

Transformations of War and Public Perception in the 20th Century

Implications for 21st Century Warfare

The problem of early 21st century warfare

In the November 23, 2004 edition of the National Post, retired Canadian Major General Lewis MacKenzie wrote that: “Soldiers are not social workers with guns. Both disciplines are important, but both will suffer if combined in the same individuals.”¹ He went on to state that armies do not need to be led by “officers educated in anthropology, psychology or philosophy”,² and added that many modern political leaders muddy military mandates with nation-building tasks and other debates in order to try “to find a safe, no-risk way of stopping the bad guys.”³ MacKenzie was voicing his views on a debate concerning the strategic objectives of warfare as perceived in Western countries in the first decade of the 21st century. Other strategists and generals have argued that soldiers should participate in nation-building activities, and have revived and expanded old concepts of military government and civil-military relations into new branches in the Canadian, U.S. and other militaries. These capabilities are called civil-military cooperation, or CIMIC, units. The new perceived importance of CIMIC grew within the context of 1990s peacekeeping operations in the Balkans, Africa and elsewhere; the post September 11, 2001, “war on terror” and associated operations in Afghanistan and Iraq; and a variety of academic studies and debates on the nature of military organization.

Generally, these academic debates centered around the term “revolution in military affairs”, or RMA, during the 1990s, and around the term “transformation” during the first years of the new century. Some RMA terminology and concepts were borrowed from the 1990s “information revolution” enthusiasts of the business world. Like their counterparts in that area, some RMA and transformation advocates tended to believe that they were discussing concepts that were fundamentally new – a more important revolution than had been seen previously in history. Historical perspective tended to be lost. On the other side were naysayers who argued that there was no revolution, or that the revolution was simply part of a longer evolution in military affairs.⁴ In fact, there have been multiple, overlapping revolutions throughout the 20th century which have come together to form the parameters of the early 21st century military-strategic situation.

Another aspect of the RMA debate reflected disagreement between those who believed that the RMA was merely an extension of traditional Western military ideas, narrowly focused on winning conventional wars between large, organized military forces

¹ Lewis MacKenzie, “Peacemaking is not Social Work”. National Post, Tuesday, November 23, 2004, p. A18.

² Ibid.

³ Ibid.

⁴ See, for instance, Scott Robertson, “Experimentation and Innovation in the Canadian Forces”, Canadian Military Journal, Vol. 1, No. 2. Kingston: Royal Military College of Canada, 2000. Printed by Canadian Forces Training Materiel Production Centre; p. 66. Dr. Robertson summed up the state of the discussion in summer 2000, quoting in part from another paper by Jacob W. Kipp: “So far, however, the discussion of the RMA has not reached definitive conclusions. As one commentator noted recently, ‘the exchanges [over the RMA] have become increasingly intense. The two positions, pitting advocates against doubting Thomas’, contrast a revolutionary interpretation as opposed to an evolutionary one.’ Undoubtedly, this debate will continue in the years to come.”

(High Intensity Conflict, or HIC), and those who argued that it enabled new approaches to warfare which facilitated winning campaigns against guerrillas, insurgents or terrorists.⁵ These types of enemies are frequently referred to as asymmetric threats by conventional armies, since their organization does not mirror that of their opponent, and conflict between guerrilla-like groups or between a conventional army and an asymmetric enemy is often referred to as Low Intensity Conflict, or LIC. This aspect became widely debated since some well-known strategic commentators, such as Martin Van Creveld, argued that Western armies, police forces and other national security organizations had been unsuccessful at combating asymmetric warfare for decades.⁶

Some advocates of the LIC approach emphasized separating insurgents from the population that would support them – in other words, a “hearts and minds” campaign has to be won.⁷ Additionally troops who are in close contact with a population can gather information about the enemy much more easily than can an army that is seen as an alien entity.⁸ It came to be understood that in order to win over a local population, it is necessary to offer it a better alternative than insurgents or extremists can, thus giving rise to the importance of the concept of nation-building. Finally, a vague awareness of the importance of public perception on the home front – what military members and strategists have, since the 1990s, often called the “CNN effect” seemed to make it politically necessary to be seen to be helping local populations in conflict zones. Politicians, wishing to be seen by voters as doing the morally right thing, focused on public perception from the 1960s on, and so emphasized the idea of peacekeeping and its associated “feel-good” implications. Thus, as MacKenzie argues, politicians do at times intervene with attempts to find “safe, no-risk” ways of stopping the “bad guys”. However, the CIMIC and nation-building concepts have a basis in military-strategic thought, rather than simply being something imposed by politicians.

The history of the RMA debate has been examined in detail elsewhere.⁹ Here it is sufficient to mention conclusions that appeared after years of discussion. In 2002 military historian Bevin Alexander accurately clarified two of the 20th century historical developments which lay behind the 1990s debates.¹⁰ One of these was the concern described above: that modern conventional armies can be defeated by guerrilla methods. The second was the development that helped start the RMA discussion: the great increase in accuracy of conventional weapons (non-NBC - nuclear, biological, chemical) that was

⁵ See, for instance, Caleb Carr, The Lessons of Terror. New York; Toronto: Random House, 2003, and Arquilla and Ronfeldt, John Arquilla; David Ronfeldt, Networks and Netwars. Santa Monica: RAND, 2001.

⁶ See Martin Van Creveld, Technology and War from 2000 B.C. to the Present, New York: The Free Press, 1989, and Martin Van Creveld, The Transformation of War. New York: The Free Press, 1991.

⁷ Consider the concept of “3 block war”, first coined in the 1990s by General Charles Krulak of the U.S. Marine Corps, to describe the possibility that in modern warfare soldiers may need to conduct warfighting in one city block, peacekeeping in the one next to it, and humanitarian operations in a third. 3 block war is inherent in the CIMIC concept.

⁸ See, for example, Mark Burgess, “Navigating the Three-Block War and the Urban Triad”. Center for Defense Information, April 4, 2003.

⁹ See Robert Addinall, “Perspectives on the RMA and the Effects on Canada of Changing Concepts of Military Organization and Practice”, War and Security: Is History Repeating Itself? Patterns and Challenges in Conflict. Calgary: Conference proceedings of the 6th Annual Student Conference of The Society for Military and Strategic Studies, 2004.

¹⁰ Bevin Alexander, How Wars are Won. New York: Three Rivers Press, 2002, p. 11.

brought about by the great advances in computing, communications and information technologies in the late 20th century.

Basing his description on the 2000 Rand Corporation study Swarming and the Future of Conflict by John Arquilla and David Ronfeldt,¹¹ both important contributors to RMA discussions throughout the 1990s, Alexander lays out a fairly common view of the new type of warfare envisioned at the beginning of the 21st century.¹² It is based on the use of small teams (sometimes described as “pods”) of highly professional soldiers and ground-attack aircraft, such as helicopters or AC-130 gunships, which “swarm” around enemy targets from all sides rather than deploying along “front lines” as in the 20th century World Wars. These forces use modern information technology and global positioning systems to know the location of both opposing and friendly forces, and to call in heavy fire from long-range artillery or rocket launchers in secure base areas, or heavy aircraft such as B-52 bombers which circle high enough to be out of range of shoulder-held rocket launchers carried by opposing fighters. “Smart” variants of such weapons, such as the joint direct attack munition, or JDAM, can be guided to a target with great precision, theoretically avoiding damage to nearby troops on one’s own side, or to nearby civilians. Unmanned aerial vehicles (UAVs, orUCAVs – unmanned combat aerial vehicles) can be used for observation, to attack opponents directly, and to provide wireless communications bandwidth for the rest of the force. Satellites orbiting the planet overhead will also provide reconnaissance and communications bandwidth. Large concentrations of troops will simply be easy targets for such “stand-off” weapons. The small teams of troops on the ground would be equipped to be relatively self-sufficient, and could quickly concentrate into larger groups and then re-disperse as needed.

Coalition special operations forces (SOF) successfully operated as “swarms” and used these techniques to call in heavy fire in operations against the Taliban in Afghanistan in the fall of 2001. Precision guided munitions have been used by Western powers with increasing frequency in conflicts since the early 1990s, sometimes to great effect, sometimes with more mediocre results. Based on current experience, this type of warfare is highly successful against enemies who present convenient targets when no significant electronic glitches or adverse atmospheric conditions interfere with communications and targeting – and many of the early failings of these systems are slowly being resolved. As various analysts, including Alexander, also point out, “swarming” combat is not entirely new but has rather been used in various ways throughout history. The particular concept of swarming put forward by Arquilla and Ronfeldt has been developing in Western military thought at least since the 1940s¹³ – it is one of a series of overlapping military transformations of the 20th century, demonstrating interconnecting strands of thought.

As discussed above, CIMIC capabilities appear potentially critical to such highly dispersed forces, both because of the intelligence-gathering potential of such capabilities and because such forces may at times be unable to avoid heavily populated areas. However, the CIMIC problem is more complex than being just a military-strategic one; it

¹¹ See John Arquilla; David Ronfeldt, Swarming and the Future of Conflict. Santa Monica: RAND.

¹² See *ibid.*, pp. 14-15.

¹³ See, for instance, accounts of SOF operations from World War II on, such as: Roy Farran, Winged Dagger. London: Cassell, 2003 (originally published by Collins, 1948. Non-SOF infantry also successfully developed similar techniques when needed; see, for example, Frank Kitson, Bunch of Five. Plymouth: Latimer Trend & Company Ltd., 1977.

is also the result of changes in the nature of media and public perception in Western countries. In this sense, there are two quite distinct areas in which transformations of warfare can take place, and a transformation in one does not always happen together with that in the other.

The Nature of War versus The Conduct of War

The question of the nature of war has concerned philosophers, historians, and military strategists for millennia. Some of these earlier works, such as The Art of War by the ancient Chinese philosopher Sun Tzu, The Prince by the early modern Florentine philosopher Niccolo Machiavelli, and On War by the 19th century Prussian military thinker Carl von Clausewitz, are quite famous. Despite the variety of interpretations of the nature of war, the argument recurs that while technological development changes the conduct of war over historical time, human nature and therefore the nature of war does not change.¹⁴ This is true in some respects, but not in others. Certain types of cruelty, tyranny, aggression, or greed can be seen throughout history as causes of war. While personal reasons for fighting will vary from individual to individual, many emotions related to war are timeless. Nonetheless, the motivations for entire societies to enter into destructive conflict vary from period to period. In terms of such mass-psychological motivation, Western civilization has experienced three general periods spanning the mid-nineteenth to early twenty-first centuries.

¹⁴ Any variety of examples of this argument can be cited, but one that is well presented in the context of military revolutions or transformations can be found in a paper by Major Eric Dion of the Canadian Forces (also a graduate student in the RMC defence management and policy program): “Information age technologies have caused a revolution in military affairs (RMA); The claim is almost trite. One needs only to read the newspapers, listen to the radio, watch television, or travel to realize, however, that there has been no corresponding revolution in the human heart or in human affairs. Military and civilian strategists alike must attend to this paradox, for from it springs an important discussion: the difference between the conduct of war and the nature of war. The conduct and nature of war are different: the former is ever changing while the latter is not.” Eric Dion, “The e-Forces! The Evolution of Battle-Groupings in the Face of 21st Century Challenges”, Security and Defence: National and International Issues, 7th Annual Graduate Student Symposium conference proceedings. Ottawa: Conference of Defence Associations Institute, 2004, p. 296. Another example can be found in the 1994 essay “How Much Can Technology Change Warfare?” by Sir Michael Howard, who writes: “The essence of war... remains the same no matter how one defines that essence. Carl von Clausewitz’s definition of war as ‘an act of force to compel our enemy to do our will’ is as valid today as it was two hundred years ago. Violence is what turns conflict into war. Trade wars and tariff wars may involve conflicting interests, but unless there is an element of organized, sanctioned and purposeful violence, these are not war. I shall therefore work pragmatically on the assumption that, whatever changes brought about by social and technological transformation, the essence of ‘war’ remains.” However, Howard goes on to state: “Since Operation DESERT STORM, there has been a focus on the technological dimension of warfare. The social dimension however, is no less important – possibly even more. In fact, the two cannot be separated. Social structures and social needs produce technological innovation, while that innovation in turn affects, and sometimes transforms, the social system out of which it has developed.” His second point, as it relates to warfare, is more relevant to the argument presented in this work.

The Nature of War: Rational War, Total War, Perception War

The first of these three periods was that of rational war, representing 19th century enlightenment ideals and described perhaps best by von Clausewitz. War was seen as an extension of political policy by other means; the amount of violence used was gauged towards achieving a rational end. During this period nationalism was a growing force in society, and the population of one country often made stereotypes from and mocked that of another, but dehumanization of one's enemy and deep-seated nationalistic hatred of the opponent were secondary to the rational ends of warfare.¹⁵

The second period was that of total war, which was contemporaneous with what many historians and political scientists define as the "short" twentieth century; the years 1914 to 1991. In the first half of this period, up to 1945, the phenomena of nationalism which had been developing in Western countries (and those most influenced by them, such as Japan) during the 19th century (with its roots in earlier centuries) caused societies to accept near total mobilization of their populations and economies towards military ends, and use of technological innovations to attack and destroy the enemy. This approach to war was accompanied by dehumanization of the peoples of enemy countries (a process started by European nationalism, which in sociological or anthropological terms caused large proportions of populaces to "other" any ethnic or linguistic group that did not "belong" to "their" nation).¹⁶

In the second half of the total war period, after 1945, the major power blocs continued to amass enough destructive power to decimate each other's populations, as well as to destroy one another's modern technological and industrial infrastructures. However, this destructive potential – in the form of atomic, and then nuclear, weapons – was so great that no side has proved willing to use it. As populations became more educated, and technologies of mass media became more advanced, the grim side of war was brought home to the public at large. Continuing technological advancements also made it far easier for people to travel, and so populations worldwide became more mixed and cosmopolitan than they had probably ever been.¹⁷ The enforced stalemate of nuclear

¹⁵ In France, Prussia, and to a lesser extent amongst portions of the populations of other countries such as Britain, Russia, and Spain, the French Revolutionary and Napoleonic wars became a total war in which the ends justified the means, and a rational view of policy was lost. The essential factor driving this phenomenon, as in 20th century total war, was nationalism. However, popular nationalism was contained by the European states system set up by the victorious powers at the end of the Napoleonic wars, in part because statesmen feared it and tried to build an edifice to contain it, and in part because the majority of the population in most countries was at that time not yet fully "nationalized". For a more complete understanding of these concepts see Ernest Gellner, Nations and Nationalism. Ithaca: Cornell University Press, 1983, and Philip Bobbit, The Shield of Achilles: War, Peace and the Course of History. New York: Anchor Books, 2003.

¹⁶ Most studies of Total War agree that arguments about dehumanization and total mobilization are generalizations; behaviour varied from country to country and, of course, many people had individual views which did not go along with the mainstream ones. However, even in Britain and the U.S., which often viewed themselves as fighting "just" wars with values common to all humanity, popular culture including movies, cartoons and other media frequently presented Germans and Japanese in a dehumanizing way. Canada and the U.S. also interned their ethnic Japanese populations for the duration of the war under suspicion that they would act as a fifth column based on ethnic, rather than political or other affiliations.

¹⁷ It has been argued that large sections of classical and medieval states, such as the Roman Empire, were effectively multicultural and multiethnic; some modern states, such as the Austro-Hungarian Empire, were also multiethnic.

“mutually assured destruction”, combined with these other changes in society, brought about the collapse of the total war mindset together with the collapse of one of the main powers and total war antagonists of the 20th century, the Soviet Union, in 1991.¹⁸

After 1991 an approach which emphasized common aspects of humanity, and which was more sensitive to loss of life and the “legality” of war, became ascendant. Public opinion in the West less frequently “othered” the populations of enemy countries, who instead came frequently to be seen in popular opinion and a significant amount of media coverage, as innocent victims of both the tyranny of their own regimes and of the violence wrought by western military forces when those regimes were attacked. Changes also took place because for the Western democracies the total war period also saw the growth of greater respect for the concept of “Just War”. As military historian John Keegan has pointed out, abuses of prisoners and civilians by the Axis powers in the Second World War, together with open military aggression, led the victor nations to make a firm commitment to “Just War” principles through such actions as the Nuremberg Trials.¹⁹ Mass violations of human rights by the major Communist states, especially the U.S.S.R. under Stalin and Communist China under Mao Tse Tung, reinforced Western beliefs during the early Cold War that a just conflict was being fought against inhuman opponents. In the 1960s and later, the suspicion that the West might be violating its own “Just War” beliefs in places like Vietnam led to extensive self-condemnation. “Just War” concepts have become engrained enough in Western thought for the International Criminal Court to be established at the Hague to punish war crimes, and for countries such as Britain to incorporate war crimes law into their legal systems.²⁰ The United States, one of the most important military players amongst the Western democracies during the period of Total War, is now frequently denounced for failing to subscribe to international war crimes law.²¹

Other factors also contributed to the weakening of the nation state. Within the West, intellectual elites which contained many proponents of nationalism in the 19th century, such as in university faculties, changed by the late 20th century to include many who held to post-modernist, deconstructionist philosophies which rejected traditional types of nationalism. Such existential questioning led many Westerners to further ponder whether their countries’ actions in the past had been “just”, and whether there was justification for intervention in the affairs of other parts of the world in the present. In addition, the same advances in communications technology which caused major changes in the media, and major changes in military doctrine, also allowed geographically disparate groups without a state, or with a distant state as a base, to organize themselves more easily. Therefore, the present period is one in which non-state based organizations, from international aid

¹⁸ In a somewhat Hegelian dialectic fashion, the origins of each of these periods can be seen in the previous period; nationalism was a driving force for total war, but was developing and having an influence in the period of the European states system and rational war. The humanist outlooks of the post-1991 period have to some extent always been present, but their confluence with mass media and anti-militaristic reaction to total war were present and highly significant through the second half of the “short” 20th century, especially in the Vietnam conflict period from the mid 1960s to the mid 1970s.

¹⁹ John Keegan, “Good Civil Law Makes for Bad Military Law”. National Post, Saturday, June 11, 2005, p. A19.

²⁰ Ibid.

²¹ Ibid.

agencies to organized criminal groups to terrorist extremists, have a greater role than in either of the preceding periods, both of which were dominated by strong nation-states.

The terrorist attacks on the United States of September 11, 2001, caused general hardening of attitudes in that country and a number of its allies, but not full reversion to the approaches of nationalism and total war. Hardening of attitudes appears to some extent to have been temporary, with allies pulling out of the U.S.-led coalition in Iraq by 2005 amidst concerns that U.S. actions may have been unjustified. Moreover, the U.S. government and military came under severe criticism both inside and outside of the country for alleged abuse of prisoners at the Abu Ghraib jail in Iraq and in “camp X-ray”²² at Guantanamo Bay, Cuba. These events serve to illustrate that Western public perception of the nature of war in the 21st century is still evolving, but that it will differ from views that dominated in the 19th and 20th centuries.

This evolution will continue because the nature of media and coverage continues to change. Rational War and Total War were certainly affected by the media of their time. During the Rational War period literacy was growing, but still limited, and many of the most important and influential ideas in society were passed on through philosophic and scientific books and treatises. Literate elites, who made most decisions, prided themselves on knowing the thoughts of great philosophers as well as their own, budding nationalist theorists. Clausewitz’s work, couched in philosophic terms and published as a book, is an example of this. His ideas were spread in a similar way to those of Nietzsche, Hegel, Rousseau, and other philosophers. Mass print media, although technologically enabled by the development of the printing press in earlier centuries, only became a force in its own right as literacy became widespread during the 19th century. By the early 20th century most popular newspapers reflected and spread one or the other of the two popular ideologies of the time: nationalism or Marxism. Political posters and other forms of political and nationalistic art also appeared on display more frequently as the 19th century progressed. During the first decades of the Total War period, film in the form of both newsreels and movies, photography, and radio, was used to spread ideas and mobilize populations. As media became more ubiquitous – able to reach more people – its importance increased. The Nazis in particular took advantage of these developments, using film footage and radio to spread the effect of the Nuremberg rallies and other events throughout Germany.²³

As technology continued to develop in the second half of the 20th century, media became even more ubiquitous, and difficult to control. A number of states did succeed in largely controlling the new media of television within their territories, but many of those same countries (such as the Warsaw Bloc states) suffered both technological and cultural stagnation as a result in part of their attempts to strictly manage public opinion in their

²² The detainees were moved from “X-Ray” to camp Delta, also in Guantanamo Bay, in April 2002. Erik Saar; Viveca Novak, Inside the Wire: A Military Intelligence Soldier’s Eyewitness Account of Life at Guantanamo. New York: The Penguin Press, 2005, p. 42. Saar writes: “X-ray was where the first detainees had been dumped from January until April of 2002, when Delta opened. It was a jumble of razor wire, with cells open to the elements and buckets in place of toilets. It looked more like an animal shelter in a bad neighborhood than a place to keep people. Images of the detainees huddled there in their orange scrub suits had been seared into the public mind by the early TV footage, and I knew that many people, especially abroad, still thought the detainees were being held at X-ray.”

²³ The widely attested importance of the propaganda films by Nazi-employed German filmmaker Leni Riefenstahl are an example of this.

societies. By continuing a firm commitment to the ideas of freedom of speech and freedom of the press, Western countries saw journalists and news corporations experiment with various applications of new communications technologies, leading to ever more ubiquitous media. Nation-wide, and later transnational cable and satellite news corporations appeared, and hundreds of channels became available on television. Colour print replaced black-and-white in newsmagazines and, by the 1990s, in newspapers. Finally, the Internet was allowed to develop freely, with news stations, newspapers, political websites, enthusiast websites, business sites, and so on all appearing alongside each other – the most ubiquitous type of media yet. The phenomenon of bloggers (whose comments and insights are now reprinted in many newspapers, and some of whom are government or business workers who are able to leak information much more easily to the public at large via the internet than through a newsprint source) shows how the Internet goes beyond “mass media” to become “interactive media”.²⁴

As a result of the development from early 20th century mass media to early 21st century interactive media, the media can no longer be viewed just as a tool in the strategic environment (to put it cynically, a mouthpiece through which to deliver propaganda). The ubiquity of interactive media makes it part of the strategic environment, and it can be seen that those countries which continued to succeed in controlling traditional mass media, such as China, are having greater difficulty in controlling the Internet (and probably will have more difficulty controlling what comes after it).²⁵ This is the technological and cultural transformation that makes the 21st century an era of true Perception War, even though media, propaganda and ideology were important in past conflicts.²⁶

²⁴ The following article presents a series of effective arguments for the concept of interactive media, and the speed with which it continues to evolve: Kevin Kelly, “We Are the Web”. *Wired*, August 2005: pp. 93-99, 132-133. As Kelly points out, a key factor driving the success of the Internet today was missed in mid-1990s predictions, including his own: that much of the online content would be manufactured by users, not corporations. The use here of the term interactive media differs from the common commercial use of the term in the 1990s and 2000s. In commercial use, the term can refer to many types of software programs delivered for computing or entertainment systems via different types of mass-produced saleable media, such as CD-ROMs.

²⁵ See, for example: Jonathan Watts, “Microsoft helps China to censor Bloggers”. *The Guardian*, Manchester, England, June 15, 2005. The article demonstrates how the Chinese government finds itself needing to enlist multinational corporations to attempt to enforce Internet censorship. It also shows how lists of forbidden words and phrases are almost arbitrary, and although the article does not spell it out, it is obvious that Internet users will find many ways to circumvent these restrictions – using intimations, constantly changing code language, and so on. Finally, although the multinationals are willing to work with China, the point that their technologies are ultimately antithetical to strict control over society is apparent: “Even with the filters, we’re helping millions of people communicate, share stories, share photographs and build relationships. For us, that is the key point here,” Adam Sohn, a global sales and marketing director at MSN, told the Associated Press news agency.

²⁶ Although once-advanced technologies, including militarily developed technologies, have historically tended to follow the pattern of a trickle-down effect, by which they become cheaper and more widely available, interactive media magnifies this phenomenon. For example, following the devastation of New Orleans and surrounding areas by hurricane Katrina in late August, 2005, on Monday September 5 Google Maps had an advertisement on its website stating “Update: See satellite imagery of New Orleans from Wednesday, August 31st at 10 am”. The sort of imagery being presented, within days of events taking place, twenty years earlier would have been as good as, or better than, high military grade imagery, and likely a classified resource.

The Conduct of War: Industrial, Mechanized, Nuclear and Information Armies

During these three periods of different motivation for war in the 19th to 21st centuries, there have been four periods of technologically-driven change in the conduct of war. Each of these has seen linked tactical and technological changes. The first of these was the mass industrialization of war in the late nineteenth and early twentieth centuries, culminating in the First World War. It was characterized by leveraging improved communications technology – railway, telegraph and radio – to organize and coordinate massive armies, and by using industrial-age factories to mass-produce the weapons and ammunition required by these forces. Practical, somewhat camouflaged uniforms and steel helmets replaced the decorative equipment of the preceding few centuries. Mass long-range artillery, machineguns, and magazine-loading rifles allowed great quantities of fire to be brought to bear on the battlefield. Sandbags, barbed wire, mines, steel-reinforced concrete and other systems allowed intricate defensive networks to be constructed. These systems forced the older tactics of close-order battle in line or column to be abandoned and, by 1918, brought about the development of what have been called “storm trooper” tactics.

The second period saw mass mechanization of warfare, led by the thinking of theorists who had experienced industrial-age warfare and were attempting to avoid the mass attrition battles of the First World War. There were two main sub-groups amongst these theorists; the armoured warfare theorists, who combined “storm trooper tactics” developed towards the end of the First World War with the potential for speed and manoeuvrability offered by motorized ground vehicles such as tanks, armoured cars, and heavy trucks.²⁷ Their theories, reinterpreted in the 1980s,²⁸ would come to be categorized under the heading “manoeuvre warfare”. The second group were the air power theorists.²⁹ Similarly to the armoured warfare theorists, they believed that a motorized vehicle – the airplane – had the speed, manoeuvrability and firepower to avoid direct attrition confrontation with the enemy and instead directly attack the enemy’s command, control and communications systems, as well as the enemy’s civilian population and infrastructure (which, obviously, provides the economic and political backing for the enemy’s forces in the field), thus forcing the enemy to surrender after a relatively short and limited conflict. These approaches to battle were tested in the Second World War, but ultimately resulted in a return to attrition mainly because all combatants had economies industrially strong enough to field so many vehicles that the motorized formations that were supposed to outmanoeuvre each other wound up fighting massive tank and air battles instead.³⁰

The third period was the nuclear firepower revolution. Its starting point was the American atomic bomb attacks on Nagasaki and Hiroshima in 1945, and it developed during the 1950s and 1960s, during which time it dominated conventional military-

²⁷ These include theorists such as Basil Liddell Hart, J.F.C. Fuller, Mikhail Tukhachevsky, and Heinz Guderian.

²⁸ Reinterpreted primarily in the works of Richard Simpkin, as well as other “manoeuvre warfare” theorists.

²⁹ These include Giulio Douhet, Hugh Trenchard, and William Mitchell.

³⁰ It has also repeatedly been argued that many military and political leaders in the Second World War failed to grasp the possibilities of manoeuvre warfare properly and so committed their forces to attritionist battles that could have been avoided.

strategic thought. It saw the nuclear weapon as a force multiplier, which could be used to decimate large mechanized formations of the type used in the Second World War, as well as to directly attack an enemy's industrial infrastructure and population in the style of the air power theorists. During the 1960s and 1970s general realization set in that the major powers had equipped themselves with so many nuclear weapons, and that the effects of these weapons were potentially so destructive, that using them would lead to "mutually assured destruction" of the combatants.³¹

The theoretical corner into which the nuclear firepower revolution backed itself³² generated a partial renaissance of the 1920s-30s approaches, which had its height in the "manoeuvre warfare" theories of the 1980s. On both sides the belief was that if one could win a land battle in central Europe (and possibly other theatres) with superior conventional force, the other side would choose to negotiate when faced with a fait accompli rather than escalate to nuclear warfare. The manoeuvre warfare of the 1980s differed from 1920s-30s armoured warfare in an even greater reliance on speed and accuracy brought about by continuing technological improvements. In the West, the thinkers behind manoeuvre warfare generally had experienced the Second World War firsthand as young soldiers and were frustrated both with what they viewed as the attritionist approaches of many military leaders during that war, and with the return to attrition approaches in the 1960s and 1970s by NATO armies.³³

³¹ Perhaps not literally complete mutually assured destruction, given that some of the residents of Nagasaki and Hiroshima survived the attacks, but certainly extraordinarily high casualty rates and the destruction of modern infrastructure to the point where the survivors would be in most respects thrown back onto very primitive technologies to sustain themselves.

³² The effects of nuclear firepower on the conduct and nature of warfare in the future are still not fully understood, and a nuclear weapons "renaissance" may take place at some point. For example, a new U.S. policy of using nuclear weapons to preempt the use of weapons of mass destruction (WMDs) by an enemy was suggested in the document "Joint Publication 3-12: Doctrine for Joint Nuclear Operations", released on March 15, 2005. This policy was reposted on the website Globalsecurity at the URL:

www.globalsecurity.org/wmd/library/policy/dod/jp3_12fc2.pdf, with a summary at the URL: http://www.globalsecurity.org/wmd/library/policy/dod/jp3_12fc2_15mar2005.htm. See also the Washington Post article by Walter Pincus "Pentagon Revises Nuclear Strike Plan; Strategy Includes Preemptive Use Against Banned Weapons", Sunday, September 11, 2005, p. A01 - also reposted online at the URL: http://www.washingtonpost.com/wp-dyn/content/article/2005/09/10/AR2005091001053_pf.html

³³ As an example of this, consider the following comments by British Field Marshall Sir John Hackett, commander of NATO's Northern Army Group in 1966-1968, published in a foreword to Simpkin's 1984 book *Red Armour: An Examination of the Soviet Mobile Force Concept*: "In the late fifties I was commanding 7th Armoured Division and much concerned just then to devise and practice delaying tactics on the North German Plain against a more powerful enemy. To set up a positional battle with such a marked inferiority seemed to me to be lunacy. To fight out any battle to a conclusion was clearly most dangerous. What we in 7th Armoured went in for instead was a narrow, sharp, deep thrust, at best speed, with maximum deception and surprise, to get in as far as we could towards a possible choke point and so to threaten this as to cause a major deploying by the enemy out of column. You would not stay to fight it out. You would disengage as soon as you had caused the enemy to embark on a major redeployment, to go off and do the same thing again somewhere else. Your first attack would be made at first light; you would hope to disengage the following night and you might even hope to repeat the manoeuvre, against another objective, at first light on the next day but one. This may sound hare-brained cavalry stuff. For high grade professionals, of good morale, fighting on ground they knew backwards, it seemed the most effective way of delaying a massive enemy. We at our level were very much in favour of it. At more elevated levels of command, however, positional operations seemed to be more popular. I handed over command of this division just as the British War Office in its wisdom decreed that my beloved 7th Armoured should become an infantry division, with appropriate implications. On a visit to its headquarters a little later I was shown

The fourth military transformation which took place in the 20th century was that covered in the RMA and Transformation debates; a further extension of the importance of information in warfare combined with the attempt to deal with low intensity conflict. As has been argued elsewhere, information warfare has been part of conflict since the beginning of history.³⁴ However, in its modern form it was pioneered in the Second World War as an extension of manoeuvre warfare used to directly attack enemy command and communications systems and divert enemy troops from the front. It was also used to establish links between regular allied armies and local insurgents. During the 1950s and later, and most successfully in Malaya, it was reapplied to fight insurgencies and guerrilla warfare. Both insurgency and SOF operations circumvented the problems large mechanized formations have in operating in broken terrain such as forests, jungles, or urban areas. They also circumvent the problems large, conventional forces frequently have in interacting with local populations and gaining trust and cooperation. In this way, the information warfare transformation was slowly but successfully developing out of manoeuvre warfare while the nuclear firepower revolution went – for the time being at least – to a less likely option.

Transformation of Conflict at the Beginning of the 21st Century

The armoured warfare and airpower theorists of the 1920s-30s, the pioneers of the modern SOF and intelligence-gathering organizations in the 1940s-50s, the advocates of manoeuvre warfare theory as it developed up to the 1980s, RMA and Transformation advocates, and many 20th century insurgency leaders, all shared the same basic goal: to outmanoeuvre the enemy by avoiding his strength and striking him in the rear. In their approaches the enemy rear could be physical (as in tangible control and communications systems), an aspect of timing (as in thinking and faster reaction), or psychological (as in attacking the morale of enemy troops or civilian populations, or both). Many theories included aspects of all of these concepts – but the strategic purpose was always the same, and always in reaction against the concept of frontal attack and attrition which dominated a great deal of conventional military thinking from the 19th through to the late 20th century. After 2000 the importance of the common theme of strategic effect was also recognized, as the U.S. and other Western armies began using the buzzword “effects based operations”, or EBO.

By contrast with other 20th century transformational theories, the nuclear firepower revolution differed in that it proposed attrition on an unprecedented scale. Although nuclear missiles were intended to avoid the strength of enemy defences, they were not designed to strike at weak points and thus bring a fast and clean conclusion to battle – instead, they were simply intended to cause so much destruction that the enemy would be physically destroyed. This was not simply psychological devastation of the enemy home

the revised operations map. It was now covered in duck eggs.” Richard Simpkin, Red Armour: An Examination of the Soviet Mobile Force Concept. Oxford: Brassey’s Defence Publishers, 1984, pp. xvi-xvii.

³⁴ See Robert Addinall, “Information in Warfare from Sun Tzu to the ‘War on Terror’”. Security and Defence: National and International Issues, 7th Annual Graduate Student Symposium Conference Report. Ottawa: Conference of Defence Associations Institute, 2004, pp. 457-477.

front as some of the original airpower theorists had advocated – it was mass physical annihilation.

In the 20th century, whenever manoeuvre concepts were combined with new technological systems and new information systems, the advocates of the latest “revolution” were generally proven correct in the short term. However, whenever two sides deployed enough of the same types of systems against each other, manoeuvre turned back into attrition. Just as opposing forces of tanks and aircraft came to fight attrition battles in the Second World War, if the West were to fight a “near-peer competitor” in the 21st century, satellites could come to fight anti-satellite weapons while UAVs fight other UAVs. Although battles would begin with “pods” of troops fighting in extremely low density battlefields, gaps in both sides’ high-tech systems would emerge as a result of attrition of satellites, UAVs, and other systems, and also as a result of destruction of computer systems by hacking and computer viruses, and conceivably by electronic warfare (EW) systems such as electromagnetic pulse weapons. Gaps in information systems coverage would also emerge for such simple reasons as bad weather. Cloud cover and electrical storms will most likely remain capable of blinding UAVs and satellites for the indefinite future, meaning that at such times the only way to be certain of the position of enemy forces will be through reports from the “pods” on the ground. Even if a PGM can still receive GPS data in bad weather and so guide itself to a precise coordinate, this capability will not do much good if the location of a moving target is not precisely known. The troops on the ground would still be able to guide some PGMs onto targets, but the level of supporting fire they would receive from these weapons would be reduced. In addition, even amongst highly professional soldiers, strain, exhaustion, and confusion will continue to cause human error, another factor which will prevent the collection and timely analysis of information from ever being entirely complete. As one experienced American officer and transformation theorist has commented: “Perfect information about the enemy does not exist and will not exist in the foreseeable future, if ever.”³⁵ Information dominance (the phrase used in the early 21st century to sum up the perfect functioning of the constellation of high-tech systems and the people using them as described above) is critical for the survival of highly dispersed, highly mobile units, and when it is lost, even temporarily, some of these soldiers would be unexpectedly pinned down and wiped out by the enemy.

As many of the highly professional “swarming”-tactics trained troops (who by their nature would be few in number) would be lost in initial operations, larger, more hastily recruited and therefore less mobile and agile (due to lack of training) forces would be deployed – which would be able to operate wherever gaps in the coverage of the high-tech systems had emerged. A war between “near-peer” competitors might therefore be less different from past conflicts than might otherwise be expected. This disproves none of the RMA or Transformation concepts as applied to high intensity conflict; rather, it simply illustrates based both on history, and on the likely limitations of information technology, that such concepts may not always have the desired strategic outcomes. Nonetheless, at least in the initial phases of a conflict between “near-peer” competitors, mid-twentieth century weapons like the main battle tank would be outdated – too frequently becoming easy targets.

³⁵ Douglas A. MacGregor, Transformation Under Fire. Westport, Connecticut: Praeger, 2003, p. 21.

Ironically, a weapon like a main battle tank that was originally developed for high intensity conflict may in the 21st century have more utility in low intensity conflict. For instance, U.S. forces in Iraq in 2003 and 2004 claimed that Abrams tanks turned out to be very useful.³⁶ In situations where guerrillas are intermixed with civilians in urban combat, stand off weapons often cannot be used because despite their great accuracy, one does not know exactly where the enemy is. In these situations large vehicles provide direct fire support for infantry, and can be armoured heavily enough to normally survive attacks (survival in this sense means that the crew is protected and the vehicle is repairable, even when damaged) with the relatively unsophisticated weapons being used by insurgents (normally rocket propelled grenades and 50-caliber machine guns). Again, in situations where it is nearly impossible to possess information dominance (and insurgency is one, barring the unlikely scenario that it becomes possible to continuously track not only the movement but also the intentions of every person in a city or an area of countryside), older and supposedly redundant techniques and equipment may need to be used.

Studying the early 21st century military transformation in the context of the military revolutions of the preceding century illustrates that current forward-looking concepts will encounter not identical, but analogous problems to those in the past. Thus, there is much to be learned. These are the lessons that need to be considered concerning conduct of war.

However, changes to the public perception of the nature of warfare create new demands on Western military organizations which may be difficult to meet. It may not always be possible for Western armed forces to somehow “liberate”, “nation-build”, and remain legalistically “just” as they warfight.³⁷ It is in this aspect of conflict that history provides us with fewer comparisons. Public perception and information warfare have played partially connected roles in conflict throughout history, but mass media and then interactive media society and information technology emerged fully for the first time in the 20th century. These changes mean that even if the types of goals given to Western militaries turn out to be difficult to achieve, the increased roles of information and perception in war will remain. The rules of warfare will continue to change, but they will not return to what they were in the periods of rational war or total war. It is in this sense, then, that a true transformation of war is taking place in the early 21st century.

³⁶ See, for example, Peter Cheney, “Battlefield Final Arbiter of Weapons”. *The Globe and Mail*, Monday, April 21, 2003, p. A6. Article includes commentary from David Bercuson, director of the Centre for Military and Strategic Studies at the University of Calgary.

³⁷ Things are more complicated than people would like to believe. Siri Agrell, “Blogging From Kabul: Forces Struggle to Control Information Leaks; Military Postings”, *The National Post*, Saturday August 27, 2005, p. 1 “Most of the comments posted on Martin Anderson’s blog are from his mom, his sister, his friends. But on July 28, a message from a man called Tariq appeared; ‘U came to mi country for osama but u r doing other activities. Leve mi country as soon as possible. Don force us to fight against u people.’ Captain Anderson had been posting from his Weblog, Martin in Afghanistan, from the Canadian Forces base in Kabul where he was deployed last February as part of Canada’s military presence in the region. His site, designed to keep his family up to date, is one of a handful of blog sites run by Canadian soldiers in war torn Afghanistan. It is also part of a new breed of military blogs, postings made by men and women at the front lines of some of the world’s most dangerous armed conflicts who are offering online, unprecedented access day-to-day reality of war. As a reservist, Capt. Anderson’s Weblog describes the work he does as part of the Civil Military Co-operation detachment – building schools, outfitting hospitals, and meeting with local Afghani leaders.”

19 th Century	<p><u>Conduct of War</u></p> <p><u>Mass mobilization warfare</u></p> <ul style="list-style-type: none"> - Improvements in logistics, administration - Mass production of firearms, ammunitions, uniforms and related kit - Improvements in artillery <p><u>Industrial warfare</u></p> <ul style="list-style-type: none"> - Magazine-loading rifles, sandbags, barbed wire, railways, telegraphs, telephones, mines, machine-guns - Long-range artillery 	<p><u>Nature of War</u></p> <p><u>Rational War</u></p> <ul style="list-style-type: none"> - Print media in the form of books, philosophical treatises, pamphlets, newspapers engages the growing literate portion of populations - Nationalistic artwork, posters, statues, and so on engage the population
20 th Century	<p><u>Mechanized warfare</u></p> <ul style="list-style-type: none"> - Internal combustion engine – leads to armoured fighting vehicles and aircraft - Radio communications <p><u>Nuclear firepower revolution</u></p> <ul style="list-style-type: none"> - Atomic, nuclear fission technology - Early computerized analysis, guidance and targeting systems - Space satellite observation systems 	<p><u>Total War</u></p> <ul style="list-style-type: none"> - Mass media such as newspapers, propaganda films and newsreels, radio broadcasts engage the entire population (television is at first a mass media technology)
21 st Century	<p><u>Information warfare</u></p> <ul style="list-style-type: none"> - Miniaturized, networked computer systems - Autonomous weapons platforms such as UAVs 	<p><u>Perception War</u></p> <ul style="list-style-type: none"> - Interactive media, including later applications of television – cable news networks and satellite – as well as the Internet with its web forums, blogs and other applications