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Robert A. Johnson

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# RECONSIDERING FUTURE WAR

## Predicting Future War

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Robert A. Johnson

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**ABSTRACT:** This article assesses how we think about future war, drawing attention to its associated caveats, obstacles, and intellectual problems. It is divided into three sections: the first acknowledges that predicting the future is immensely problematic, but suggests history can be a critical guide. The second assesses the present and why it is difficult to conceive of accelerating change. The third examines the trends of future war. The article concludes with implications for US forces.

### Predicting the Future Operating Environment

Throughout history, changes in the character of war have been difficult for contemporaries to identify, particularly during long periods of peace. While there may be trends and enduring principles of strategy and international relations, it is the variability of conditions, changes in the application of technology, adaptation, and the dynamics of conflict that make prediction, and consequently planning, very challenging. The problem of prediction has not prevented bold assertions, and some dystopian visions of the future have been propagated through sensationalist tracts and even, apparently, in serious scholarship. The modern prophets of doom who foresee a Hobbesian anarchy include such distinguished names as Robert Kaplan, Francis Fukuyama, Samuel B. Huntington and, albeit to a less apocalyptic extent, David Kilcullen.<sup>1</sup> Martin van Creveld and Philip Bobbitt suggest the state is in terminal decline in international affairs, opening the way for chaos and warfare.<sup>2</sup> Others claimed that war would be conducted “amongst the people” with dire results in terms of civilian casualties, and the official United Kingdom military doctrine of 2009 on future character of conflict referred, in solely negative terms, to a “hybrid” battlefield that would be inevitably “contested, congested, cluttered, connected and constrained.”<sup>3</sup> Works on global strategic trends predict a violent future amidst diminishing natural resources, climatic pressures, and global population growth. Nevertheless, such projections are starkly at odds with the conclusions of Steve Pinker, Andrew Mack, and Håvard Hegre, specifically that war, both minor and major, is in decline.<sup>4</sup> Statistical work

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1 Robert D. Kaplan, “The Coming Anarchy,” *The Atlantic*, February 1994, <http://www.theatlantic.com/ideastour/archive/kaplan.mhtml>; Francis Fukuyama, *The End of History and the Last Man* (New York: Free Press, 1992); Samuel B. Huntington, *Clash of Civilizations and the Remaking of the World Order* (New York: Simon and Schuster, 1996); David Kilcullen, *Out of the Mountains* (London: Hurst & Co., 2013).

2 Martin van Creveld, “The Fate of the State,” *Parameters* 26, no. 1 (Spring 1996): 4-18; Philip Bobbitt, *The Shield of Achilles* (New York: Penguin, 2003)

3 Rupert Smith, *The Utility of Force* (London: Allen Lane, 2005); Ministry of Defence, *The Future Character of Conflict* (MOD, DCDC Strategic Trends Programme, February 2, 2010).

4 Steve Pinker, *The Better Angels of Our Nature: Why Violence Has Declined* (New York: Viking Books, 2011); Andrew Mack, “More Secure World” lecture at ANU, February 2011; Håvard Hegre et al, “Predicting Armed Conflict, 2010-2050,” *International Studies Quarterly* 55(2) (2013): 1-21.

Dr. Robert Johnson is the Director of the Oxford Changing Character of War (CCW) research program. The program brings together academics, policymakers, and armed forces in the study of war, pursuing a variety of research themes, including war and the state in the connected world, nonstate warfare, and strategy. Dr. Johnson also served in the British Army.

at Uppsala University, incorporating all the standard drivers of conflict since 1945, forecast a reduction in the number of wars and in the overall casualty toll in the next fifty years.

In the past, attempts to predict the future of war were just as contradictory. It was always tempting for contemporaries to hold on to strongly-held values and force structures and to downplay unpalatable truths. The selection of preferred assumptions, rather than absolute truths, was a common problem. Nevertheless, some projections, dismissed as absurd by contemporaries, proved accurate in time. Selection, exaggeration, absurdity, contemporary fears and preferences, misunderstanding, and misplaced long-range forecasts were the characteristics of predicting future war in the past, and all these traits still dominate the present.<sup>5</sup>

There are many reasons why prediction is so difficult, even when there are apparently obvious positivist “trends” to guide us. It is tempting to make projections in the present based on the types of wars that seem the most prevalent today and to assume that, for the foreseeable future, all wars will fall into this pattern. Military analysts want to identify the characteristics of future war with some accuracy, not least because expensive technological development programs depend on their judgments, training of specialists is long term, and governments require success with the greatest efficiency. The difficulty is that success is contingent on context. Clarity in what the objective is must be essential, but the dynamics of war frequently change the conditions under which the conflict was entered. Aims, therefore, evolve just as rapidly and comprehensively as the conflict itself. Trends of the recent past give strong indications about war in the near future but still require caution. Failing states, international terrorism driven by radical ideologies, and a diminishing power of Western states to influence events or populations may characterise the immediate future. However, the true value of history is not to invoke direct analogies, nor does the answer lie in trying to extract selections to suit a particular agenda, as so often occurs. The value of history is rather in encouraging critical reflection, to ask questions, and to challenge the positivist assumptions that crowd our field of view. We are subject to the flux of history, and we cannot entirely escape our present, but we should seek to break free of unreasoned supposition about the future through critical thinking.

### **War and Accelerating Change**

Recent assessments of the future operating environment have laid emphasis on trends visible in the present. The relative economic decline of the West in relation to the rise of Chinese manufacturing, a phenomenon not necessarily inevitable in the future, has given rise to the assumption that the world will become more multipolar. Given the brevity of the American unipolar moment after the Cold War, multipolarity is hardly surprising, but its association with the relative economic decline of the West is illogical: it is not automatic. Indeed, the rising military potential of China and ambiguity over Beijing’s long-term plans, referred to with such regularity and suspicion that confrontation now

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<sup>5</sup> See Antulio J. Echevarria II, *Imagining Future War: The West’s Technological Revolution and Visions of Wars to Come 1880–1914* (New York: Praeger, 2007).

amounts to an accepted, inevitable condition, may never occur at all, even in the Pacific.<sup>6</sup> China provides peacekeeping forces to the United Nations and is primarily focused on its domestic security. Fears of its cyberwarfare potential often fail to take any account of the Chinese government's desire to monitor domestic sedition. The People's Republic of China is particularly sensitive about its border integrity, not an unreasonable attitude given threats to its frontiers in 1950, 1960, 1962, and 1979. Most important of all, China is restrained in its ambition by its interdependence with the West and the global economy. It is reliant on markets, as well as the quiescence of its domestic population. A second assertion is that legal frameworks for Western operations will become less flexible and military officers express a fear they will be too constrained to maneuver at all in the future.<sup>7</sup> Legal advisors are vital in low-intensity operations among the people and in counterterrorism but would have less bearing on high-intensity campaigns. Indeed, it should be noted that legal advice in Western countries has tended to facilitate rather than obstruct operations. The real obstacle is risk-aversion and fear of juridification of operations at the strategic and policymaking level. Concerns are expressed, for example, about psyops, surveillance, and targeting even though these are intrinsic to counterterrorism.

A third assertion is that future operating environments are forecast as urban, with rapid population growth exerting impossible strain on infrastructure and resources. A further complication is that climatic change is regarded as the catalyst for a greater incidence of natural disasters, particularly affecting coastal cities, and Western forces could find themselves in devastated regions. Resource crises, an assumed trigger for war, are foreseen as reaching an acute stage when energy demands begin to exceed supply or available reserves, and the first to be affected, it is thought, would be cities teeming with impoverished populations. Significant adjustments are indeed likely, but, in fact, these will be driven by the market: as costs become too great, consumers and states will be forced to switch to alternatives, and war may not always be the result. Mapping the choke points of demand and supply, and the relative power of cities, states, and nonstate actors, might produce some correlation with future conflict; however, these correlations cannot be regarded as deterministic.

The most accurate assessments of war in the near future are informed by the present. These foresee large insurgent movements, operating across rural and urban areas, deeply enmeshed in local politics, and enjoying the sympathy if not the support of their populations. Iraq, Afghanistan, and Somalia have been characterized as large-scale Western military intervention that antagonized local people, threatened vested interests, and were marked by hasty or badly aligned ends, ways, and means. Even if deliberate intervention is not the intention, it is possible that, in the near term, attempts to bring humanitarian relief to a population in the midst of civil war, or a peacekeeping mission gone awry, could produce similar complications and obligations.

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6 For an alternative view, see Christopher Coker, *The Improbable War: China, the United States and the Logic of Great Power Conflict* (London: Hurst, 2014).

7 Akbar Ahmed, *The Thistle and the Drone: How America's War on Terror Became a Global War on Tribal Islam* (New York: Brookings, 2013).

Since American conventional capability is so overwhelming, and a nuclear exchange is so unthinkable, many believe *all* future adversaries of the West will wage irregular or unconventional warfare. Some assert that proxy warfare will be more common.<sup>8</sup> Some proxies might not be conventional military forces, but may range from private military companies to transnational corporations and financial institutions.

The terrorist attack of 11 September 2001 in the United States suggests that future attacks will be directed at specific weak points of the West. Their targets, such as civilian populations, embassies, and infrastructure, are invariably nonmilitary, but, in fact, these vulnerabilities are exactly what Western armed forces need to address not least because civilian agencies lack the capability to protect them. In tackling these weaknesses, a radical reappraisal of the role and function of armies is probably required, along with a new appreciation that the future operating environment is as likely to be in the domestic sphere as overseas.<sup>9</sup>

Anxiety about Western vulnerabilities has produced a great deal of speculation about e-warfare, counterterrorism scenarios, interrobotic battles, and the future of unmanned air power to conduct standoff attacks. The problem is these may not characterize future war, even if they are reassuringly predictable for their advocates and critics. Western military analysts are eager to identify the patterns with which they are familiar, even where they tend to select and exaggerate the threats and ignore future opportunities. Much of this is cultural. Clausewitzian notions of decisiveness, the politics of decision, and rapid results are deeply attractive, even though war can be, in essence, indecisive, protracted, dynamic, and unpredictable.

One current characterization of war, we observe, is of increasing digitization, with an emphasis on the metrics of targeting, firing, surveillance, and effects. The steady evolution of this phenomenon has been overshadowed by recent debates about counterinsurgency techniques. Nevertheless, the issues are closely related, for, at the tactical level, insurgents endeavor to overload these superior systems by multiple firing points or various forms of attack, including suicide bombers. Special Forces teams are still required to carry out close surveillance to enable the computerized weapons to engage and they often need to be concealed inside populations or recruit local auxiliaries, employing men using a high degree of empathy and understanding of the needs of nonstate actors and their agendas.<sup>10</sup> Despite attempts to eliminate friction with new technologies countering terrorism and insurgency, human personnel and their high-tech systems are still vulnerable to exhaustion, technical failure, and to erroneous decisions taken by tired, stressed, and scrutinized commanders. Information fog may be less of an obstacle in conventional warfare, but insurgents try to subvert Western information systems, confuse, obscure, and remain concealed. The high-tempo of

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8 Andrew Mumford, *Proxy Warfare* (Cambridge: Polity, 2013).

9 The implications are that police forces may be compelled to develop more paramilitary capabilities, or, perhaps, that military forces will be forced to confront duties of Military Aid to the Civil Power more frequently, and perhaps blend with policing tasks.

10 Diane E. Davis and Anthony W. Pereira, eds., *Irregular Armed Forces and their Role in Politics and State Formation*, (Cambridge: Cambridge University Press, 2003), 149-177; Austin Long, "Going old school; US Army Special Forces Return to the Villages," *Foreign Policy*, July 21, 2010, [http://afpak.foreignpolicy.com/posts/2010/07/21/going\\_old\\_school\\_us\\_army\\_special\\_forces\\_return\\_to\\_the\\_villages](http://afpak.foreignpolicy.com/posts/2010/07/21/going_old_school_us_army_special_forces_return_to_the_villages); Charles Tilly, *The Politics of Collective Violence* (Cambridge University Press, 2003), 19.

conventional war suits the technological systems of Western forces, but periods of protracted warfare among populations do not, because here friction reasserts itself more powerfully.

The assumption, much repeated, is that Western operations in the future will be expeditionary since there is no existential state threat to the United States or the European continent. Those who wish to avoid the protracted character of land warfare, like that in Afghanistan, speak of the need for air and sea operations, or, at the very most, a light force structure. Advocates of such a posture rarely acknowledge the limitations of air power that were exposed as recently as operations in Kosovo. Navalists, eager to emphasize the way governments could maintain their freedom of action but not become embroiled in land campaigns, give less attention to the vulnerabilities of sea power in congested littorals or the fact that decision in war in the past occurred on land just as much as at sea. Those who envisaged light forces engaging in peacekeeping seemed not to have considered the consequences of these missions going wrong, resulting in severe fighting and the risk of catastrophic defeat.

The logic of a light footprint in Western expeditionary warfare in 2001-03 was to remain agile, minimize the burden of logistics, and avoid the antagonism of local people with any overt and large-scale military presence. The United States sought specifically to avoid any idea of occupation in Afghanistan to prevent a repetition of the Soviet mistakes in 1979. In 2001, there was considerable faith in the ability of air power to deliver solutions without a substantial ground commitment.<sup>11</sup> In fact, the logic of smaller ground forces means greater vulnerability and less intelligence which can only be compensated by a greater reliance on air power. Yet, despite the advent of precision strike and enhanced targeting, reliance on air power has caused higher civilian casualties. This approach proved counterproductive in the militarized policing operations Western forces subsequently found themselves. Air power alone could not provide security for the establishment of a new government. Since operations against Libya (2011), there has again been enthusiasm for air operations that avoid a ground commitment, and limited missile strikes were advocated against the Syrian regime in 2013. It has taken some time for Western powers to realize that not only their methods of war fighting and stabilization, but also their campaign design and doctrines, cannot be treated as immutably superior, and they have been forced to change constantly as operations unfolded.

New technologies, from unmanned aerial vehicles to robotics, and new methods such as cyber denial of service or disruption, do no more to guarantee victory than did the faith in air and sea power in the early twentieth century. The novelty of a technology has never ensured success in its own right—it is the integration of innovation into effective methods and means that gives a strategic or tactical edge. This has been the case particularly with unmanned aircraft with the ability to strike with missiles. Debate has raged on the character, legal and ethical, of targeted killing within states not at war with the West, such as Yemen or Pakistan, of temporarily removing insurgent fighters from the battlefield by extra-legal incarceration, and extraordinary rendition of suspected

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11 D. M. Drew, "US Airpower Theory and the Insurgent Challenge: A Short Journey to Confusion," *Journal of Military History*, 62 (1998): 809-32.



fighters.<sup>12</sup> The fact remains that the enemies of the West subvert Western laws of armed conflict; they attack while concealed by the local civilian population, do not adhere to the truth in their information operations, and declare their intention is to inflict mass casualties on those who do not conform to their ideas. The Western concern to protect populations, deeply internalized from the advent of massed air bombardment in the world wars, is not the priority for many non-Western belligerents. Disturbing and unpalatable though it may be for the West, the fact is that intimidation, fear of reprisals, and overwhelming military power have all too often swayed a population into compliance, rather than the selective ethical targeting so treasured by Westerners.<sup>13</sup> Nevertheless, inconsistencies can also be exploited. Drone strikes without a clear framework of the rules of engagement erode the boundaries between war and peace still further and make it easier for nonstate groups to assert that they, too, possess the right to strike back in an international setting.

Urban and marginal environments where government control is not assured clearly present the greatest problems for security forces, and at times, the military may assume a temporary role as governing authority with legal powers. Western armies find the thought of internal security less attractive than conducting war beyond their national borders. Domestic security is regarded as a form of policing, rather than a military activity. The unhappy history of internal security and coercing of populations, while the traditional role of armies before the nineteenth century, can seem anathema to military professionals. Yet, more emphasis needs to be placed on the objective of getting adversaries to the negotiating table as the parameter of success, seeing negotiation as normative, rather than the exceptional total war concept of military victory through the destruction of the means to resist.<sup>14</sup> Treating war as an extension of politics means that victory is the correlation of ends, ways, and means, and it is a continuous process, not an end-state.

Above all, the inability to predict the future confidently might help explain the current desire to seek out the new while retaining the familiar in future war planning. Nevertheless, in the future operating environment, both old and new concepts of war will coexist. While some adversaries will use new weapon systems and information operations, some will attack infrastructures and attempt to mobilize populations using ideological grievances, but others will physically dig trenches and fight at close quarters. There will be no template for prediction, for every conflict will have its own context.

Finding patterns is common in future war discourse, and the anxieties of the present are usually projected onto the future in exaggerated

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12 Kenneth Roth, "What Rules Should Govern US Drone Attacks?" *The New York Review*, March 25, 2013, 16-18.

13 The best documented and most comprehensive use of terror against insurgency include Bolshevik annihilation of white resistance in the Russian Civil War and the Nazi destruction of French resistance activities in central and southern France during the Second World War.

14 Richard Hobbs, *The Myth of Victory: What is Victory in War?* (Boulder, CO: Westview, 1979).

terms.<sup>15</sup> Less sensational assessments are not so appealing, attract less attention and, if unfulfilled, are held up as exemplars of complacency. Longer term historical trends are difficult to identify: one cannot be quite sure if the trend identified is the correct one. Moreover, it is impossible to ignore the type of wars in the present. It appears that the world is, for now, in a period of unconventional conflict. Projections are made against this established pattern, which explains why those seeking to demonstrate through statistics a decline in war in the future feel as confident as the doomsayers.

The inherent contradictions of these analyses suggest that, in fact, there is no guarantee that patterns and trajectories are reliable. It is not inevitable that the low intensity, unconventional warfare of today will continue even into the near future. It is possible that episodes of intense and highly destructive interstate war, perhaps including a limited exchange of tactical nuclear weapons, will occur.

Moreover, as David Kilcullen points out in his recent *Out of the Mountains: the Coming Age of the Urban Guerrilla*, it is not so much that the trends of change are unfamiliar and unpredictable as the *rate* of those changes.<sup>16</sup> He argues that existing institutions, states, governments, and military forces will be overwhelmed by the scale of unrest in new megacities and the tempo of new connectivity. In particular, he argues the future operating environment will be cities rather than states, with future conflicts likely centered on the periphery of sprawling coastal conurbations in the developing world where nonstate armed groups such as drug cartels, street gangs, and warlords compete for resources and influence. Failing states would be the dominant feature of the future, and Kilcullen develops the idea to suggest that states will struggle to govern megacities. Furthermore, Kilcullen illustrates how modern connectivity, such as the internet, mobile phones, satellite technology, Google Earth, and social networks, present both challenges and opportunities in this new operating environment. These tools can mobilize demonstrators as in the Arab Spring, maintain an unofficial economy in Mogadishu, train unskilled soldiers and armorers, and be employed by school children to identify the position of regime snipers in Libya. This connectivity comes into play at both local and global levels and will overload conventional military forces and government institutions.

By advancing a theory of what will be new in the operating environment, one can lose sight of continuities. While cities will potentially be the seedbed of popular unrest, it is also the case that urban areas are dependent on their hinterlands. The point is that cities can be bypassed and contained as well as being a battle space. They are interdependent on other cities, ports, transport infrastructure, and their environs, and that means the city system, as Kilcullen describes it, consists not only of the built-up environment, but of the supporting networks that serve it. Moreover,

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15 Change in human history has been, hitherto, incremental with periodic and episodic “shear events” that are subsequently interpreted as turning points. For Clausewitz and Jomini, the great turning point of their age was the French Revolution, but for many in military history, these moments were identified either as decisive battles, as technological breakthroughs, or the achievements of particular commanders. Such determinisms were challenged in mainstream history and social science but seemed to enjoy a greater longevity in military studies. See Jeremy Black, *Rethinking Military History* (London: Routledge, 2004).

16 David Kilcullen *Out of the Mountains: The Coming Age of the Urban Guerrilla* (Oxford: Oxford University Press, 2013).



one needs to acknowledge the importance of ideologies and legal aspects of the operating environment, since constraints on security forces are highly likely if they are to confront a Mumbai-style terrorist swarm attack, mass contamination, or low-intensity operations against an aggrieved, poor population taking violent action against their deprivation.

Kilcullen reiterates historic anxieties about resources, threats, and reputations that are unlikely to disappear as causes of war. It is likely that the ends of war will remain predictable, while ways and means will be transformed significantly. Yet, alongside these changes, traditional modes of war will remain. The use of force as an instrument of policy, which seems inevitable, can still be stratified into limited war, the threat of *guerre a l'outrance* (in terms of Weapons of Mass Destruction) and attempts to neutralize an enemy by the defeat of his strategy. Nevertheless, new means during the century may open up new possibilities, or new ways of achieving strategic ends.

Rather than a singular global crisis in the future, clashes of resources and population pressures will vary by region.<sup>17</sup> Some crises, through their sheer scale, may accelerate rapidly. The limited supply, exhaustion, or increased costs of extraction of resources such as energy, water, and food will also vary and affect the developing world more adversely than the developed. The *Global Environment Outlook* of 1999 predicted conflict over water in North Africa and the Middle East between 2000 and 2025, though ideological and governance issues still predominated in those regions midway through that forecasted period.<sup>18</sup> Financial pressures have also proved far from isotropic: the lack of credit in less developed countries leaves them vulnerable to popular unrest. Inequality and youth unemployment are widely predicted to rise over the next thirty years, and there may be a corresponding rise in disaffected groups willing to take violent action.

Nevertheless, there is a risk of exaggeration: terrorist attacks on infrastructures are short-lived and are unable to destroy entire systems. The true vulnerability of the West would be exposed by the economic collapse of China through some mass social unrest and a global stagnation in trade and financial exchange. Nevertheless, the digital revolution promises to increase global GDP far faster and more extensively than the industrial revolution. The acceleration of technological change is likely to produce significant benefits as well as detrimental outcomes. If sequencing a human genome in 2000 took several years and \$50 million, today it can be achieved in a day at a cost of less than a \$1,000.<sup>19</sup> This advanced medical research provides the United States with a significant strategic edge in global relations. The same is true of the ongoing information revolution. More information is generated every two days than the last

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17 In recent work by McKinsey and Company, demographic shifts and the rise of emerging markets will, they argue, place strain on global resources to an unprecedented level. Food prices will increase by 40 percent by 2030 and there will be a 30 percent gap in energy supply and demand for oil and gas. There is likely to be a gap of some 40 percent between supply and demand for water. Global meat intake will increase, placing pressure on available land.

18 Michael T. Klare, *Resource Wars: The New Landscape of Global Conflict* (New York: Metropolitan Owl, 2001). The states that are most vulnerable to conflict are Somalia, DR Congo, Sudan, and South Sudan. Areas that are at significant risk are Chad, Yemen, Afghanistan, Haiti, Central African Republic, Zimbabwe, Iraq, Cote d'Ivoire, Pakistan, Guinea, Guinea Bassau, and Nigeria.

19 McKinzeys's presentation at Oxford University, November 28, 2013.

2000 years combined.<sup>20</sup> The implication is that grievances will be amplified faster and to a larger audience than before, but solutions may also be faster to acquire. This possibility suggests there will be greater volatility across informational, physical, infrastructural, and ideational domains.

### Trends of Future War

The character of war in the future will change as frequently as it has in the past, but there will be many striking continuities, including terrorism and violent mass protest movements. There will almost certainly be a significant increase in irregular warfare in cities and systemic warfare. There are ten trends of future war: irregular warfare in urban areas exploiting infrastructural vulnerability; porosity; dispersal; depth; stealth; miniaturization of combat power; privatization of violence; devolution; nodal systemic operations, and precision.

In large cities, low intensity terrorism could be much more likely. Protracted conflicts require significant military and police manpower and surveillance commitments, and managed media operations. In future war, urban militias may be able to access more lethal weapons including surface-to-air missiles, anti-armor weapons, and contaminating chemical or biological weapons. In urban warfare, military forces would find civil authority collapsing, multiple agencies working in the same spaces with their own agendas, and a vulnerable civilian population expecting relief.

Systemic warfare is just as unconventional, involving attacks on financial systems, the deliberate hollowing out of local economies to create dependent regions and peoples, diffused and mass participation in antistate, antigovernment activity, information operations, cybercrime, cyber blockades, disruptive electronic warfare, selective bio-attacks on sections of society, outages in energy generation and supply, or contamination of food and water. Each type of assault is characterized by an emphasis on the systemic nature of the consequences: they are designed to disrupt, degrade, discredit, or destroy systems on which a state or a people depend.

The process of diffusion has affected the battlefield since the beginning of the industrial age as more lethal weapons of greater precision and range have extended it in-depth. Where Gettysburg was fought within the compass of a few miles in 1863, the Second World War was characterized as a conflict extending across a variety of theaters around the globe, requiring the mobilization of domestic economies and their populations. Since 1945, unconventional wars as well as overt, conventional wars, have affected the entire globe. The interconnected nature of the world economy and communications systems means that even the smallest terrorist act is broadcast to all the world's population.

Closely linked to the idea of dispersal is concealment or stealth, with small organizations operating out of sight, or attempting to remain concealed within populations or remote terrain. Interestingly, despite assertions that clandestine organizations are particularly threatening to the West, digital signatures are increasingly difficult to conceal. Modern

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20 Ibid.

state forces are even more exposed and vulnerable, and in the future camouflage in conflicts among the people will require complete blending.

Since the industrial revolution, precision engineering has facilitated smaller and more effective weapons systems, while advances in physics and chemistry have increased their explosive power. Concurrently, it has been possible to manufacture platforms that are smaller yet deliver the same or greater combat power. Machine guns, once large and cumbersome, became hand-held. After the first atomic bombs, new generations of nuclear weapons were designed until it became possible to manufacture a device as small as a nuclear artillery shell. In the near future, it is possible to envisage weapon systems of significant magnitude that can be carried by individuals. The deduction of this trend is that every city, port, and province is a potential battle space.

Warfare is likely to be individualized further in the near future as smaller and smaller groups assert the right to wage war, equipped with significant combat power. The increasing numbers of private security contractors and private military companies, in both domestic and overseas security tasks, is a trend likely to continue. Such a phenomenon makes the conduct of proxy warfare easier, with deniable groups and individuals trained and equipped by both states and nonstate actors. Assamese irregulars, Mexican drug cartels, Somali pirates, and fighters from the Nigerian delta have mounted sustained campaigns against governments, international interests, and large companies on their own terms.

The diffusion of power and communications since the late nineteenth century in the West, and which have now straddled the globe, are reflected in new modes of making war. The development of technology and communications, which was also once the preserve of the elite and the state, has passed into the hands of the population and has become a key enabler for irregular movements. Devolution has also empowered state forces: handheld radio and mobile communications enable small teams and even individuals to enjoy enhanced situational awareness, to locate targets and to maneuver. Increasing specialization means greater connectivity; interoperability and devolution are essential for efficient delivery of effect.

Technological developments continue to enhance precision and the overwhelming power with which to conduct stand-off attacks with considerable effect. More precise means of war in the future will nevertheless require more technician-warriors, able to wield these devices both in defense and offense, such as new generations of antimissile technology and semi-autonomous vehicles. There will need to be multiuse platforms, able to operate on land, sea, and air, and electronically, and there are likely to be smaller numbers of highly trained, well-equipped, and versatile Special Forces, whose vulnerability will be compensated by a range of support options (in transport, intelligence, fires, expertise, and logistics), but in all these state operations, the emphasis will be on greater precision alongside concealment, dispersion, and adaptation to the threats of clandestine attack posed by nonstate or proxy forces. New systems will necessarily be needed to operate with precision underground, in urban spaces, in high-rise buildings, underwater, and in space. For the future, forces will need even greater accuracy, and, more importantly, *greater speed of target acquisition* than at present, if it is to be able to destroy terror forces located or operational within populations.

The ability to inflict nodal or systemic degradation of an enemy's capacity to resist, command, or communicate will be a feature of future war, involving the paralysis of communications, greater emphasis on informational-psychological, cyber, or, in the future, even neurological warfare. It will represent a form of stealthy, deniable e-envelopment. These modes will be part of a wider array of operations against the principal threats of enemies situated within domestic populations.

### **Implications for Contemporary Armed Forces**

Deductions are difficult, and, in a short article, necessarily selective. Nevertheless, brevity and trenchant assertions can provoke critical thought, and it is through informed exchanges that we may challenge assumptions, refine our conclusions and remain alert to misconceptions. In this spirit, the following concluding thoughts are offered.

Future forces will make use of stealth, systemically operating through communications networks and through the exploitation of the vulnerabilities of society. They will use information warfare to spread fear and panic, but also wage kinetic warfare on and among civilian populations. Their aim will be to destroy financial systems, infrastructure, and the willingness to sustain resistance. This unconventional warfare will be more frequent than the sustained, high-intensity wars of the past, although these, too, may still occur. The weaponization of space appears to be imminent.

To meet these threats, states have to identify their own vulnerabilities, and take steps to address them, even if this means the reorganization of their armed forces. Preparation for this diffused, dispersed, devolved warfare of the future will also mean new civil defense measures. In the future anti-terror conflict, information and psychological warfare will be essential. Peacetime preparation is likely to blur with protracted, sometimes domestic, internal security operations, peacekeeping, and counterinsurgency or counterterror missions. Armed forces will probably be deployed on the receipt of specific intelligence in highly mobile and exceptionally rapid operations. Attacks will resemble raids. Intelligence will be the mainstay of operations, but targets of opportunity will also become available fleetingly and will need a fast and precise response to exploit. Intelligent application of tactical concepts will be vital, but so will closer liaison with a variety of civilian agencies.

The current trends of war are an incomplete guide to the future operating environment, but they give some shape to its likely direction. The themes of porosity; dispersal; depth; stealth; miniaturization of combat power; privatization of violence; devolution; precision; nodal systemic operations, and infrastructural vulnerability will occur in a variety of domains—physical, infrastructural, ideational, and informational, especially with regard to cities and systems. The grammar of war, in these areas, has changed. Understanding cities and their hinterlands, their morphology, connections, and vulnerabilities gives the future commander an important advantage whether they are directing regular, irregular, or proxy forces. Understanding the new connectivity of systems, be they electronic, urban, resource-based, or informational, will determine military literacy in the future. Military forces will be forced to adapt to the new environment or face defeat. One way to

improve the ability to adapt is to emphasize the importance of innovation, improvisation and adaptation, and use the past as a critical guide for educational development and institutional change.