# Combating Weapons of Mass Destruction: Translating Strategic Guidance into Actionable Solutions

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When the attacks of September 11, 2001 shattered the sense of domestic security that Americans had felt living in the United States, it was soon after that individual and national security attention was drawn to the question – "What else could happen?" Quickly, people began to realize that a significant vulnerability of the free and open society we enjoy is the risk of "weapons of mass destruction" or WMDs in the hands of this same type of vengeful terrorist who attacked us on 9/11. With that realization came a renewed and refocused emphasis on both non-proliferation and counter-proliferation of these WMDs. What are these weapons? *They are nothing more than the next turning in a long history of innovation trumping innovation in man's quest to out-maneuver and subdue his enemy.*

*Aptitude for maneuver is the supreme skill in a general; it is the most useful and rarest of gifts by which genius is estimated – Napoleon*

Maneuver, usually listed second after Mass among equals in a list of the Principles of War, is defined in joint doctrine as placing the enemy in the best possible position for the optimal application of force. This 20th century view of maneuver must be broadened and assessed as gaining dimensional advantage over an enemy, whether by sea, land, air, space, or cyberspace. Viewing the history of the warfare through the prism of technology development and its impact on maneuver brings to light the critical nature of technology in warfare's evolution

From the continuous lengthening of standoff range, to the introduction of the railroad for logistical re-supply, historians have often heralded the successful introduction of technologies as turning points in a military being able to gain advantage over another. The introduction of space based capabilities in communication, surveillance, and navigation are also examples of technologies that, when successfully employed, gave significant early warning of enemy position, movement, and intention. With respect to speed, the stirrup ushered in the age of cavalry, dramatically changing the tempo of war and giving the advantage, at least temporarily, to land forces best able to use it. The same can be said of the internal combustion engine and its application into the tank, ushering in the implementation of the blitzkrieg strategies and tactics. Is there any doubt left that the successful integration of airpower over the last 100 years, from largely an observation platform with fighter escort in WWI, to precision "Shock and Awe" in Operation Iraqi Freedom, has not been critical to the U.S. maintaining strategic dominant maneuver?

In the 21st century, technological development is increasing at unprecedented levels. Unclassified briefings by the highest levels of our national intelligence community indicate that their gravest concern is the threat posed by the combination of technology acceleration (Moore's Law in computing power, tailored-designed, custom DNA bacteria for the cost of a new car, etc) and technological leveling through instantaneous diffusion over the internet and overnight shipping.

Innovation - Historical Pivot Point in Maneuver Warfare

What becomes clear through the study of Maneuver Warfare is that more often than not, the most significant and abrupt changes in a combatants ability to "gain the dimensional advantage through movement" comes coincident with the successful application of a new

technology. Placing an adversary into a posture of disadvantage to impose its will can be accomplished one of two ways. Repositioning oneself into a location that leaves the opposing military forces in a relatively weaker posture is the first; the second is to lure the enemy in such a position leaving so it is left with no choice but to move into a position of disadvantage (the classic "horns of a dilemma"). Throughout history, a classic method to accomplish the first has been the relentless pursuit by military technologists to continuously lengthen standoff range. In doing so, a force is able to maintain its strike advantage while making its opponent's force much weaker and less effective in inflicting harm.

The original standoff range very likely would have been arms length, with the balled fist being the weapon employed. Over the millennia, besides making the weapon itself more lethal, man has sought to lengthen that range to a rock, a spear, etc, culminating today in the airplane, the long-range missile, and software viruses and each giving him the ability to out-maneuver his opponent and strike him at will. Not to lessen the importance of other factors, such as skill, courage, or reflex in such a contest; all else being equal, the first military (whoever it was) to successfully adapt the "lengthened knife" or spear to it warfighting apparatus gained a clear advantage over all others.

> "The time when only a few states had access to the most dangerous technologies has been over for many years. Dual-use technologies circulate easily in our globalized economy, as do the scientific personnel who design and use them. As a consequence, it is more difficult for us to track efforts to acquire, for nefarious purposes, these components and technologies."[47]
>
> Annual Threat Assessment of the Director of National Intelligence for the Senate Armed Services Committee - 27 February 2007

The DNI sees it's most harrowing threat, that of technology invention and diffusion and the ability of our adversaries to "live on the exponential technology curve" unlike the US military which is encumbered by the weight and drag of its own bureaucracy and infrastructure that it took to get to that understanding breakthrough.[37] Nimble adversaries are leapfrogging a century of science because both the diffusion of technological knowledge and the access to product come largely as a result of the internet and the explosion of both the Google & eBay economies. Ominously, unanticipated changes in the character of war can cause major pivot points in political history as well.

Richard Hellie, in his work Warfare, Changing Military Technology, and the Evolution of Muscovite Society, emphasizes the the effect of migrating from the bow and arrow to the musket on not only victory in warfare, but also resulting in a reordering of political power. During the period from 1450-1725, Russia experienced two revolutions in society as a direct result of military threats that came largely from the full-scale introduction of technological advances. The first was the Tatar light cavalry, and the second was to the Swedish infantry threat. The replacement of the light bow and arrow with the musket changed the nature of warfare from one of resource control to territory control. Russia reordered its society to a very rigid, caste-like system and was able to successfully defend itself against threats from Lithuania, Poland, and Sweden.[35]

We live in an epoch unparalleled in human history, where "virtually anything of value is offered today in today's global marketplace-including illegal drugs, …machine guns and rocket launchers, and centrifuges and recursor chemicals used in nuclear weapons development."[53] The shift to a more free global arms market means "The massive transfer of goods and equipment once under the exclusive control of national armies into private hands released into

the market products ranging from rockets launchers to SCUD missiles and nuclear designs and machinery."[54]

**Maneuver, Advantage, Innovation, and Uncertainty**

*It's tough to make predictions, especially about the future – Yogi Berra*[60]

It is clear that much like in the commercial marketplace itself, it isn't the inventor of technology who "wins." The winner is the successful innovator. Whether it is in stand off range or logistics, reconnaissance or precise navigation, the military that was most successful in applying the invention to the art of war was the most successful in gaining advantage and winning, all other instruments of political power being equal.

**Innovation in the Commercial Marketplace**

As part of a thesis for the National War College, this author conducted case studies across three industry leaders in innovation, Google, Apple, and IBM to determine which cultural characteristics were common among them and could be applied to the defense world ultimately to improve this nation's ability to innovate solutions to counter the asymmetric technologies that will be used to significantly degrade the elements of National power. Conducted using the framework devised by Jim Collins in his treatise *Good to Great*, the results of these findings are summarized below:

**The 11 Cultural Lessons of Innovation:**

People:

*Recruit the best people you can possibly afford, and avoid the worst at all costs*

*Establish a culture of seeing problems to be solved*

*Direct a sizable and conscious amount of work-time effort to foster the creative*

*Organize around small work groups: 3-4 people foster the highest level of innovation.*

*Greatest leadership trait is credibility - technically skilled and perceived as such.*

Thinking:

*Commitment at all levels to "radical honesty"*

*The starting point of all relevant innovation is solving a real problem*

*The very essence of creative, innovative thinking is accomplished by individuals*

Action:

*Disciplined, rational, but audacious movement at all levels*

*Vision and raison d'être are internalized by all levels and members of the organization*

*Everyone must have hands-on skills related to the work they are leading or involved with.*

Application to Non-proliferation and Counter-proliferation of WMD:

There are few propositions more fraught with disaster than the idea that the military needs to be run like a business. The goals, motivations, necessity, and reason for existence often run in completely opposite directions. The confluence of history that this nation finds itself is unique in human history, however. Scientific & technological know-how and invention are at the highest rate in the history of the world and the world is becoming a technologically level playing field due to the networking associated with the web and internet commerce. While this flattening enables an elevation of productivity and living standards for people around the world, it must be recognized that it is also one of the roots of gaining technological advantage. Because of that, the national security apparatus dedicated to combating WMD, a necessary but quite unconventional endeavor for national survival, ought to consider these lessons as it migrates and devises organizations for this purpose.

The engine through which much of the leveling and advancement comes from or through is the Internet. Though most technologists will readily argue that the web-enabled world is still only in its infancy, sufficient time has lapsed that a highly inventive and competitive economy has formed around it. Because of the lower-capital costs associated with entering this market, it has been and is likely to remain highly competitive. The intellectual property associated with it resides predominantly in software, and the economic reward can be so asymmetric, it remains a highly dynamic, competitive, and innovative environment. For these reasons, these cultural attributes that enhance the ability of an organization to be innovative have application to the organizations dedicated to our gravest threat, WMD in the hands of terrorists. They do call into question some general assumptions the highly bureaucratic national security establishment has made in its own culture, organization, and traditions (in fact in some ways are contrary to conventional wisdom), however this nation is dealing with a new power distribution that is being brought about by this technological leveling. To ignore this shift is to the nation's peril. Further study is needed into studying and applying each of the proposed considerations, but it must be done soon. As Napoleon said many years ago, "Given the same amount of intelligence, timidity will do a thousand times more damage in war than audacity."

Very little gets done in mature bureaucracies, Philip Howard emphasizes in Death of Common Sense, because the processes we have put in place over the years strip responsibility from bureaucrats. This renders them unaccountable and disallows the three attributes most necessary to solving problems and getting things done: effort, courage, and leadership. [164] Without rethinking the reward structure of our military to begin a migration away from a highly bureaucratized, static organization towards a flattened, empowered, versatile, and highly innovative culture, there is significant risk that, much like the evolving Improvised Explosive

Device war caught our Army by surprise, there will be much graver and much higher threats to our national survival in play.

The only limiting factor for technological applications by military force is the imagination of a certain percentage of the 6.5 billion people, who deep down inside would rejoice seeing the United States endure some forms of humiliation for the hubris that many perceive it to be acting on. The question that ought to be haunting the Non-proliferation and counter-proliferation establishment right now is this: "How can we be ready for a 21st century *"Mongol"* (who applied the stirrup to cavalry warfare and changed the world), who at this moment is recognizing the military utility of something that no one else sees and that can bring down the most powerful nation the world has ever known?"

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