

# Part 1: What Impact Does Military Technology Have On Society?

- This is Part I in a Three Part Series -

This article originally published on our Home Page in May 2012

With this article we begin the first of a series of three essays on technology and war. We start by analyzing the impact of nuclear weapons and the concept of the ultimate weapon on war, continue in the next article with a discussion on how technology shapes warfare, and in the last article end with a final essay on what makes modern military technology different from that of the pre-modern period, from the commander's perspective. Join us each month, and feel free to send us your comments.

As we all know, many of the scientists who worked on the development of the atom bomb had misgivings as to whether it was the morally and ethically responsible thing to do; to develop a bomb with such great capabilities, killing power, and ability to destroy humanity. A number of them, including Albert Einstein himself, wrote to President Franklin Roosevelt to express their concerns, yet at the same time urged that the bomb be built. Looking back at the advent and use of emerging technologies for military purposes, this instance of the scientists involved in the advancement of technology stepping forward and warning of the consequences of what they were doing was probably the first example of society recognizing that there is both a positive and a negative side to the inexorable advance of science.

Yet is that really the case? Perhaps more importantly, is it really the case that military use of emerging technologies always represents the dark side of life, while civilian use of it represents the bright side?

Ask the average man on the street and he would surely say that the military is quick to find terrible uses for new technology. Like some Darth Vader, the military is usually portrayed as skulking down the back alleys of civilization, looking for a chance to wreck its worst on society by repurposing a new technology for the sole purpose of maiming or killing.

That's what most people think. Our view? Bah. Humbug.

In our view, the truth is just the opposite. From our perspective it's the military that is first to find useful purposes for new technologies, purposes of the kind that frequently result in the further enlightenment of society and bettering of people's lives.

Take the Internet or the Global Positioning System (GPS). Without the military and DARPA, there would be no Internet (Al Gore to the contrary...), nor an ability for you, with your wife and kids in the car, to act like you are all knowing and well aware of where you are going, as you aimlessly try to find your way to your grandkid's Little League baseball final, all without stopping to ask for directions. GPS, in all its wonder, saves you from the embarrassment of having to admit that most of the time you don't know where you are or where you are going... something every man knows you're not supposed to admit to the opposite sex. Our point being that clearly, in the case of the Internet and GPS, rather than the military trying to work its worst on society, it has helped us all.

We would say the same for the atom and hydrogen bombs too.

As we look at the confrontation that continues to escalate between the West and Iran, over Iran's stubborn insistence that it has a right to develop its own nuclear technology (read: bomb), it serves our purpose to look again at what the atom bomb brought us all.

For one thing, while during its development there were a number of scientists that posited that it might cause the world ill, none of them walked away from their jobs or quit the project. Instead, to a man they realized that society is wholly unable to stop the advent of science or technology, whether it wants to or not. Because of the free thinking capabilities of the human race, to try to do so would be folly. Instead, what early scientists knew then and we know today is that whether science or technology is used for good or evil is not based on the technology per se, but on the intent of the people who have access to it and control it.

In the case of technologies that can be militarized, this is especially true. And in Iran's case, this factor is what drives the Israelis crazy. The intent of the leaders of Iran is what counts, not Iran's ability to cause nuclear fission.

One can see this by looking at those scientists that have lined up on the side of trying to develop even more destructive military technologies... in the interest of finding what is usually referred to as the Ultimate Weapon. Among them are distinguished people like Alfred Nobel, Niels Bohr, Werner Heisenberg, Robert Boyle, Paul Dirac and others who thought of weapons as having the ability to contribute positively to society.

Weapons, contributing positively to society? How so?

By making it possible to eliminate the blight of war, or at least bring its excesses under control, through the invention of a weapon so terrible that no one would have the courage to use it, lest it be used against them too. Therein, the Ultimate Weapon.

In a few months it will be 67 years since the first atom bomb was exploded on July 16, 1945, at Los Alamos, New Mexico. Used only twice in anger (August 6 and 9), the severity of the destruction it wrought in the real world (versus the theoretical world of quantum physics and

mathematics) saw its further actual use quickly set aside in favor of the threat of its use. In essence, with its first explosion it became the Ultimate Weapon.

Few could argue that the existence of this Ultimate Weapon has caused those who possess it to turn from considering actual use of the device to its application in another yet different capacity: as an instrument of politics. This became possible because once the world knew what the atomic bomb could do, there was no need to actually do it. The theory of Mutually Assured Destruction proved this point, as any reasonable world leader can see that the threat of its use on the part of sensible countries against regimes on the wrong side of history was sufficient to keep those countries in line. That is, provided that those rogue countries were able to think and act reasonably, on their own accord. But what of countries whose doctrine of societal development is not reasonable, not by our western standards at least?

For more than six decades every country that has had access to the bomb has also subscribed to the common belief that preservation of their own society was more important than the destruction of that of their enemy. And because of this it has been the case that the worst destructive power that the advancement of military science and technology could invent has served to make the world more peaceful and safe, not less so. More specifically, as opposed to being a threat to society, the Ultimate Weapon has turned out to be the long sought after war-stopper.

And while it continues to be the case that technology is neither good, bad, nor always neutral, there are some disturbing signs that things may be changing. The reason is that while technology by itself is non deterministic, it is also the case that it turns out to be the ideal instrument by which society can satiate its desire to manipulate the material world for human purposes. Don't believe us? Just look at genetically modified crops, or even Botox for that matter.

As we relate this to the case of Iran or North Korea, the concern becomes one of gauging whether their social values match those of the majority of the world or not. If they do, then they will use their increasing access to Ultimate Weapon technology to manipulate the material world for the benefit of humanity. If not, then we are all in for a very bumpy ride.

Again, we make the point: whether the advent of a particular technology ends up causing good or evil depends not on the technology itself, but on what humans choose to do with it. This is especially so for military hardware, and therein our concern over both Iran and North Korea gaining access to either nuclear technology or an effective ballistic missile system.

In the case of North Korea, it would appear that while its leaders are bombastic, they are not without intelligence. Self serving, egoistic, petulant, and childish, yes. Stupid, no. Their effort to gain access to Ultimate Weapon technology is likely little more than a ploy to achieve the global footing they seek, and/or to use it to either fatten their pockets or, hopefully, find a way to re-enter society through the back door. Regardless, while their doctrine of social development may be convoluted, it appears to parallel ours enough to give us comfort that

they fear reduction of their society to a parking lot as much as we do our own. If that is the case, then we need not fear North Korea any more than we do Russia or China today. While it may take a while, eventually the North Koreans will come around.

But what of Iran?

In the case of Iran, one might ask: does their society place more emphasis and value on preparing for the return of the Twelfth Imam, or on its own survival? Does their doctrine of social development parallel our own, or is it driven by messianic overtones that undermine logical reason?

Shi'ite Islam states that Allah shielded or hid Muhammad al-Mahdi as the Twelfth Imam so that he would be able to return to the world at the end of time, when he would then reappear and save it from the chaos it was descending into as it approached its end. And while Shi'ite orthodoxy has it that humans are powerless to encourage the Twelfth Imam to return, President Mahmoud Ahmadinejad, a member of the Hojjatieh sect, believes that if he can cause enough chaos and hasten the end of the world's coming, he can bring about the return of the Twelfth Imam sooner than Allah might normally have had it.

Considering this, one can quickly see that whereas world leaders who seek to avoid the end of the world can leverage the concept of Mutually Assured Destruction and the utility of the Ultimate Weapon to assure world peace, those who seek a quicker end to humanity see just the opposite: a chance to end things now, quickly, on their terms. That being the case, MAD and the strength of the Ultimate Weapon play perfectly into the hands of a wacky society such as that of Iran, a messianic cult that says it wants to hasten the end of the world, not stop it.

This is deeply troublesome. More than just being a means to turn Israel into a has been experiment, Iran's continuing effort to develop nuclear weapons seems based more so on attaining religious goals than dealing a neighboring country a devastating blow. Judged by the standards of reason, this form of Islamic belief threatens the world, not just Israel. One might ask: is all this crazy talk simply Iranian nationalist and Islamist rhetoric, something designed to intimidate the west, or does it represent their true, core beliefs?

One might also ask: can we afford to wait and find out?

For as long as rogue regimes continue to threaten the safety of others, those who wish to see a peaceful world will have to use the military force they have at their disposal, both manpower and technology, to suppress and stop those who would use the Ultimate Weapon for non-peaceful purposes. In this regard, and especially with respect to Iran, the preemptive aspects of the Bush Doctrine are beginning to look more and more attractive.

## Part 2: Technology Shapes Warfare

- This is Part II in a Three Part Series -

This article originally published on our Home Page in June 2012

In this article we continue with the second of a series of three essays on technology and war. In our last article we analyzed the concept of ultimate weapons and their impact on war, this time we look into how technology shapes warfare. In our next essay we will bring these two together and look into how Human Agency when added to the mix of technology and warfare determines the outcome of war. Join us each time and feel free to send us your comments.

Three months ago on our April Home Page we took our government to task for not giving us Americans enough information before a war begins to allow us to assess the value of an upcoming war to our nation's needs. What we were trying to express is our viewpoint that as things stand now most Americans are wholly unable to make an accurate assessment and understand the implications of an upcoming war sufficiently to fully understand what kind of commitment our country must make to that war if we are to win it. What spurred us to look into this area is the fact that the American public seems to consistently tire of each war we get into long before it is able to be brought to a proper end, with the result that our government and military leaders find themselves rushing to end a war and "get the boys home" before the public starts taking to the streets with pitchforks. Obviously, this sloppy method of ending the wars we fight contributes greatly to another problem we face: messy endings that leave the countries we fight in as basket cases stumbling along for the next 50 years as wards of society, or worse, as a continuing nemesis to our own country.

What we said the American people needed to know if they were going to stand behind a new war effort for "as long as it takes" was what the government and military leaders who would manage the war thought about how long the war would last, how much it would cost in terms of our nation's treasure, how long our commitment as a nation must be for, what the final stage of winding down the war would look like, how long the final stage would last, what the final stage's cost would be, and what the world would look like when all of the stages of the war were over and done with and the world was at peace again.

Key among these is the latter point as it applies to any hypothetical new country we might be thinking of warring against. That is, what will that country look like when our happy warriors come home and we are no longer spending any money to support it? Will it be stable and prosperous, enjoying a new form of participatory government, or will it be an oozing, war torn abscess of a nation hanging on the rump of the world for the next 50 years... as North Korea is and it is increasingly looking like Iraq and Afghanistan may be too?

As we said then, if we as Americans were to be so lucky as to actually be briefed on these kinds of things before a new war gets underway, and also lucky enough to actually have a President and Congress that has enough respect for the Constitution to declare a war instead of just segueing into it with the same insouciance that they apply to forming a budget, then we might be able to get into one of these wars, win it, and leave behind a successful, free, peaceful, prospering country, instead of the kind of mess we see the world being dotted with today.

Moving from this point to one that runs parallel to it, in this month's article we are concerned with how technology impacts these hot little wars. That is, what impact does technology have on the outcome of the kind of wars we are increasingly taking on today? If the American public is ever to know what to expect when America next goes to war, it needs to know more than just how many soldiers and how much money it will cost. It also needs to know how a war will shape up as it gets underway. And to know the answer to that, one must know of the impact today's technology has on a war's effort, because in the end it is technology that shapes warfare.

Why does the public have to know how our technology... more specifically how today's emerging technologies... affect warfare? Because the depth and breadth of pain the American public feels in any new war effort will be in direct proportion to the ability of the war fighters, on both sides, to leverage the technology they have access to to their benefit. Simply put: no pain, and the American public will let the military fight a war forever, until everyone is satisfied that it has been won the way it should be; too much pain in too short a time, and the American public will demand that the war be put to an end quickly and everyone brought home, regardless of whether we are winning or not. And just to be clear, in this case pain does not just mean the loss of America's sons and daughters in combat. It also means the kind of damage to America's national pride and image that a poorly conducted war effort can bring (think: Abu Ghraib).

Continuing with our thinking: in our view, more than any other force, the availability or lack of availability of technology has a dramatic impact on how a war is fought, who comes out on top, how long a war must go on before someone does come out on top, and how effective post-war governing leaders will be in helping their country return to peace. One need only look at the impact of drones on Afghanistan to see what we mean re. technology shaping war.

When Afghanistan first got underway effective drone technology was in its infancy, with many military leaders seeing it more as a defocusing video side game than a useful piece of armament to have in their basket of tricks. Now, 11 years later, drones have become more relevant to the war effort than ISAF itself. The same might be said for Facebook, YouTube, Twitter and the myriad other social network platforms that let the enemy get their word out in ways that Ho Chi Min could have only dreamed of. Think back to the viral way in which the Abu Ghraib photos spread around the world in less than an hour, or the burning of the Korans in Afghanistan led to over 3 million tweets in 24 hours, and you will see our point. Technology has a great impact on warfare, even non kinetic technology. [1]

Technology, more than any other outside force, shapes warfare. In trying to figure out how effective America will be in fighting any war then, one must take into effect how well we use technology ... both kinetic and non-kinetic... to fight a war, as well as how well our enemy uses it.

Bear in mind here that when speaking of technology we are not talking of the old traditional forms of technology such as those used for communication interception and the like. Those forms have been around since the very first recorded war ever fought—between Sumer (in modern Iraq) and Elam (a region that is now part of Iran) in 2700 BC. Instead we are talking about emerging technologies, of the kind mentioned earlier. These emerging technologies... like those used in drones, or those used by Bradley Manning to leak military secrets to WikiLeaks, are what we are speaking of. Emerging technologies... the kind that not only shape how a war is fought, but are also shaped by it.

Note again the last part of the previous sentence. Strange though it may seem, the unique thing about technology is that while it has a dramatic impact on a warfare, conversely it is war itself that shapes technology. One more time: war itself shapes technology, not warfare. Clarifying this point then; among the three—technology, warfare and war—technology shapes warfare but not war, while on the other hand war shapes technology but not warfare.

If this is true, then we can also say that military technology is not deterministic. In other words, just because a particular military technology was instrumental in winning a war in the past, you can't assume that the inevitable consequence of an improvement to this antecedent form of technology will cause the state of affairs today to result in another win. Military technology in and of itself is not deterministic. Rather, it opens doors as to what can be. Because of this, emerging technologies that are based on successful antecedents will not open any more doors for the managers of war than a form of technology that has not yet proven itself useful or successful. Regardless of a technology's past history and evolution, there is no way to determine whether it will intrinsically spawn a successful form of usage when applied in a wartime environment. What does determine the success of a technology is how many of the doors that technology opens man decides to walk through. Thus, the more doors a technology opens to possible means and methods of use, the greater the availability of and larger number of paths there will be to wartime success.

The relevance of all of this to our discussion of the impact of technology on war is that not knowing where emerging technologies have their greatest impact can be dangerous to a war leader; dangerous to the point of making it possible to lose a war if one is not careful.

One can see a bit of this happening in the use of drones in Afghanistan. Clearly, military leaders now know that a) the plan is that everyone be out of Afghanistan and home by 2014, b) with only two years to go, the last thing the American public will stomach is a large loss of life at this stage of the war, so if the desire is to wrap it up quickly you might as well scratch combat operations off the list, c) in a couple of years there won't be anyone left in Afghanistan to fight this war with, and d) in spite of all of this, and regardless of whether we

are there or not, the war will go on for at least another 7 – 10 years anyway, and likely result in something future historians will classify as another “Vietnam style defeat” for America. With this in mind, how can anyone blame today’s military leaders from turning to drones as their surrogate fighting force? After all, pretty soon it’ll be all they have left.

This latter point aside, whether they are blamed or not, unfortunately, drones—or any other form or combination of emerging technologies for that matter—won’t help our commanders win the war in Afghanistan. Depending on technology to solve what couldn’t be solved with boots on the ground creates in a leader a false chimera not worthy of his carrying the title Combat Commander.

Why? Because technology shapes warfare, not war, and especially not its outcome. War, on the other hand, as we said above, shapes technology.

The important point here is to distinguish between war and warfare, and the impact technology has on both of these.

That technology shapes warfare not war is easier to see today than it was back during WWII, and certainly much easier than it was during WWI.

Like the air we breathe and the water we drink, it is unfortunate but true that for as long as Homo erectus has been around, so hasn’t war. It is timeless and universal. The fact that our species has used it as a tool to impact society’s development for over 1.6 million years, since we first started walking upright, makes one wonder if all of the cries for peace coming from the liberal left isn’t just one big waste of time? Does anyone really believe that the mere act of wanting a world at peace is going to bring one? Does anyone really think that if one element of society gives up war, all the others will too? Haven’t the wars stemming from religious intolerance made the case that man has found a way to usurp even the most beautiful part of man’s thoughts—belief in a good and peaceful God—such that rather than religion being a cause for good, it now has become a cause for war? Let’s face it, war is here to stay.

If so, then what of technology’s impact on it?

Ahhhh... we got you. You see, that’s a trick question. It’s a trick question because if one looks at the graphic below, one will see that technology has no impact on war. Instead, it’s impact is on warfare.

What’s the difference, you ask? Consider this: our current President is busy trying to reduce America’s stockpile of nuclear weapons. He’s also busy shelving the research Reagan started into ways and means of shooting down ICBMs and other offense postured missiles (especially during their boost stage) and satellites. If our premise here that war impacts technology, and technology impacts warfare, and warfare impacts war is right, then doing away with nuclear weapons or missile defense shields isn’t going to do a darn thing when it comes to stopping or preventing war. All it is going to do is impact our ability to fight it when

it inevitably comes.

Look at the graphic and you can see that being without nukes or missile defense systems won't deter an aggressor from attacking... to the contrary, it might even incent one to attack sooner. But it most definitely will impact how we fight any such war that an aggressor might start. A weak military posture invites strong actions against us by those who oppose us. And if we toss our best technology into the scrap heap of history, all this will do is multiply the strong response by those who oppose us by a factor of five or more. The increase in the strength of their response will be exponential folks, not linear.

To be clear, by warfare we mean the conduct of war. In other words, the broil and scrimmage of arms in the field, or the deployment and management of armed forces in the exercise of conflict. Warfare entails what we learned of in OCS as operations, whether or not it involves engaging opposing forces directly, or via some other organized form of violence, kinetic, or non-kinetic action.

War on the other hand is little more than a condition. It is the condition of circumstance that a state or government finds itself in. While warfare (i.e. the physical activity conducted by armed forces in the context of war) can determine the final condition of circumstance that a government may be saddled with when a war is over, the fact that a country or people are in a state of war cannot determine the mode of warfare that is used to impact the final result of the conflict. Only technology can do that.

So, in the end, if a country wants to have control over the final state it finds itself in when a war ends, then it has to develop a credible means to conduct warfare. And if the desire is to be able to use warfare in a credible manner to impact the end state of a war, then that same country needs to master the use of technology to underwrite its mode of warfare... emerging technology in particular.

By now our astute readers will ask, What about diplomacy? Can't it be used to win a war or affect its outcome? Why only warfare?

Clearly, the answer is yes, diplomacy can impact the final state of a war. However, unlike von Clausewitz, we would not say that "war is an expression of politics by another means," instead we would say that politics (i.e. diplomacy) is an expression of war by another means. In other words, diplomacy, or what von Clausewitz calls politics, is in reality just another method of warfare. Our point then being that warfare is the overarching entity that determines society's advance, not politics.

We say this because in our view the methods of political control over people that have come and gone through the ages have had less of an impact on society's advancement than warfare has. Everything from dictatorships, monarchies, empires, and strange things like the old Hanseatic League through to internal revolutions, anarchy, democracy, communism, socialism, Marxism, Leninism, Mao Tse Tung's thought, the teachings of Che Guevera, and

much, much more has been tried. And one by one they have all fallen by the wayside or failed at giving people what they want. The only thing that has remained consistent throughout time has been the use of warfare to gain for a society that which it could not gain by political means. Unlike politics, warfare has proven its enduring ability to either protect or restore to a people the form of society that they wish to live in. Don't mistake what we are saying here. We are not saying that war is good, only that if one looks again at the "Cause Of Effect" graphic above one will easily see that diplomacy, politics, and the state a country or society exists in are all impacted by technology.

This moves us to our next point: understanding what the impact of technology is on warfare.

Since wording is important in our making our case, let us say with specificity what we mean by the impact of technology on warfare. Here we mean that technology defines, rules, restricts, and demarcates how a war is fought. It presages how warfare will take place, and once warfare begins it (i.e. technology) becomes the instrument of warfare.

If forced to distill all of this into one word, the greatest impact technology has on warfare is that it alters it. Referring back to our discussion above about politics and diplomacy, one can see that if diplomacy is just another form of technology, then as it evolves it too can impact how a war is fought. That is, thinking of a new form of diplomacy as merely an emerging form of an existing technology, one can see (and even hope) that perhaps it might be able to take the rough edges off of the conduct of a given war... perhaps even to the point of resolving the war in an end state that the people of both sides can approve of. But, if this new "diplomatic technology" proves unable to win the war, then the combatants had better hope that their "other technologies" are up to the task... or else one side or the other will find itself in the position of the Third Reich at the end of WWII.

All in all then, technology both provides and is the chief source of military advancement, i.e. the advancement of warfare. And yes, we include diplomacy and politics within the term "military." Technology impels changes in warfare more than any other factor, but it does not determine warfare. Underneath it all, warfare is impacted and greatly enabled by technology, but without technology warfare will continue to exist. The reason is that what we commonly refer to as the "principles of war" exist regardless of whether technology evolves or doesn't... or for that matter even exists, and in the end it's the principles of war that determine warfare. What do we mean by the principles of war?

In our case the term principles of war refers to the body of knowledge that a commander needs to know to conduct warfare. Strategy and tactics are included here, as are those elements that comprise a commander's understanding of how to wage warfare. Among these are included the concepts of friction, the fog of war, chance, violence, intelligence, use of terrain, the element of surprise, maneuver, maximum advantage, planning, critical mass, economy of force, intelligence and communication security, concentration of force, overwhelming force, convergent attacks, command and control, unity of command, and much, much more. From this we can see that technology defines warfare, but it does not determine how it is fought. It presides in warfare, but it does not rule warfare.

So what does rule warfare and determine the outcome of war? For that answer, we are afraid you will have to come back next month when we continue our discussion with the Effect of Technology on Human Agency. Clearly, from this little hint you can see that in our view Human Agency, brought to bear on warfare, determines both the sate of and outcome of war. How well it does this is in great measure determined by how well Human Agency utilizes the emerging technologies at its disposal to modify and implement a more effective mode of warfare

Next Month: Human Agency And Technology Create Winning Warfare

- - - Epilogue - - -

As Raphael demonstrated in 1509, Causal Power is intrinsic to “Prime Mover” status. In the world we live in today, having Causal Power is an ontological feature of being human. Restating this, one could say that in many cases human beings hold Causal Power and therefore are able to exercise it in ways able to change the existing world. One such way is by acting on technology to become its Prime Mover. Much as early believers in 1509 thought God did when setting the universe first in place and then in motion, people today use Human Agency as the Prime Mover force to leverage technology to alter the heavens. Not by filling them with stars, but with society-altering armament.

Human Agency, acting on technology, allows the creation of new forms of warfare, which have the capability of affecting and altering the end condition of war.

Adding to this theory of critical realism is the opposing axiom that regardless of the number of society altering arms one set of Prime Mover's can place in the heavens, other Prime Movers will be able to leverage technology to defeat their utility... if, that is, they understand that technology shapes warfare, and they have used every mode of emerging technology that they can get their hands on to open as many doors to Human Agency as possible.

With this in mind, it makes one wonder: how much wisdom is there in reducing the size of a nation's nuclear arsenal, or shuttering its missile defense shield research, merely to make the rest of the world feel better?



## Part 3: Technology Shapes Warfare



- - - - -



In this article we continue with the third and final installment in a series of three essays on technology and war. In our first essay we looked at the search for the ultimate weapon and its impact on war, in the next we looked into how technology shaped warfare. This time we bring these two together and look into how Human Agency when added to the mix of technology and warfare determines the outcome of war.



In our earlier articles we said that in great measure war determines the pace of advancement of technology, while technology determines how warfare is conducted and how warfare determines the final outcome of a war. Our position has been that if a country wants to control the final outcome of a war it needs to aggressively develop emerging technologies that will enable an exponential lift in a country's ability to conduct warfare, or, as they say in business: create a hockey stick change in a country's ability to achieve its goals. The question that should be asked is what causes the exponential lift in a country's ability to conduct warfare? That is, what outside force is it that when added to the emerging technologies that come along allows the creation of a winning form of warfare?



To understand the answer to this it would be worthwhile to review again some of the positions we took in our earlier articles. For one, we said that while we concede that the evolution of weaponry is what changes warfare, what we didn't concede is that changes in weaponry determine the outcome of war. Specifically, we said that technology (and therefore weaponry) is *not* deterministic. Clearly, what we were saying was that it's not the weaponry that is important but what is done with it.

Nuclear weapons by themselves are benign. In the hands of a radical religious leader like Ahmadinejad though they can threaten the world. So is it the nuclear technology that is the culprit here or the mind and intention of the guy nervously holding the trigger mechanism? The reader will quickly agree, it's the mind of the weapon holder that is the driving force behind the risk that is inherent in technology.

Do you trust this guy?



And yet while this is true it is only part of the story. A more interesting part of the story is that it's not the evolution of weaponry that is important but its *distribution*. Yes, the distribution of weaponry is more critical than the weapons themselves. Therein the conundrum with Iran and North Korea and their quest for not only nukes but a way to deliver them.

If this sounds counterintuitive it's because it is. Throughout history most wars have taken place under a state of weapons symmetry. Today that symmetry is disappearing and for America that is good.

Take the first Gulf War; during it Saddam Hussein tried to defeat America's conventional mechanized Army with his own conventional mechanized Army. Traditionally speaking, weapons wise the war was one of symmetry. What tipped the balance in our favor was the combination of the quality of our troops (think: Human Agency) and the edge our more advanced technologies gave us. These two factors, which can be thought of as just another form of weaponry, shows that Saddam didn't have the same kind of weapons we did. That is, the distribution of weapons was in fact uneven. And therein a key point to be learned: any country that wants to win the wars it gets into has to pay as much attention to stopping those countries that pose a threat from getting leading edge weapons as it does in getting those weapons itself. It's not enough to simply build new weapon systems, you have to stop the other guy from doing so too.



We can see this in action if we go back again and look at the second Gulf War. In the second Gulf War the enemy learned its lesson and resorted instead to what has come to be known as insurgent based asymmetric warfare. In this new fight America's high-tech weapon systems proved of diminished value against the enemy's low-tech instruments of suicide bombers, targeted murders, assassinations, and terror. It was only after the U.S. adjusted its technology by introducing COIN to meet this new form of warfare that the bad guy's tactics began to lose their edge.

COIN as a technology, you say? Yes. More than just a doctrine or a strategy, in the realm of warfare COIN approaches that of being a technology of its own. First, its utility on the field of war makes it akin to a weapon system and second, if the superior skills of our military leaders are part of Human Agency then clearly their ability to apply that cleverness to the task of assembling an integrated mix of kinetic and non-kinetic actions, troop movements, tactics, and other factors to create a means to defeat a strategic initiative by the enemy makes the result of that effort analogous to a new form of technology. Think of it: a 105mm

Howitzer is clearly a piece of technology. When Human Agency is applied to it and it is placed *en masse* as part of a predefined set of supporting weapons and tactics such as are found in a firebase the combination becomes a technology upon which Human Agency has acted to create a new form of warfare. In our view this is no different that what happens when COIN is created from a seemingly motley mix of economic, social and political initiatives layered on top of troop movements, kill teams, drones, **FOBs** and special ops. It becomes a weapon system and in the triumvirate of war, technology and warfare weapon systems fit into the category called technology.

But we don't have to argue this point because the more important point is that its the superior skills of the military leaders who created the concept of COIN that is what is important here. From a military perspective superior skills encompass all of those things that come from superior training and best of breed combat principles, like distributed decision making abilities, enhanced capacity to communicate in real time, numbers of men, and will to succeed. It also encompasses the ability to think on one's feet, combine the tools at one's disposal to create a better tool, and things of this nature. Intellectually, it's what philosophers and sociologists call the capacity of an agent to act. In other words: Human Agency.

Thus, it's Human Agency that, when applied to a known technology, allows the "agent" to alter that technology so that it is more effective... in this case in combating the enemy. The result of such a situation, the application of Human Agency to a given technology, more often than not results in an extended form of the original technology, one that is more effective in accomplishing the chosen purpose. By these standards most wars, when properly reviewed and assessed in terms of how they were won, can be seen as having had their outcome determined not by politics but by the nature of the technology that each side could apply to its mode of warfare. You can see then the importance of a country not only fostering newer forms of technology, but of denying their distribution to potential enemies. [Pieter Bruegel - Icarus -- Human Agency](#)

Why do we put the emphasis on the emerging technology and not Human Agency? Because while we may want to think otherwise the truth is that America does not have a stranglehold on creativity and unique skills. What stops other countries from being able to do what we can do when it comes to warfare is not a lack of Human Agency potential, it's a lack of emerging technology on which to put that Human Agency to work.



Thank God.

So when it comes to assuring that a country has the best form of warfare at its disposal to protect its interests what we see is that a fine balance must exist between i) the quality and quantity of people with Human Agency that are made available by a country to work on improving its form of warfare, ii) the extent to which the country continues to invest in emerging technologies so that there are sufficient doors opened for those people to walk through, and iii) the encouragement that a country gives to those people to pass through those doors and apply their Human Agency to the emerging technologies.

Think of it as a three legged stool: the availability of people with Human Agency, the availability of new technologies for them to act on and a country bound and determined to bring these two together.

If there is anything that we should learn from this it is that it's not the weapons that determine the result of warfare folks, it's a country's determination to keep this three legged stool in play—during both war *and* peacetime. Throughout history hundreds of seemingly wondrous new weapons were thought to be able to change the result of a war but they didn't. Such emerging technologies from the introduction of gunpowder by the Chinese through to the great battleships of the past, trench warfare, the airplane, carpet bombing, agent orange, and even nuclear weapons did little more than impact how a war's managers fought the war not what the result ended up being.

For those of you who are skeptical and would point to Hiroshima and Nagasaki as examples of technology ending a war we would disagree. Yes, the nukes we dropped on Japan worked well but they didn't win the war. It was the mode of warfare adopted that ended the war. That mode—unconditional surrender, a determination by America's war leaders to turn Japan into an unpaved parking lot by dropping more and more nuclear bombs, and a very determined U.S. Army itching to get on the ground on the mainland of Japan and dish out a little payback for the losses incurred in Guam, Saipan, Attu, Guadalcanal and the rest—that caused the Japanese government to

## Unconditional Surrender

throw in the towel. Warfare determined the outcome, not technology. Warfare that was made possible because America's leaders at that time deigned to turn Human Agency loose on emerging technology to create weapon systems that sat the Japanese back on their butt.

Unconditional surrender. Imagine the audacity of even thinking of staking out a position like that in one of today's wars? One almost hesitates to ask the inevitable question: what is our mode of warfare in Afghanistan? Get out at all costs like the French announced (in the first week in June) that they will be doing? Or an unconditional determination to stay the course until the country is as pacific as, say, Vermont? After all, that's what Japan is today. In terms of its threat to the world Japan is another Vermont, and a darned good one at that.

The important point here is to distinguish between war, warfare, technology and Human Agency and understand that technologies, emerging or otherwise, do not determine the outcome of war but instead contribute mightily to the ability of those in charge of a war fighting effort to conduct effective warfare.

How does it do this?

Emerging technologies contribute to a country's war fighting effort by opening the doors to the possibility of new methods of warfare that in turn can alter the outcome of a war.<sup>[1]</sup> Once the door is open however it is up to the civilian leaders to decide whether to allow the combat commanders to walk through a particular door or not, thus allowing them to apply the Human Agency at their disposal. Of equal importance, since no technology holds value on its own (but only via its utilization) those managing a warring effort—both the combat commanders *and* the civilian leaders—must find ways to adapt the technology at their disposal to the challenge at hand. This means that civilian leaders must be willing participants in the process, looking for ways to use new technology to avoid wars as much as the combat commanders do in their effort to win wars.

One can see an example of this in the emerging technology area of missile defense [The riddle of the Polish missile shield](#) shields (like those scheduled for Poland, with their [Exoatmospheric Kill Vehicle](#) capabilities that include a closing speed of about 7 km/s—a technology whose use in Eastern Europe was cancelled by the current administration in 2009). In this case the technology in question resulted from President Reagan's Human Agency. He legitimized the concept when he launched America's effort to develop missile shield technology. Now, so many years later, it is ready for deployment... except our civilian leaders are afraid that doing so will anger our Russian friends. In our view this particular form of technology serves two useful purposes: one, it's a deterrent, and two, it provides a darn good sidearm if an active war ever does take place. This then is what we mean by Human Agency acting on technology to provide a means to alter the outcome of a war. Again... making our case as strongly as we can... in this instance the technology can alter the outcome of a war in two ways: by providing an incentive to avoid it in the first place, and by helping win it if it does get underway.

Clearly, in today's world there is plenty of emerging technology to go around. The question is, is there enough Human Agency to match it and develop better means to avoid wars through the threat of the ultimate weapon-like capabilities that result when emerging technologies are modified? Or more to the point, are there leaders willing to release the Human Agency at their disposal so that it can develop new forms of warfare that may be able to assure that our side wins the wars we get into? In the end, government leaders must decide if they are going to, or can, take up a given military innovation. And they must adapt it to their country's unique circumstances. As long as governments, our government, is more inclined to cut back on the roll out of newer forms of military technology we will forever be constrained to fighting the next war with the last war's technology... while our enemy brings to the field innovative ways to circumvent the technology he already knows we have.

Technology is a possibility not an imperative. If you don't use it the other guy will. As important, in using it you absolutely *must* modify it to suit your country's particular strategic objectives.

For example, in the years between the world wars the U.S. and Britain, geographically isolated from continental Europe, developed strategic bombers with which to project their military power while the major continental powers concentrated on fighter aircraft to contend with each other for

## The dogs of war, or the dogs of Human Agency?

air superiority over the battlefields in their own back yards. Today our strategic goals have to do with things like winning against asymmetrical forms of warfare, implementing a new security strategy in the Pacific, countering violent extremists and destabilizing threats in the Middle East, and maintaining regional access and the ability to operate freely. If, using the analogy of the between the war period, we focus on building fighter aircraft (as the continental powers did) instead of focusing on our own strategic need for bombers, we just might lose the next war. So, allegorically speaking, what do we need today? Fighters or bombers? Whatever it is our government needs to let loose the dogs of Human Agency and let them get busy deciding which emerging technology doors our military scientists should pass through. Further, when the result of imposing Human Agency on emerging technology is finished and a new military technology evolves we need to put it into place and stop this ridiculous trend of worrying that we might offend a country or two who could care a whit about our security to begin with (think: Russia and it's objection to our placing missile shields in Eastern Europe).



Summarizing these points, it can be said that while technology determines the form of warfare that is available for use, it's Human Agency that determines the applicability of that technology to the war being fought and the outcome of the warfare undertaken, not the technology itself. Yet if a country's leaders are remiss to either allow the development of newer forms of military technology more suitable to the country's changing strategic goals, by allowing the application of Human Agency to emerging technology, or deploy them once they come on line, then it is a foregone conclusion that any war fought by that country is going to be long, painful, and internally contentious for the citizens of the country fighting it... likely ending in a failed effort, or possibly even in a loss.

Finally, we visit one more time the issue of emerging technology. Now that we know that the application of Human Agency to emerging technology leads to more applicable forms of military technology for the intended purpose... that is, military technology that is more able to support a country's evolving strategic needs (such as maintaining regional access and the ability to operate freely), the question becomes how do you recognize when that technology has arrived? Part of the answer has to do with understanding that modern military technology is different than your father's technology... noticeably different. Yet that difference is subtle because it's not different in kind but in degree.

If one thinks back to World War II, one will quickly recognize that the weapons in use at the end of that war were significantly different from those used at the beginning. The atomic bomb is the most obvious example but the list also includes jets, guided missiles, microwave radar, tactical FM radio, the proximity fuse, Heat and HESH anti-armor warheads, and even our old friend Napalm, to name just a few. A lot of post war pundits claimed that this plethora of new military technology meant that America's industrial production capability is what won the war.

We don't think so. Sure, production capacity is important, but the idea that America's industrial might is what lets it win wars is an old saw left over from the Civil War, when it was clear that the North's industrial might helped it arm itself faster and more completely than the rural south could. Instead, in WWII it was the institutionalized research and development capabilities that America had that allowed Human Agency to be applied to emerging technologies in a way that led to the surfeit of "for purpose" weapons that supported the soldiers in the field and enabled them to win the war. Think of the Signal Corps' research facilities at Ft. Monmouth and you'll easily see what we mean. In our minds, the introduction of systematic, institutionalized innovation is what brought new weapons to WWII, not industrial might.

If you can accept this principle then you can see that what has changed in all of these years is the pace of technological change in the modern world, not the rate of development of new military technology. That is, Human Agency works its magic on emerging technology at the same pace that it always has, but the pace at which emerging technology is being brought to the fore has increased considerably. The result is that newer forms of improved military technology (hardware and software, kinetic and non-kinetic) is presented to the military at blinding speed. The upshot is that today's career Officer expects to see the arsenal at his or her disposal change continually throughout their career.



That was not the case in WWII, nor for that matter in Vietnam. During the WWII era a commander fully expected to retire with the

same instruments of war he took up when he came in as a shave tail. Even in Vietnam technological changes were few and far between as far as Company grade Officers were concerned. Today however, what we see is a sustained hothouse of military technology development.

Is this good or bad?

We posit that it all depends on the pace of change of a nation's strategic goals. If the need this year is to, as Secretary of State Clinton says, "pivot" towards the Asia Pacific, then this rapid pace of development is good as it lets the military bring on-line weapons more suited to the mission at hand. In the case of a new century of Asia Pacific focus this may include an ability for the Navy to more effectively project itself over the horizon when encountering China's evolving navy, or in the case of our beloved Signal Corps interdict China's short haul military communications with radio transmissions from northern Burma.

Regardless, what we know is that modern military technology is different. And one of the ways in which it is different is in its pace of change. Why do we care? Because unlike in the good old days that difference means that both Company and Field Grade Officers must be prepared to accept and embrace an ever changing array of technologies and weapons if they are to get the job done and earn their pay. And, of course, what this means is that just as much as we need brawn in our military we also need people—Officers—who are bright and smart enough to keep up with today's ever changing technological infrastructure. In fact, we would posit that if you have a Company grade Officer today that is not fully conversant with today's social media platforms as well as the rudiments of HTML and TCP/IP he may be nearing the end of his "use by date."

A second way in which today's military technology differs from that of earlier times is that whereas WWII era military weaponry reflected an improvement on preceding forms of the same, today's technology reflects weapons being brought on line to fill voids where no weapons exist at all. In the old days the best way for a country to improve its war fighting ability was to improve on its existing weapon systems. Got a missile that works well? Then make it fly further or make it carry a bigger warhead. That was the thinking. Today it is expected that such improvements will be made simply as a matter of course. There's nothing special about improving an existing weapon system. What is special though is filling a void where no weapon exists, in an area where no one ever thought a weapon system should exist.

Take as an example the STUXNET and FLAME malware programs that are in the news (see video at right; right-click to see full screen). These software demons have done something no nation, regardless of how strong their military is, has been able to do: bring Iran's uranium enrichment centrifuges to a dead stop. A part of cyber warfare, they provide an excellent example of how Human Agency layered on top of emerging technology can bring a new weapon system to bear almost overnight, creating a new taxonomy of weapons in the process. Definitely speaking, this gives us a second means of differentiating modern weapons from those of the past: pre-modern producers of military instruments were "improvers" while today's are "innovators." Modern weapons reflect innovation more than improvement.



As you watch new technologies appear in the news, look for those that will be acted upon by Human Agency to create tomorrow's post-modern weapon systems. They will have the attributes described above: the pace of change in the technological area will be close to light speed when compared to traditional technologies, new technological areas that seemingly have no relation to the military will open up windows of opportunity for weapons to fill voids where no weapons currently exist, and the weapons that are developed to fill these voids will reflect innovation more than improvement.

Why all of this focus on emerging technologies and Human Agency? So that the military can wage effective warfare. What government leaders must understand is that turning loose a nation's Human Agency to work its magic on emerging technology, for military purposes, is as critical in being able to avoid wars as it is to winning them once they get started. As important, once these new forms of modern technology are developed these same leaders must guard against supporting policies and plots that limit their application. If Human Agency can leverage a new technology that will shut down Iran's centrifuges, let the military use it. If Human Agency can leverage an emerging technology to create a missile shield for America's cities, those of our allies in Europe, or anywhere else, let the military use it.

Having those in charge understand how Human Agency works its magic on emerging technology to produce military solutions that bring a greater prospect for peace to the world is important. As we have seen, more than just heroics on the field of battle, Human Agency enables the warfighter who displays these heroics a chance in hell of succeeding. It does this by leveraging technology to

provide a battlefield hero with the nutrients he needs to sustain himself. Nutrients like the time to think, superior weaponry, real time knowledge of the battle space around him, alternative means to fight, smart weapons, and much more. Without Human Agency enabled emerging technologies our battlefield hero of today would be no more equipped to do battle than if a Hoplite warrior of the 8th century BC appeared beside him.



While the tools of war have evolved slowly throughout the course of human history only in the modern world has there been an institutionalized and rationalized means for continuously, methodically and analytically innovating and improving military technology. When government leaders stand in the way of that mechanism they put more than their country in jeopardy, they put their warfighters in jeopardy too... and for no good reason.

The next advanced warfighter...

The thing about war-changing weapons is not that they change the course of wars, but that they change the course of history. War is inevitable. And as long as it is here it will impact the evolution of technology. Technology is not going away either. Enabling it to be applied to change the course of history for the better means letting loose Human Agency to work its magic on evolving technologies, in ways that deliver more effective kinetic and non-kinetic weapons to the hands of the military. Most importantly, not being afraid to use these post-modern weapons will make all the difference in bringing kinetic wars to a quick end, and in avoiding kinetics in the first place.



**Footnotes:**

[1] The Open Door concept was first introduced by historian Lynn White, Jr., in his study titled Medieval Technology and Social Change (Oxford, 1962). - [click here to return to your place in the text](#)

Click to read the next two articles:

[Article I](#)

[Article II](#)

*Have a comment on this article? Send it to us. If you are a member of the Association we will gladly publish it. If you are not, well, it only costs \$30.00 a year to become a member and have your views heard... and because we are a fully compliant non-profit organization your payment is tax deductible.*