report to the President of the United States, p. 124.

10.   Martin Van Creveld, On Future War. London, Brassey's, 1991.

11.   As he wrote: "Leaving aside all specific purposes of any particular engagement, the complete or partial destruction of the enemy must be regarded as the sole object of all engagements." See Carl Von Clausewitz, On War, edited and translated by Michael Howard and Peter Paret (Princeton: Princeton University Press, l984) p. 227. All further references to On War pertain to this edition.

12.   Ibid., p. 230.

13.   Ibid., p. 194.

14.   Ibid., pp. 230-35

15.   Cited in Azar Gat, The Origins of Military Thought from the Enlightenment to Clausewitz (Oxford: Clarendon Press, 1989), p. 206. Shimon Naveh has highlighted the debilitating effect of Clausewitz's preference for mass and firepower river mobility on the development of operational level maneuver thinking before World War I. See his In Pursuit of Military Excellence of Operational Theory (London: Frank Cass, 1997), pp. 91-92.

16. Ibid., p. 209, emphasis added.
17. On War pp. 592-93
18. Ibid.
19. Ibid., p.609.
20. Ibid., p. 586.
21. Ibid., p.5l5.
22. Ibid., pp. 515, 593.
23. Hew Strachan, European Armies and the Conduct of War (London: George Allen & Unwin, 1983), p. 15.
24. William H. McNeill, The Pursuit of Power: Technology, Armed Force, and Society since AD 1000 (Chicago: The University of Chicago Press, 1982). p. 223.
25. Ibid. As McNeill wrote, this meant that most of the male population of European countries could be trained for war and actually delivered to the battlefield. The ideal of every man a soldier, characteristic only of barbarian societies in time past, became almost capable of realization… "Accordingly, armies begin to count their soldiers by the million."
26. Van Creveld, op. cit., p 142, emphasis in the original.
27. This number is based on 67 battles fought between I805 and 1815. It does not include casualties incurred in many of the lesser engagements which took place. Date are based on Digby Smith's work in The Creenhill Napoleonic War Data Book (London: Greenhill Books, 1998).
28. Niall Ferguson, The Pity of War: Explaining World War I (New York. Basic Books, 1998), p. 293.
29. The "absolutist doctrine" is the term used by Morris Janowitz to label one of the two schools of thought he reports have dominated US military thinking, the other school being the "pragmatists." The absolutist school, he wrote, was a direct outgrowth of America's punitive and expeditionary tradition. It proposes that, since the political objectives of war are gained by victory, the more complete the victory, the greater the possibility of achieving one's political goals. See his The Professional Soldier: A Political and Social Portrait (New York: The Free Press, 1971), p. 264. The book was first published in 1960.
30. During World War II, F.A. Lindemann (Lord Cherwell), who was Churchill's science advisor and a staunch proponent of area bombing, offered this succinct statement on the use of civilian attrition as the enemy's morale breaker. In a letter, dated April 20, 1942, he wrote how he had calculated that, by bombing Germany's 58 largest towns, one-third of the population would be "turned out of house home." There seems little doubt, he wrote, that this "would break the spirit of the people," for Lindemann explained, "investigation seems to show that having tines house demolished is most damaging to morale. People seem to mind it more than having their friends or even relatives killed." Frederick, Earl of Birkenhead, The Professor and the Prime Minister

(Cambridge: The Riverside Press 19621), p. 262.

31.　On War, p.89.

32.　Janowitz, op., Cit., pp. 265-66.

33.　The phrase "deadly logic" is taken from the title of Philip Green's book. Deadly Logic: The Theory of Nuclear Deterrence (New York: Schocken Books, 1966).

34.　Brian Bond, The Pursuit of Victory (Oxford: Oxford University Press, 1996), p.171.

35.　Ian Clark, Waging War: A Philosophical Introduction (Oxford: Clarendon Press, 1990), p. 7.

36.　For example, at Kumersdorf in 1759, almost one-half of Frederick the Great's army of 50,000 because battle casualties.

37.　On War, p. 260.

38.　Cited in Van Creveld, op., cit., p 208.

39.　Cost calculations are based on the overall cost of military personnel and housing as reported in the FY 1968 and FY 1998 editions of the Defense Department's annual report.

40.　Julien Mathonnière, "At the Crossroads," Jane's Defense Weekly, 15 September 1999, p. 64.

41.　The cost of the B-2 seems to be a frightening affirmation of Augustine's Law No. IX, which predicts that buying one lighter-bomber in 2054 will consume the entire U. S. defense budget. He wrote that the same trend holds for bombers, in which ease the United States will have to choose one or the other. Norman R. Augustine, Augustine's Laws (New York: American Institute for Aeronautics and Astronautics, 1982), pp. 48, 53.

42.　 See. Peter D. Feaver and Christopher Gelpi, "How Many Deaths are Acceptable" A Surprising Answer,'' The Washington Post, November 7, 1999.

43.　Nasal Doctrine Publication 1: Naval Warfare (Washington, DC: Department of the Navy, 1994), p. 35.

44.　This is one of the outstanding conclusions in Trevor N. Dupuy's study of the nature of defeat in battle. Using statistical data and interviews with soldiers who had experienced defeat, de concluded that, "No matter how casualties are measured, battles have been given up as lost when casualties ranged from insignificant to overwhelming" Understanding Defeat: How to Recover from Loss in Battle to Gain Victory in War, 2nd edition (McLean: Nova Publications, 1995), p. 214.

45.　Ibid., p.2l5.

46.　See, Michael R. Cordon and Bernard E. Trainor, The General's War: The Inside Story of the Conflict in The Gulf (Boston: Little, Brown and Co., 1995), p. 470.

47.　Jeffery Record's critical opinion of the decision to intervene in Kosovo evidently holds to the latter. He wrote: "We are witnessing a

demonstration of the strategic price exacted by the elevation of casualty minimization over military effectiveness. NATO is playing at war, not making it." Serbia and Vietnam: A Preliminary Comparison of U. S. to Use Force (Montgomery: AL: Air War College, Center for Strategy and Technology Occasional Paper No, 8, May 1999), p. 1.

48. Ibid., pp. 400-32.

49. It is revealing that the widely publicized photos of the carnage on the "Highway of Death" showed lots of vehicular wreckage, but no dead Iraqi soldiers.

50. Amy Truesdell. "The Ethics of Non-Lethal Weapon." The Occasional, No. 24, published by the Strategic & Combat Studies Institute, 1996, p. 7.

51. It has been reported that during the first three weeks of Operation "Allied Force" 90 percent of the weapons used were "smart" against barely 10 percent in the whole of the 1990-91 Gulf conflict. Nick Cook, "NATO battles against the elements." Jane's Defence Weekly, 21 April 1999, p. 4.

52. A list of 35 non-lethal "system" and their characteristics is in Ibid., pp. 16-18.

53. See, Brian Bender, "U.S. 'Soft Bombs' Prove NATO's Point,' Jane's Defence Weekly," 12 May 1999, p. 4.

54. See, Headquarters U.S. Marine Corps, "A Joint Concept for Non-Lethal Weapons" in U.S. Marine Corps Warfighting Concepts for the 21st Century (Washington, DC, undated). The Marine Corps is the Department of Defense's executive agent for the development of non-lethal technologies. The "Joint Concept" itself is dated January 5, 1998.

55. Truesdell. op. cit., p. 21.

56. See, for example, Dennis B, Herbert, "Non-Lethal Weaponry: From Tactical to Strategic Applications," Joint Force Quarter, Spring 1999, pp. 87-91.

57. On War, p. 593, 590.

58. Van Creveld, op. cit.

59. This is Van Creveld's theme throughout his book, On Future War.

60. Bruce D. Porter, War and the Rise of the State: The Military Foundations of Modern Politics (New York: The Free Press, 1994), pp. 302-03.

61. See, Miroslav Nincic, "Casualties, Military Interventions, and the RMA: Hypotheses from the Lessons of Vietnam," p. 19. Paper presented at the Joint Center for International and Security Studies (JCISS) Conference on the Revolution in Military Affairs, Monterey, CA 1995. Nincic holds out the important caveat that this could be the case if casualties are indeed the leading obstacles to domestic support for intervention. He points out there may be circumstances when even few casualties will not guarantee public support.

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