Cyber Conflict and Global Politics

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War and the Media Paradox

"The dangers of war are heightened by intolerance, national chauvinism, and a failure to understand varying points of view. This should never be forgotten by those who have responsibilities in the media. Above all national and political interests, there is the supreme interest of all humanity in peace."

--- International Commission for the Study of Communications Problems, *Many Voices One World* (Paris: UNESCO, 1980)

Media and the Information Technology (IT) revolution are radically altering the way societies interact—as well as the way that states (and anti-state partisans) fight wars. In military-technological terms, it is clear that the continuing fusion of the computer, satellite communications and media revolutions has radically "improved" war fighting capabilities, even if the IT revolution has not fundamentally altered the geostrategic and political-economic rationale for war itself (Gardner, 2005/07a).

While computers, satellites and rapid access to "real time" information have helped to make the "revolution in military affairs" possible, and have proven their effectiveness with regard to the very rapid interventions in Afghanistan in 2001 and Iraq in 2003 in particular (taking updated *blitzkrieg* concepts to their fullest extent possible through "network centric warfare" at least in the opening phases of each intervention), these IT innovations in general have had several unexpected consequences for American policy makers and military strategists.

The first largely unexpected consequence is that global access to the Internet has made the battle for the "hearts and minds" as the Pentagon puts it, all the more difficult. This is due to the ease in which propaganda, involving valid information, mixed with dis-information, mis-information and excessive information (coupled with mis- or dis-interpretation of that information) can be disseminated and utilized globally on the Internet Tower of Babel.

Even if not all societies possess equal access to computers, the mobile phone and the Internet, elites in differing communities do possess such access and can disseminate their desired messages accordingly. (Ironically, as to be explained, Bin Laden *himself* does not use high tech systems, as does his organization and often self-proclaimed affiliates.) In essence, while innovations in computers and communication have assisted tremendously the speed and

accuracy of contemporary military capabilities, they have concurrently facilitated both criminal and "terrorist" activities.

The second issue of concern is that the new IT technologies appear to possess the "seeds of their own destruction" due to the very nature of their inter-connected networks. IT systems can be countered, or at least disrupted, by both states and anti-state partisan groups (as well as by pranksters and criminal hackers) through various techniques of cyber-sabotage, which in effect, seek to disrupt, if not destroy, the most vulnerable "nodes" of various systems of information and its distribution, through planting Trojan horses, hacking, denial of service attacks, exploiting errors in software, etc. Storage of classified information, banking accounts, computer operations of different kinds have all been targets of cyber sabotage. Finding and knocking out the "Achilles heel" of one communication system can, in turn, disrupt all other systems connected with that system. The first "cyber war" took place between Russian and Estonian computer hackers in April 2007 (Ifrah, 2007).

A third issue of concern is the socio-economic effects of the new IT innovations. On the social side, the mass media (since Marshall McLuhan's "global village") has had a stunning psychological and social impact. The homogenizing effects of the globalising media have tended to alienate groups and leaderships who subconsciously (and consciously) absorb the images, values

and conceptions presented by the new media. On the one hand, new systems of communication diffuse new ideas and images that can possibly assist reforms, if not peaceful and "progressive" revolutions. On the other hand, they can also work to alienate elites and large segments of the population, possibly causing a violent backlash. What differs now, particularly since the advent of the personal computer, mobile phone and Internet, is that the new IT revolution provides greater opportunities for alienated activists to *intercommunicate, interact* and *intervene* together.

On the economic side, the glorified commercial benefits of the new computer revolution have largely been overplayed. In effect, the new innovations in IT have not yet brought about a recovery (as compared to previous technological revolutions in history) as many had forecast, particularly because the IT sector touches only about 12% of the economy. Moreover, the new IT economy already appears to be suffering from diminishing returns since the 1990s and is regarded as helping to widen gaps in income both within and among states. In addition to the difficulties of managing macroeconomic policy, in which global sales, currency flows and exchange rates have been significantly impacted by IT technologies, the major problem is the length of the "lag time" — in which new innovations begin to directly impact the world economy on a greater scale. The longer the "lag time" without recovery the greater the difficulty in managing macroeconomic

policies, and the greater the chance for geopolitical and socio-economic conflict to erupt.

Related to this concern is the fact that increasing job insecurity makes it more difficult and risky for journalists (and academics) to "speak truth" to those in power—and even more so during war time. IT transformations provide governments as well as large multi-media conglomerates— which are increasingly interlinking print, on-line services and television together— a significant advantage in disseminating "information" and "analysis" though their differing media outlets. Big Brother appears to be on the rise again in that the new information technologies, fused with other innovations, not only allow for greater surveillance by corporations and individuals, but also permit far greater governmental *coordination* of public surveillance. Using IT, governments can now link together financial and banking information, travel documentation, video surveillance and personal profiles—with new panoptic and pan-sensual surveillance innovations on the horizon (Hawksley, 2007)

While the prospects of instant communication had been hailed as a means to prevent conflict and to help negotiate an end to disputes and wars, and although the new media possesses tremendous potential in expanding advertising and markets globally and can still be used for very positive purposes, such as the publication of the world's classics in multiple languages, one of

the major paradoxes is that a number of media innovations are actually helping to cause, if not perpetuate, social and political conflict in general. The danger is that despite the new IT revolution's potentially positive role in fostering peace, economic development, technological advancement, and in providing world-wide distribution of knowledge through instant communication, the greatest actual impact of IT innovations may be in further refining instruments of violence and public surveillance.

Media and the War Paradox

Writing in the late 1960s, in his book *War and Peace in the Global Village,* Marshall McLuhan argued that the new media technology represents an extension of human senses, affecting the nature of our perceptions, if not our very process of conceptualisation. The new, ever globalizing, and all pervasive, media influences our personal psychology, social behaviour, attitudes and concepts—in that the "mess/mass-age" of the "global village" (to re-phrase McLuhan's famous catchphrase, *The Medium in the Message*)[1] permeates our sub-consciousness whether we attempt to ignore it or not (McLuhan and Fiore, 1967).

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[1] Marshall McLuhan's famous slogan, "The Medium is the Message," was accidentally transformed by a printer's typo in his book's title, to *The Medium is the Massage*. McLuhan left the altered title, so that the medium could imply four signifiers: as a form of message, as a form of brain washing "massage" or else as the "Mess-Age," or "Mass-Age." The mistake also illustrated the role of accident in the process of creation. The idea of a "mess/mass-age" almost worked, but it was not quite poetry!

In McLuhan's views, the globalizing media, rather than leading people to look to the future, can lead alienated groups and societies to look to an ostensibly more secure and glorified past (much as *Al-Qaida* glorifies the Islamic *Ummah* prior to the collapse of the Ottoman empire). In effect, new media innovations subconsciously disturb the self-image of individuals and their societies, so much so "that fear and anxiety ensue and a new quest for identity has to begin" (McLuhan and Fiore, 1968). By increasingly exposing different societies, ethnic groups and social classes throughout the "global village" to the ways of the materially and technologically advanced societies in particular, the media subconsciously contributes to a significant degree of psychological and social imbalance— or *alienation.*

The new media can thus lead alienated groups to demand the same advantages as those of the wealthier classes and societies, among other socio-political concerns, for example. In this sense, the ultimate subliminal message projected by globalizing media can be deeper than mere political propaganda, and can affect the core values, norms and ideologies of a given society and its culture in very different and often conflicting ways. This process can potentially shatter traditional conceptions of the self and society, and possibly create a nostalgic longing for past ways—what McLuhan called an "orgy of rear-view mirrorism" (McLuhan and Fiore, 1968: 126).

Innovations in the global media can accordingly send out both positive and negative signals depending upon one's judgment of the *status quo*. Media images can radiate hope for a better, more positive world through both overt and subliminal messages, but such images can more disturbingly undermine traditional values of those societies that have not been previously exposed to that media, often causing dissonance, possibly leading whole communities to engage in a fundamental re-assessment of their values, norms and beliefs. Such a forced re-assessment, coupled with efforts to safeguard that society from change, can in turn result in backlash and violence.

In terms of the causes of war, McLuhan thus argues that new media technologies endanger the identities of individuals and of whole communities and societies. As the new globalising media, particularly given its homogenizing tendencies, can distort one's self-image and identity, there is a tendency to lash out in self-defence. On an even deeper level, McLuhan argues that all sensory change is "levered" by new technological innovations, since "the new technology inevitably creates new environments that act incessantly on the sensorium" (McLuhan and Fiore, 1968: 136). In effect, new technologies represent "self-amputations" that then replace former organs of perception, and permit new ways of looking at the world, and new changes in the social environment.

One can add to McLuhan's observations that the new IT revolution not only represents an appendage that *extends* human organs of perception through "self-amputations," but it is also extending new *prosthetic* capabilities to the human body, replacing old extensions. The IT revolution not only changes the way we see the world, but also the ways that can *interact* and *intervene* in the world. This fact makes for permanent change, and hence opens the potential for permanent dispute and conflict. New media and IT innovations have increasingly become *prosthetic* appendages that provide *interactive* and *activist* tools that can be manipulated or *leveraged* for *interventions* by differing actors and groups for either beneficial and nefarious purposes.

The IT revolution itself thus becomes the source (and object) of potential conflict in that it uproots traditional personal and socio-political identities by displaying alternative life styles and by spreading radical or differing ideas and images that subconsciously (or consciously through alternative information and propaganda) upset the perceived *status quo*. The mandate for war is then justified by the need to "recover" the "old image" at any cost in McLuhan's view. Or, from a differing perspective, it is also possible that individuals and groups might seek to obtain the "image" that some other admired group is projecting, or else seek to *project* their own image. The latter is even more possible given

the *prosthetic* options available in today's technology as compared to that of McLuhan's era.

Whatever the case, the *imaged* symptom—at which alienated individuals and groups can lash out—is caused, in McLuhan's views, by "something about which we know nothing. These hidden factors are the invisible environments created by technological innovation." (McLuhan and Fiore, 1968: 97). In effect, the global media can disseminate messages that *subliminally* alter one's perceptions and interpretations of oneself, and can raise questions as to one's role and ultimate goal in society, and can work to change behaviour and attitudes toward one's political, social, technological and ecological environment. This can lead individuals to critically question their state and society, while states and political groups can, in reaction, seek to prevent individuals from gaining access to critical information and concepts. In a word, from the perspective of state authorities, the *prosthetic* IT revolution is potentially more dangerous than media of the past in that IT can provide alienated individuals and groups with wider opportunities to communicate with like-minded individuals and to then potentially *act* in defence of strongly held values or beliefs, in pursuit of common goals. IT can also provide state leaderships with new tools to fight wars, adding a new

dimension to the "dialectics of insecurity and security" (Gardner, 2007b).

Truth, War and the Question of Media Domination

What the global or "mess/mass" media says is happening, and how that media appears to interpret socio-political activities, tends to become a point of a reference in every day discussions and social life. Differing media may present a variety of perspectives that can be openly accepted, ignored or else criticized and rejected, if the individual has the opportunity or the willingness to listen to various viewpoints. Yet as the *predominant* global media has tended the reflect the values, norms and a narrow range of political ideologies that are "acceptable" primarily to American and European societies, the "mess/mass" media (particularly in its blandest forms of homogenisation!) is likely to cause dissonance among those individuals and societies which do not accept or share those values or political ideologies.

In the mid-1970s and 1980s, American, British (and French) media predominance (with four agencies controlling some 80% of global news flow), coupled with Soviet media dominance in Soviet spheres of interest, led developing states (particularly the non-aligned group) to call for a *New World Information and Communication Order*. Also then at issue was the control of the radio spectrum (often for military usage) and of the control of

orbiting space for satellites (which could be used for multiple use military and commercial purposes). The NWICO proposal represented one pretext for the U.S. and UK to both withdraw from UNESCO— in ostensible opposition to the concern that "third world dictators" who supported the NWICO would seek to control news dominated by U.S. and UK multinational media conglomerates.

U.S. and UK opposition to the NWICO occurred despite the fact that the report, *Many Voices One World* (1980) by the *International Commission for the Study of Communications Problems,* chaired by Sean MacBride, strongly supported a truly "free flow" of information, but opposed a "one way" flow. In seeking ways to *enlarge* both national and international influence, as well as the influence of non-governmental sources, over *all* information, the MacBride report strongly condemned *all* barriers to freedom of information and speech in accord with the Universal Declaration of Human Rights.

In denouncing what it called "retrogressive autocratic measures and increasing monopolistic trends," the report strongly condemned authoritarian government efforts to block access to information and to threaten, harass, if not assassinate, journalists. But it also opposed monopolistic controls of media: "When the public has only a single source of news, or where various sources have the same orientation, it is the monopolist who is in a position

to decide what facts will or will not be presented, what opinions will or will not be conveyed.... "(MacBride, 1980: 137-38). The report furthermore argued that true democracy was not possible without radical reform in media: "Without a two-way flow between participants in the process, without the existence of multiple information sources permitting wide selection, without more opportunities for each individual to reach decision based on broad awareness of divergent facts and viewpoints, without increased participation by readers, viewers and listeners in the decision-making and programming activities of the media, true democratisation will not become a reality." (MacBride, 1980: 173-74). From this perspective, *Many Voices One World* was very critical of the repression of freedom of information by totalitarian and illiberal regimes; yet it was also critical of the limitations put on information by monopolies in the advanced democracies. The report furthermore underscored the important role that journalists should play in attempting to prevent conflict and war.

In the contemporary situation, the efforts of states and private multi-media conglomerates to control the flow of information, can, at least in theory, be countered by global access to the Internet. Yet critics and truth seekers themselves need support (plus funding!) in order to survive in a situation in which powerful vested interests can still influence public opinion. This is particularly true as multi-media conglomerates are now more

consciously interlinking and synchronizing press, on-line and TV information media. Moreover, as more and more free services available on the Internet become subscription services, a number of "free voices" may be forced to close down if they cannot sustain their commercial viability. At the same time, however, the number of media options involving excessive doses of information, misinformation, disinformation that are available tend to create an Internet Tower of Babel in which truth tends to dissolve in virtual reality.

As technology has advanced, in order to break the monopoly over the control of information, individuals, organizations, developing countries, as well as advanced countries, have all sought to develop their own alternative news services and cultural media, as well as satellite reconnaissance capabilities, in part in response to the threat of war. The European Ariane space system was developed, at least in part, to launch European satellites as an alternative to American control over satellite imagery in the first Persian Gulf War in 1990-91. Interestingly, the first Ariane 5 space flight failed in 1996 because of a computer bug that led to a malfunction in its control software! In addition to the Europeans, China, India, and Japan have all been developing significant space and satellite programs so as to expand their national controls over information. Other countries are at various stages of their satellite and launcher programs: Ukraine, Israel, South Korea, Brazil, Iran,

Malaysia, Pakistan, Turkey and Taiwan. (Casarini, 2007) Japan launched its first reconnaissance satellite in 2003 after North Korea launched a ballistic missile that soared over Japanese airspace in 1998 (Embassy of Japan, 2003.) Both Japan and China are reaching for the moon, as is India.

Conflict and war affects major media in the developing world as well. India's Bollywood (the world's largest media industry in terms of output) reaches out to central and south Asia, as well as to the Middle East and Russia. Yet, despite high demand for Bollywood media products in Pakistan, the Pakistani government has continued to ban most Bollywood films since the 1965 Indo-Pakistani war, except for a few major classics that were permitted by Pakistani authorities to be shown in 2006. (Wilkerson, 2006). Qatar's *Al-Jazeera*—which, in effect, has attempted to counter American control over information in the wars in Afghanistan and Iraq in particular and to counter American and European bias with regard to the Arab/Islamic worlds in general—has reached larger audiences as a state subsidized company, broadcasting in both Arabic and English. Venezuela's *Telesur* and France 24 (the latter broadcasting in French, English, Arabic and eventually Spanish) also hope to compete with CNN, CNBC, and BBC. (The BBC, however, which is sponsored by public taxation, is now suffering from a nearly $4 billion debt crisis resulting in cost cuts and restructuring partly in

response to the new demands and competition in the "digital age" in which both media and audiences are "transforming" (CBC News, 2007).

Historically, differing forms of media— leaflets, books, posters, newspapers, telegraph, radio, TV, film and the videocassette (shown in Mosques during the Iranian revolution as propaganda against the Shah, for example)— have always represented a psychological tool in helping to disseminate information and propaganda by states, as well as by anti-state movements. In part due to Roosevelt's fire side chats, Marshall McLuhan saw World War II as a radio war as much as an industrial war; film clips were also used to disseminate propaganda in the name of "news" prior to movies shown in theatres primarily for entertainment.

Vietnam was the first TV war; as McLuhan points out, the introduction new "mess/mass" media technologies (TV and film) initially tended to cause havoc in undermining cultural habits and self-images in the 1960s. But even here, the U.S. government attempted to channel public opinion in a pro-Vietnam war direction even if the media could not be totally controlled or "regulated." Propaganda in support of the Gulf of Tonkin resolution, for example, appeared to mimic earlier propaganda at the time of the Spanish American war in 1901 in which the "yellow press" of William Randolph Hearst and Joseph Pulitzer

vehemently supported the Spanish American war (a fact regretted by Pulitzer).

After the Vietnam War, the Pentagon attempted to control journalists' access to the battlefield during the U.S. interventions in Grenada and Panama and in the first Gulf War in 1991 at least until the second Gulf War in 2003. The Pentagon acted, in part, in response to the critique of neo-conservative groups who attempted to blame the "mess/mass" media for permitting the U.S. to lose the Vietnam war. But the major reason that the U.S. lost the war in Vietnam was Chinese support for the Vietnamese and the threat of Chinese intervention which limited U.S. military actions, and kept the U.S. from landing military forces in the North (Morgenthau, 1970).

Concurrently, much as was the case for the Yellow Press before the Spanish American War, the global media of Rupert Murdoch (Fox News and the neo-conservative Weekly Standard, among many others), vehemently propagandised in support of U.S. military intervention in Iraq in 2003. In 2007, the Murdoch multimedia news conglomerate then bought out the *Wall Street Journal* (whose editorial page had also vehemently supported intervention in Iraq in 2003), in order to expand Murdoch's already considerable media empire and to compete with the rival multimedia conglomerate, C-NBC. Purchasing the *Wall Street Journal* has been seen as "the hub for the digital transformation of

newspapers" that Murdoch already owns around the world and "as an engine for a global financial information business with print, online and television components" (Siklos, 2007).

While the Pentagon had hoped to keep restrictions on journalists and media in Afghanistan and Iraq, as previously pointed out, *Al-Jazeera* and other news services were able to enter both countries to provide alternative perspectives, often enraging the American, Afghan and Iraqi officials. (In 2004, the Iraqi government banned *Al-Jazeera* reporters.) In China, in April-May 1989 just prior to the Tiananmen Square repression in June 1989, it had been the portable transistor radio that provided alternative views to those of the government. Following the Tiananmen Square repression, Chinese authorities have developed the most sophisticated Internet filtering system in the world, as compared with Iran, Saudi Arabia, Vietnam, Burma, among others (Berkman Center, 2002). In the Afghan and Iraq wars, it is now the Internet, the mobile cell phone and digital camera that have worked to influence public opinion as well as the more traditional news media. Mobile phones, for example, took pictures of American torture abuse at Baghdad's Abu Ghraib prison. The *interactive* and *interventionary* nature of today's media, as compared to movies, TVs, books, and newspapers has consequently created an open mine field for the dissemination of competing ideologies and interpretations of information, misinformation and disinformation.

As it appears almost impossible to control IT innovations, the U.S. and Iraqi governments have attempted to engage in a counter-propaganda offensive in an effort to outflank journalistic and academic critics; as in past conflicts there have also been attempts to question the patriotism of those who have dared to dissent. Here, only a few journalists dared to question the pretexts used by the Bush administration to engage in a so-called "pre-emptive" (really *preclusive,* if not *predatory*) intervention in Iraq in 2003. Former CBS anchorman, Walter Cronkite, warned that cost-cutting efforts and consolidation on the part of multi-media news conglomerates not only threaten the jobs of journalists, but also put "American democracy" and "freedom" at risk (Associated Press, 2007). The problem of telling "truth to power" is not that of journalists alone, but that of intellectuals and academics in general, who need free access to all dimensions of information and who need to be able to interpret that information as freely as possible, but who also need job security and relative independence to testify (Morgenthau, 1970). Apparently increasing trends toward non-permanent non-tenured positions in academia and job cuts in journalism, coupled with increasing restrictions by governments on obtaining access to public records, threaten the right to free speech and to freedom itself.

Subverting the Global Economy

Economists have split over the socio-economic effects of the communications revolutions after the "dot.com crash" of 2000-2001 and the September 11, 2001 attacks on the World Trade Center and Pentagon. Optimists believe the IT revolution will make profound positive changes in the world economy, as have previous innovations in history. Pessimists, however, argue that the new revolution is not as "epoch making" as believed. By contrast with Schumpeter's theory of "creative destruction," the new IT revolution appears more destructive than creative— at least after its initial boom in the 1990s. If anything, the most important impact of IT innovations after the declaration of the "global war on terrorism" might well be that of enhancing military technologies and public surveillance capabilities.

Writing before the 11 September 2001 attacks, the economist Robert J. Gordon argued that the greatest benefits of computers had already taken place in the 1990s. Unlike previous innovations, Gordon argued that the productivity gains from the new IT revolution represent a far smaller increment in the standard of living as compared with previous technological revolutions. These epoch making innovations included: the introduction of electric light, the factory efficiency achieved by the electric motor, the automobile, air travel, the chemical industry, the telephone, radio and the TV, and perhaps least appreciated, the improvements in

life expectancy and health achieved by urban planning and indoor plumbing. (Gordon, 2000). There is consequently a major problem of diminishing returns in that the new IT economy in general, and the Internet in particular, have failed to boost multifactor productivity growth. This appears true because as much as 88% of the economy lies *outside* of the durable manufacturing sector, which includes the manufacturing of computers and semiconductors and other goods.

Much as has been pointed out by Janet L. Yellen, IT innovations, improved communications and new financial technologies, have facilitated a vast expansion in global trade and increase in global capital mobility. The new IT economy has generally permitted firms to become much more efficient; companies have been able to alter relationships between suppliers and customers though changing production methods, re-engineering jobs, and organizations. At the same time, however, firms have also "vastly increased outsourcing both at home and abroad" (Yellen, 2001). American firms (unlike European) have not been prohibited from shedding workers and thus reorganizing the work force. IT innovations have furthermore tended to raise wage inequality—not just among countries but also within them, largely by favouring skilled workers. Increased global trade, assisted in part by Internet marketing, however, has raised a significant dilemma related to trade linkages and job outsourcing that could

increase spillovers across borders. This makes the Gross Domestic Product of differing countries much more sensitive to foreign shocks while it likewise makes national business cycles "more synchronous" (Yellen, 2001). Greater capital mobility then creates a dilemma whereby countries are forced to either let their currencies adjust freely or else to link them directly to a strong currency (the dollar or increasingly the Euro), thereby putting to an end relative banking and financial independence. Global operations of hedge funds and venture capital funds, enhanced by IT, can furthermore exacerbate financial volatility. In the case of the U.S. itself, this new reality can work to limit the leverage of the Federal Reserve over the U.S. economy (Yellen, 2001). Such increased trade and financial inter-vulnerability on a global scale raises the need for more concerted fiscal and monetary policy coordination— if political economic disputes and rivalry among both liberal and illiberal states are not to intensify.

Even those who are somewhat more positive about the new IT economy have argued that significant macroeconomic risks and adjustments lie in the not-so-distant future ahead. Here, the period of rapid productivity growth in the 1990s, combined with the greatest degree of structural change, can be best compared and contrasted with the roaring 1920s— followed by the catastrophic 1930s, which resulted in global war. While there is absolutely no necessity for history to repeat itself in quite the same way, "the

largest short-run impact of the 'new economy' may be that it increases the stakes at risk in macroeconomic management" (Delong and Summers, 2001). On the one hand, the IT revolution exacerbates problems related to macroeconomic management; on the other hand, it is not clear how long the "lag time" between innovation and leading growth sectors— or the gap between the time when innovations are introduced and then actually begin to impact the larger economy— will last. (Delong and Summers, 2001: 21; Rivlin, 2001).

How long the IT "lag time" will prove to be thus remains to be seen. A very long "lag time" without significant economic recovery looks increasingly likely given the significant rise of world oil prices since the essentially unilateral U.S. intervention in Iraq in 2003 and the continuing possibility of war with Iran, coupled with the failure to develop viable alternative energy sources, and energy saving technologies, as forewarned since the 1970s. These interrelated geostrategic, political economic and technological factors themselves forewarn of major social and geopolitical conflict ahead—if more *concerted* geopolitical and political economic policies, in which alternative energy and IT technology could play a major role, cannot soon be adopted.

New Military and Surveillance Technologies

From this perspective, particularly given the global crisis following the 11 September 2001 attacks, the major factors pushing for IT innovation thus far tend to be non-productive and non-economically related—but security- or military- oriented. In addition to employer concerns with office surveillance, the risks of cyber-sabotage to both the public sector and to corporations will necessitate higher security and thus investment in even more sophisticated technology (and thus more redundancy) to protect information services. Similarly, military spending in Afghanistan and Iraq should result in significant governmental purchases of the most advanced IT services. But once again, these latter innovations are largely non-productive although they might begin to "trickle down" to the greater aggregate economy but at a much later date.

Ironically, new innovations do not tend to arise from the request of the military itself, but can still possess military applications, if oriented in that direction (DARPA, 2007). Here, the "global war on terrorism," efforts to control illegal immigration (through the introduction of biometric methods of identification), coupled efforts to sustain a high degree of military readiness against both actual and potential threats, involving increasing public surveillance, should work to sustain high U.S. and

European governmental and corporate spending on advanced information technology.

In the U.S. case, the Defence Advanced Research Projects Agency (DARPA), for example, seeks to create a whole range of new technologies related to fighting the "global war on terror" that might or might not possess commercial applications. DARPA had helped develop Internet technologies in the 1960s and 1970s with the ARPANet and its associated TCP/IP network protocol architecture; in the 1990s, DARPA also helped to invent satellite navigation, now used in cars, and it likewise assisted in the development of stealth systems (DARPA, 2007).

In addition to seeking advances in space technology (such as nano-satellites), DARPA has envisioned: New advances in network centric warfare; a chip-scale atomic clock designed for more accurate time in order to assure network communications; technologies to identify and defeat terrorist activities, such as the manufacture and deployment of improvised explosive devices; rapid unmanned air vehicles that can hover long periods; supercomputers for variety of military operations, including weather forecasting, cryptography, and the design of new weapons systems; real-time high quality machine language translation of text and speech; the development of prosthetics that can be controlled and perceived by the brain; the examination of quantum phenomena in the fields of computing, cryptography,

and communications; plus alternative technologies and energy sources to help reduce the military's massive reliance on petroleum, among many others (DARPA, 2007). (The development of alternative technologies and energy sources, among other innovations, could possess significant commercial applications).

DARPA is additionally developing panoptic computer systems so that a facial image on a surveillance camera can be matched to a person's gait, height, weight and other elements and then be identified. In addition, new pan-sensual surveillance technologies are being developed that can detect radio signals emitted by humans, and can pick up breathing and heart rates through walls. New devices that can give indications of what people are thinking are forecast to be feasible within 10 years (Hawksley, 2007).

Media and Asymmetrical Warfare

Writing in the 1960s, Marshall McLuhan noted how the Algerian resistance was quickly able to utilize the new media technologies to channel its supporters, and combat the French enemy. Citing Frantz Fanon, McLuhan noted how the radio went from being an alien European instrument or "enemy object"—that was regarded as undermining traditional Algerian society—to the "primary means of resisting the increasingly overwhelming psychological and military pressures of the occupant" (McLuhan,

1968). The Algerian resistance was consequently able to use the radio in Arabic, Kabyle and French to unify the Algerian resistance.

The same paradox is true today for various anti-state partisans, such as *Al Qaida,* who have attempted to resuscitate medieval traditions of Islam (if not pre-Islam) while, at the same time, manipulating both common and advanced technologies against their enemies in radically new tactical forms. In the U.S., for example, there are at least one hundred Internet sites used to disseminate pan-Islamist propaganda (Moss and Mekhennet, 2007). Many cites use the latest up-to-date media technology and cultural forms, such as rap music, to get their "mess/mass-age" across. Here, however, some propaganda may be more effective than other forms. *Al-Qaida,* among other spontaneous groups of similar pan-Islamist *Weltanshauung,* have backed efforts to resuscitate Malcolm X's ideology. One can speculate that reviving Malcolm X, for example, could possibly appeal to some militant Black Muslims in the United States much more than would the Iranian "Review of the Holocaust: Global Vision" in December 2006 which was officially sponsored by Iranian President Ahmadinejad, and which most likely offended many Black Americans (a large percentage who are Muslim). This is due to Hitler's absolute racism and because of the official invitation of David Duke, the Imperial Wizard of the Ku Klux Klan, to Tehran,

among other holocaust sceptics. On the other hand, Iranian propaganda might better appeal to right wing white extremists.

Concurrently, as other Internet bloggers have criticized the treatment of Black Africans by Arab states, it is not absolutely clear what kind of individual will listen to which kind of extremist message. A problem to be studied is whether the excess of material on the web will lead to endless surfing, or else the opposite, complete *anomie*? Or does the problem of excess information on the Internet Tower of Babel lead many individuals to identify with websites that already support their own preconceived notions?

Much as McLuhan predicted with regard to a possible negative reaction to the globalising media, *Al-Qaida* is engaging in a orgy of violence, watching backwards in the rear view mirror, while still moving forward. In other words, *Al Qaida* and related ideologies see the U.S. and European media as disseminating values of materialism, individualism, and hedonism. From this standpoint, the shallow argument that pan-Islamist terrorists criticize the "West" from a medieval perspective, but then use "western" technology, forget that technology is not a "western" but a *universal* asset, and in which its origins may not necessarily be derived from the "West." (Here, for example, gunpowder was first invented in Imperial China, but was largely refined as a more effective tool of warfare by the Europeans.)

The larger issue raised here is that a number anti-state extremist organizations (and not just pan-Islamist groups) not only use high tech communications for their propaganda purposes, but they can also do much more damage through new *prosthetic* IT technologies. Internet permits anti-state partisan extremists to bypass traditional media (television, radio, or print media) and engage in fundraising, propaganda, recruitment; it can display libraries of speeches, training manuals, and multimedia resources. (Qin, 2007). Internet cites explain in Arabic, Urdu, and Pashto among other languages, how to mix ricin poison, how to make a bomb from commercially available chemicals, how to sneak through Syria into Iraq, how to shoot at American soldiers. Partisan groups can secretly communicate with E-mail, online dead drops, satellite phones, cell phones, encryption and *steganography*; they can also use "spread-spectrum" radios that randomly switch their broadcasting and receiving signals—thus camouflaging their messages. With access to satellite photos on the Internet, they can locate potential targets. In sum, partisan groups can post their plans on the web, or send information by encrypted Internet, where it will get "lost in the billions of messages that are out there" (Coll and Glasser, 2005). Mobile phones, for example, were used to detonate sophisticated bombs in Madrid in 2004.

Here, however, it should noted that Bin Laden himself uses more traditional foot couriers who can then disseminate

information using high tech techniques. This is due to the fact that Bin Laden was aware of the fact that the U.S. National Security Agency (NSA) could eavesdrop on his conversations. It is also because of the experience of the Chechen leader Dzokhar Dudayev who had been killed in the Spring 1996 after NSA spy satellites located the position of his satellite phone signal, and forwarded the coordinates to Moscow. A Russian Sukhoi Su-25 fighter jet then killed him with two laser-guided air-to-surface missiles. Ironically, Dzokhar Dudayev had spoken too long on his cell phone, lured by the prospects of peace talks with Moscow (Gaudin, 2001).

In Iraq, differing Islamist groups have been producing instructional videos and electronic newsletters on the Internet that outline techniques from encryption to booby-trapped bombs to surface-to-air missiles (Moss and Mekhennet, 2007). Those cyber manuals have largely replaced the 1967 Anarchist Cookbook, which appeared on the web in different variants, such as the Anarchist Cookbook Version II, III (Mieszkowski, 2000). U.S. and European law has been working to penalize those who place such information on the Web. But then again, the Bush administration itself has been responsible for disseminating information related to nuclear weaponry: In the effort to prove that Saddam Hussein did possess a nuclear weapons program, highly technical documentation taken from Iraqi archives that could help make

nuclear weaponry was inadvertently placed on the U.S. government website (Broad, 2006).

One of the major concerns is that both government and private business could come under attack. Anti-state extremists and hackers can use advanced technologies to undermine networks of businesses, computer-information, highways, fibre optics, railways, and defence arrangements that are interconnected. The more complex and deeper these systems are inter-linked (and the less protected through redundancy), the greater the potential for rupture (Gaudin, 2001). As illustrated in the first cyber war between Russian and Estonian hackers, denial-of-service attacks (DOS), which involve saturating the victim's server with numerous external communications requests sent simultaneously through 'rootkits', 'spams' and 'storms' can be so powerful that they can destabilise a country's economy or interrupt nuclear power plant controls, stock exchanges, financial institutions and insurance companies (Ifrah, 2007).

One additional problem raised here from the corporate perspective is that of the rights to privacy: In order to better protect against cyber threats, the U.S. government hopes that corporations will share proprietary information about networks they have built or manage between the federal government and private sector and *within* the private sector itself (Homer-Dixon, 2002). The fact that roughly 85% of critical infrastructure is,

however, in private hands creates a tension between government and business because of the government's proposed intrusion in private affairs (Buxbaum, 2007). The issue furthermore raises questions as to the possibilities of inter-corporate cooperation because of the very nature of competitive private enterprise and the desire to keep secrets away from one's rivals.

Information Systems as a Tool of State Warfare

Once the global media has helped to stimulate conflict (by means of political propaganda or by more subconsciously challenging social values and identities or "images" in McLuhan's view), advanced technologies connected with that same media can become a tool in fighting that war. Historically the media has been used in disseminating information and propaganda, but in contemporary circumstances, with the revolution in information technologies, the new media technologies and computers provide instant "real time" communications for states to fight wars.

In many ways, the IT revolution was first stimulated by the Soviet launch of the Sputnik-1 satellite in October 1957. This IT revolution has continued to influence the commercial uses of information technology as well as those of the military, particularly following the formation of the Defense Advanced Research Projects Agency (DARPA) in 1958. To be most effective, contemporary warfare needs to integrate actions in the air, land,

sea and outer space with rapid information and speed of execution. Satellites, for example, are needed to conduct military reconnaissance, to pinpoint nuclear tests and to direct guided missiles and other "smart" weaponry. The Pentagon is consequently evolving new missions related to space control (to defend U.S. satellite constellations), not to overlook national and theatre missile defence, global psychological operations, and global information operations.

In the 1991 Gulf War, only 8% of all bombs were laser guided; by the 2001-02 intervention in Afghanistan, some 60% of all bombs were either laser guided or guided by commercial Global Positioning Satellites. Moreover, during the 1991 Gulf War, the total bandwidth required for information exchange was 100 megabits per second (Mbps); the 2001-02 war in Afghanistan required more than double that amount, or 250 Mbps. Ironically, it was primarily commercial geosynchronous satellites orbiting 23,000 miles above the earth that provided the Pentagon with nearly all of this bandwidth. The military's need for satellite communication systems can be seen in the following example: Just One Global Hawk Unmanned Aerial Vehicle (which provides Air Force and joint battlefield commanders near-real-time, high-resolution, intelligence, surveillance and reconnaissance imagery) utilizes 50 Mbps (Hastings, 2003).

Yet the American dependency upon satellites is not limited to guiding missiles. The American military is highly dependent upon satellites for *all* of its major war operations— from the foxhole to the Pentagon— by virtue of its reliance on computers and information. In effect, satellites represent "flying computers" in the words of Dr. Daniel Hastings and thus represent the ultimate in advanced multiple use IT systems that can engage in commercial transactions of various forms as well as military actions (Hastings, 2003). The fact that space assets can also be information assets— as they gather, process and pass on information— makes space warfare and information warfare interconnected.

Here, for example, GPS (Global Positioning Satellites) are positioned in outer space for multiple use commercial and military purposes, while GMTI (Ground Moving Target Indication) can be used for traffic monitoring and control in cities and for military purposes. Less detectable, and more sophisticated, nano-satellites (miniature satellites) are beginning to replace the functions of larger satellites. The fact that launching costs are getting lower and that satellites are getting smaller means that both commercial firms and less wealthy states can send up satellite systems. (This was not the case when the UNESCO report, *Many Voices One World,* was published in 1980 as previously discussed). Concurrently, commercial satellite imagery is catching up with the resolution of

secret reconnaissance satellites of the U.S. and former Soviet Union during the Cold war, making it possible for any kind of state or extremist group to access visual information. Satellite maps available on Google.com have already been raising security concerns.

The security issue arises in that commercial systems are less expensive but they also mean that the Pentagon loses control over them. Concurrently, private owners expect military protection. This generates a continuing tension between military security and private interests that have, in turn, begun to generate demands to expand military capabilities into outer space in part for protection of private satellites. Dr. Daniel Hastings described the military situation in outer space in the following terms due to the mix of defence and commercial satellites: "Space warfare will be surrounded by non-combatants: Like fighting guerrillas in an urban setting" (Hastings, 2003).

These facts make the U.S. military highly dependent upon space-based assets; but the fact that satellites represent "flying computers" makes them potentially vulnerable, as they can be struck by cyber attack. The development of nano-satellites that can attach themselves like parasites to larger satellites raises new security concerns, in that they could later explode or disrupt communications. Other threats include the possibility of a high altitude nuclear burst; this threat would require multiple

redundant satellites so as to safeguard communications. Military users themselves will thus need to protect their own information by means of "massive diversity" or else attempt to "harden" communications and satellite systems (DARPA, 2007). While American military officials have proposed an Unconventional Warfare Command to fight against cyber sabotage and other extremist activities, the U.S. Senate has considered new legislation (such as the Critical Infrastructure Information Security Act) to address the protection of both government and private computer and information systems (Boot, 2006).

In addition to the importance of satellite communications for multiple use military and commercial purposes, the global sales produced, at least in part, by Internet marketing have begun to rationalize an expanded role for the U.S. navy. Here the argument that "terrorist" groups, pirates or states might seek to disrupt global trade and attack undersea fibre optic cables, for example, has become a major issue in the need to secure the globalising economy. It is thus argued that products sold over the Internet generally travel by sea and consequently need naval protection:

"Ultimately, the open ocean is still the prime medium and symbol of globalisation—for the *thoughts* transmitted along the Internet must be translated into *products*, which must in turn be transported to far markets. Even the financial flows that might travel along the wires and fibre-optic cables of today's information

network have the eventual purpose of producing goods that are sold and consumed. If these goods are to be sold and consumed in somewhere other than a localized, domestic market, they are likely to be transported by sea" (Bowdish, 2002). The concern raised here, however, is that U.S. plans to *forward deploy* naval capacities to protect burgeoning global IT inspired trade from terrorism and piracy and to prevent weapons proliferation, drug trafficking, and other illicit activities (Cooperative Strategy, 2007), could come into conflict with expanding navies of Russia, India and China—if Washington cannot establish more concerted relations with these states

The first Internet "war" has already taken place in April 2007 between Russian and Estonian hackers; the initiation of the conflict was blamed on the Russian government, but it is not absolutely clear who was actually behind it (Ifrah, 2007). In 2005, there were about 1,300 successful intrusions into Pentagon computers out of more than 79,000 attempts; in September 2007, China's People's Liberation Army (PLA) was successfully accused of hacking into Pentagon, UK and German computers (charges denied by Beijing). China's military goals purportedly seek to achieve "electronic dominance" over the U.S., Britain, Russia and South Korea by 2050 (Reid, 2007). In January 2007, Beijing tested a missile capable of destroying satellites in orbit. Assuming a treaty effectively banning further tests or use of anti-satellite weapons (ASAT) cannot soon

implemented, China's anti-satellite test could spark a renewed weapons build-up in both outer space and on the ground, coupled with new forms of IT rivalry (Kahn, 2006).

The high dependence of the Pentagon on communication links and information operations make these areas "Achilles heels" for potential jamming, disruption or attack. In addition to the real threat of cyber sabotage against key communications systems, satellites, as "flying computers," would represent one of the first targets in a major power war, as both China and Russia have begun to threaten—in part to counter the deployment of U.S. Ballistic Missile Defences which depend upon satellite communications (Gardner, 2007b).

Conclusions

As a "multiple use" technology, the IT revolution has possessed global military-technological, political economic, as well as socio-cultural ramifications. While heralded as a means to resolve conflict through "instant communications," the new media may not or may not help resolve disputes or conflict. On the contrary, the new media and IT revolution itself can represent a potential cause of conflict through the dissemination of propaganda. But even if the new media itself is not the actual cause of disputes, then it can perpetuate conflict in the sense that it

tends to uproot traditional socio-political-personal identities, causing backlash.

At the same time, however, the new media does not necessarily offer a substitute for those lost or altered identities. Marshall McLuhan's famous statement that the "medium is the 'mess/mass-age'" (as re-phrased) is misleading. This is true in the sense that the media is not a religion or ideology in itself and can only transmit "images" and "messages" related to those religions or ideologies; but in transmitting various ideologies it also alters those "images" and "messages." Not only that, media is no longer merely a means to disseminate propaganda (as a brain washing "massage"), but can become an active agent used in warfare by both states and anti-state partisan groups in that it has become a *prosthetic* appendage for active *intervention* in the "mess-" of the "mass- age" created by the globalising media that has, in part, been fostered by with the assistance of "flying computers" and by the Internet Tower of Babel. Sources of communication thus become a potential objects for attack.

The need for satellite communications has helped to expand military technological and geo-economic rivalries into outer space while underwater fibre optic cables and globally expanding trade assisted by Internet marketing have helped to expand such rivalries both under and over the sea. Moreover, rather than working to foster economic growth, the new computer and

communications innovations have actually helped to cause socio-economic insecurities, largely through exacerbating gaps in income among skilled and non-skilled workers, and by raising profound questions for the stability of the international political economy in terms of a very long "lag time"—in which it is not certain when the new IT innovations will begin to directly impact the world economy on a greater scale.

In addition to the rise of authoritarian and illiberal states determined to "filter" Internet access, increasing international political economic instability, coupled with the rise of multi-media conglomerates determined to fuse and synchronize "information" for profit in print, on TV and on the Internet, not to overlook American and European state efforts to enhance public surveillance in the "global war on terrorism," all raise profound questions for the ability of critical individuals, academics and journalists to tell "truth to power." And finally, the new media and IT revolution presents an existential paradox in that it offers tremendous opportunities of instant communication and infinitely expands capabilities for knowledge and activity, but provides no certainty as to the prospects for successful negotiations to put an end to conflicts or to the actual impact that these significant technical advances will ultimately possess on humanity as a whole.

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