Beyond Utility Targeting

Toward Axiological Air Operations

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Editorial Abstract: A hot topic in aerospace discussions today is targeting—what, where, how, and when to do it in order to achieve the desired effects. This piece argues that today the dominant mechanism and measurement for targeting is industrial-age utility and that in the future an equally important method should be targeting based on adversary leaders' values, depriving or holding at risk their ability to fulfill human needs.

The outcome of the air war was the destruction of the Kosovo we wanted to safeguard, renewed political tensions between the U.S. and Russia and an open-ended deployment of peacekeepers.

—Adm William Owens, US Navy, Retired

The single most important lesson of the conflict is that there is no cheap, easy way to prevent genocide or mass killing. Airpower alone will not generally determine what transpires on the ground. Only when paired with ground forces—and only if used decisively—can airpower be expected to work.

—Ivo H. Daalder and Michael E. O'Hanlon

The targeting process in Operation Allied Force was incoherent and inept.

—Dr. Earl H. Tilford

In an extraordinary paradox, a war based on the notion of discriminate force using dazzling information-age technology—B-2 bombers, cruise missiles, and joint direct-attack munitions—sacrificed the Albanian Kosovars to indiscriminate death at the hands of Serb forces using methods we associate with the Dark Ages. In humanitarian terms, the air war was an unmitigated disaster, and a cautionary warning for the West in employing force in future intra-state conflicts. This humanitarian failure will not prevent Western air force theorists from arguing that the war was a decisive victory for air power.

—Dr. Michael Evans

If there's somebody in this town [Washington, D.C.] who can speak to lessons learned from Kosovo, I'd like to meet him. There are lessons from Kosovo, but nobody's learned them, as far as I'm concerned.

—Lt Gen Michael C. Short, USAF, Retired

"He's finished!"

—Placards at postelection rallies in Belgrade
28 September 2000

AND SO IT goes, continuing even with Slobodan Milosevic unseated. Airpower advocates argue, as they must, that Kosovo was an air war and that airpower "won" this war in Kosovo.[1] Critics, as is their wont, argue otherwise. Sides count and dispute the numbers of bomb craters, the catastrophic kills of tanks and armored personnel carriers and decoys, and make their cases for the danger or usefulness of "gradualism."[2] The debate remains heated, yet our aim is to enter this debate indirectly, if at all.

Our entry point is targeting. We probably take a rather broader view of targeting than others. To us, targeting is the activity that transforms a theory of conflict or conflict termination into behaviors—diplomacy, coalition-building, propaganda, engagements, strikes, electronic combat, cyberwarfare, and supporting activities—that intend to affect the

targeted objects and thereby intend to prove the theory's hypotheses. "Targets" in this view are the objects that our behaviors aim to affect.[3] In our analysis we identify a target for diplomatic engagement just as we identify a target for an air strike. We engage neutrals. We entice allies. We attack tanks. The success or failure of each of these activities, to the degree that they are congruent with the larger theory of conflict or conflict termination employed, conditions or determines our judgment as to whether, at the end of the day, we have won or lost.[4] Whether or not the allies "won" and Milosevic "lost," or the allies won and Milosevic won too, or both the allies and Milosevic lost, the air war resulted in the testing of a theory, or perhaps theories, of targeting.[5]

Weighed in the balance, our hypothesis is a simple one. We argue that today the dominant mechanism and measurement for targeting is industrial-age (or "second wave") utility and that in the information-age (or "third wave") future, an equally important method should be targeting based on value. Today we target infrastructure to deny warfighting utility. Tomorrow we should target to deprive leaders of the capacity to meet their needs: things that leaders must value.[6] We must move beyond utility targeting.

Theories of Targeting

We call our concept "axiological aerospace operations," and we assert the need to move airpower "toward" that capability. *Axiology* is a fancy word, the combination of the Greek *axios* meaning "worthy" or "of like value" and *logos* meaning "reason" or "theory." Axiology is the study of values—the philosophical investigation into the nature, criteria, and metaphysical status of value. We contrast value and values to "utility." In decision theory, as in our conception, "utility" and "value" are different, and each is quite complex.[7] *Utility*, as we use it, simply means future usefulness, fitness for some chore, or the capacity of real objects to produce a resource or resources useful to the adversary. *Value* is the relative worth resident in an object. The philosopher Risieri Frondizi describes value and values as follows:

> It would be more appropriate to assert that values are "unreal qualities," although not ideal, inasmuch, as we have seen, they do not add reality or substance to objects, but only value. Regardless of the designation, what is certain is that values are not things nor elements of things, but properties, qualities, sui generis, which certain objects called "goods" possess. . . . Because they are qualities, values are parasitic beings which cannot live without being supported by real objects, and lead a fragile existence, at least while they are adjectives related to "goods."[8]

Current operational theories such as "full spectrum dominance," "rapid halt," "rapid dominance," and "rapid decisive operations" are the manifestation of theories of conflict resolution.[9] They ascribe value to speed, to the ability to exercise control across a spectrum of activities, and to the ability to force a decision. But unless there is a change in the logic of targeting, none of these theories is likely to be proven in future conflicts. Why?

Utility Targeting

In second-wave or industrial-age warfare, the way we made war was the way we made wealth.[10] Societies made their wealth through mass production, and the machine metaphor or engineering paradigm dominated the thinking of second-wave societies. The second wave created "mass societies that reflected and required mass production."[11] Carl Builder accordingly observed that second-wave societies valued "organization and discipline" simply because planning for mass production (to increase wealth) and producing mass warfare (to steal or protect wealth) required those values.[12] Standardization, rationalization, mass transportation, and all kinds of engineering become important when humans organize for mass production. Successfully waging war in the second wave required large capital investments, the *levée en masse*, military engineers, and a mass of killing machines and appliances.[13]

In the industrial age, warfare and serious fighting were the work of states. Only states could produce the "stuff" that large-scale warfare required: trained troops, small arms, mortars, artillery, ships, trains and vehicles, tanks, armored personnel carriers, and combat and transport aircraft. For each of these there are corresponding "anti" systems: antipersonnel mines, antiaircraft artillery, countermortars, antitank weapons, mines, and attack submarines. These are concrete, tangible things. They are the tools of aggression or defense that can be seen and counted. The Red Army ascribed "tactical-technical" characteristics to each of these concrete objects. In the age of mass, "more" usually was believed to be "better" than "fewer." When the "more" was widely distributed or garrisoned among the civilian noncombatants in the warring populations, collateral damage was likely.

Thus, war in the age of mass, the industrial age or second wave, tended to be state-versus-state total war. By "total" we mean, for example, that airpower killed more civilians in Germany than all American and British (including Commonwealth) wartime casualties, and in "Japan more people were killed in six months of heavy aerial bombardment than in the whole United States war effort."[14] Some have argued that superb generalship did not "win" World War II for the Allies. Mass production and brute force did.[15] John Ellis notes that "the prosaic arithmetic of natural resources, generating capacity, industrial plant and productivity was to be incontrovertible."[16] It was only natural then that weapons of mass destruction arose as the "anti" for an adversary's mass production capacity. Targeting aimed to destroy the usefulness of an enemy state's industrial plant. Targeting theory pivoted, and pivots today, on what may be an antiquated or at least incomplete theory of conflict and conflict resolution: how to make states stop fighting.

The epitome of utility targeting theory probably is found in the influential thinking of John Warden.[17] Warden's views invigorate airpower thinking, especially in the United States, and illustrate what may be the zenith of standardization, rationalization, and engineering thinking. The enemy can be reduced to a standardized targeting template because it can be thought of as a "system" with categories of "things" or entities within the system to be targeted (fig. 1). Planning is apprehending or estimating calculable cost-benefit ratios.[18] Targeting was and is about identifying and destroying adversaries' means of production, whether those things being produced were the system itself, war materiel, or lethal force. Targeting attacks key nodes in each of the categories in "parallel," striving to rapidly induce systemic paralysis. Yet, Warden accepts that

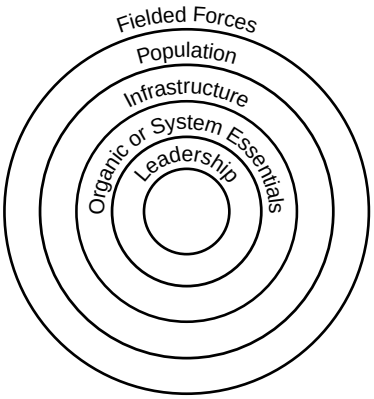
> the object of war is to convince the enemy leadership to do what you want it to do. The enemy leadership acts on some cost/risk basis, but we can't know precisely what it might be. We can, however, make some reasonable guesses based on system and organization theory. To do this, put yourself in the center of the five rings as the leader of a strategic entity like a drug cartel or state. You have certain rather basic goals that normally will take precedence over others. First, you want to survive personally (this is not to say you won't die for your system, but you probably see yourself and the system as being closely tied together). For you to survive personally (in most instances) the system you lead must survive in reasonably close to its present form.[19]

We agree that the aim of war is to convince the enemy leadership to do our will, and we believe that the key to compelling the enemy leaders is targeting what the leaders at every level value. Our intention in making this assertion is not to illuminate all the shortcomings of utility targeting theory. Rather, it is to suggest another way to think of targeting. We call this value targeting.

Value Targeting

The thing that differentiates the "system" that is a belligerent nation or militarily aggressive group is that these are human organizations. The philosopher-historians Will and Ariel Durant go so far as to say that

The enemy is a system that must be rendered dysfunctional or paralyzed.



"Enemies, whether they be states, criminal organizations, or individuals, all do the same thing; they almost always act or don't act based on some kind of cost-benefit ratio. The enemy may not assess a situation the way we do, and we may disagree with his assessment, but assessments are part and parcel of every decision. From an airpower standpoint, it is our job to determine what price (positive or negative) it will take to induce an enemy to accept our conditions."

Source: Adapted from Col John A. Warden III, "Air Theory for the Twenty-First Century," in Barry R. Schneider and Lawrence E. Grinter, eds., *Battlefield of the Future: 21st Century Warfare Issues,* rev. ed. (Maxwell AFB, Ala.: Air University Press, September 1998), 106, 108.

Figure 1. Targeting According to Utility

> our states, being ourselves multiplied, are what we are; they write our natures in bolder type, and do our good and evil on an elephantine scale. We are acquisitive, greedy, and pugnacious because our blood remembers millenniums through which our forebears had to chase and fight and kill in order to survive and had to eat to their gastric capacity for fear they should not soon capture another feast. War is a nation's way of eating.[20]

States are "systems," of course, but more importantly they are complex human organizations. Moreover, states are not the only complex human organizations with the capacity to do harm—witness terrorist groups and genocidal ethnic factions. These groups are organized to survive and to fulfill a set of functions unrelated to survival. For example, maintaining an army or a national air force is related to the survival of a nation, but having a national health-care system or maintaining a zoo or public park in a town's center is related to the survival of the state only indirectly. Likewise, the nonstate Hezbollah has an armed force, but it also maintains a social services infrastructure and runs a Web site.[21]

States must insure that their populace has the basic necessities for life, among which are food, water, and perhaps even unpolluted air. To fulfill these basic requirements for life, states must have some territory, some place to grow food, and a more or less secure environment in which the people live. A state must provide its citizens protection from other states, just as a subnational group must afford its members protection. Although providing basic necessities is the government's role, or at least providing the environment in which the people can secure basic necessities, hostile groups and states, especially neighboring states, can threaten even this. (Today, for example, wealthy states like the United States and the Netherlands are unable to protect their people from ballistic missile attack should such attacks commence.)

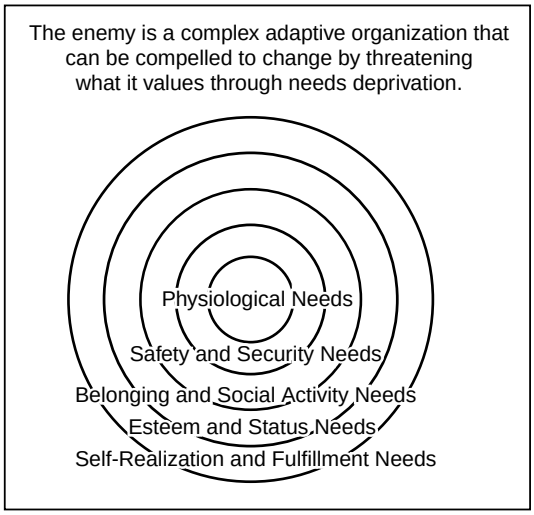
Thus, states and groups must attend to their defense. When they attend to their defense, they produce "things" that are useful

tools for defense. Yet, to target and destroy the state's or group's tools is not a guarantee that it will be defenseless to the degree that it will cease fighting or readily do our will. Targeting its tools in the hope that these will compel an adversary to do our will seems to be refuted by the facts. Thus, there needs to be another scheme for targeting. This new scheme actually may be an old one provided by Abraham Maslow, who attempted to classify needs relevant to individuals and to organizational behavior.[22]

Enter Maslow and Unfilled Needs

Maslow's "hierarchy of needs" formulation suggests that we have a prepotency of needs; that is, some needs are assumed to be more important or potent than others, and those that are the most important must be satisfied before the other needs can serve as motivators. He postulated five categories. At the basic level are the physiological needs such as thirst, hunger, and sex drives. To satisfy this level of needs, we hunt for food, breed cattle, grow crops, dig wells, and look for mates. When these basic needs have been satisfied, the next higher level becomes a more important motivator; the level of safety and security needs, which is represented by freedom from fear of external harm, climatic extremes, or criminal activity. To satisfy this level, we build tents, huts, and houses; we organize ourselves in tribes, villages, cities, states; we establish policing forces and armies; and we formulate rules and laws. The next higher level corresponds with belonging and social activity or affiliation needs. This level motivates us to undertake action in exchange for support, affection, and friendship. The fourth level represents our drive for esteem and status; it makes us strive for status and respect, adopt behavior to get access to and be accepted by those we admire. At last, when all previous levels of needs have been fulfilled to our satisfaction, we strive for self-actualization, for self-realization and fulfillment (fig. 2).

In the great wars of the twentieth century, Western nations fought against what they believed were totalitarian states. The scores of minor conflicts that have occurred since the end of the cold war have continued that trend. This means that in the future, and likelier than not, democratic regimes will be pitted against totalitarian regimes or leaders in "rogue states."[23] Democratic values, shared by many, will compete with totalitarian values, shared by few. In modern Western democracies such as the Netherlands and the United States, most of the respective populations have achieved all of Maslow's lower levels of the hierarchy of needs, and many are striving to fulfill the need for self-realization. In a country such as North Korea, however, there is evidence that the basic needs for food are not provided for all. On the other hand, if we look at a country such as Serbia, we see that the basic needs for food and water had been fulfilled for all, yet the higher-order needs probably had been fulfilled only by Milosevic and his small circle of "cronies." Authentic "safety and security" are scarce commodities in a totalitarian system. Freedom of speech, movement, information, and assembly were



Source: Adapted from Abraham Maslow, *Motivation and Personality* (New York: Harper and Row, 1954)

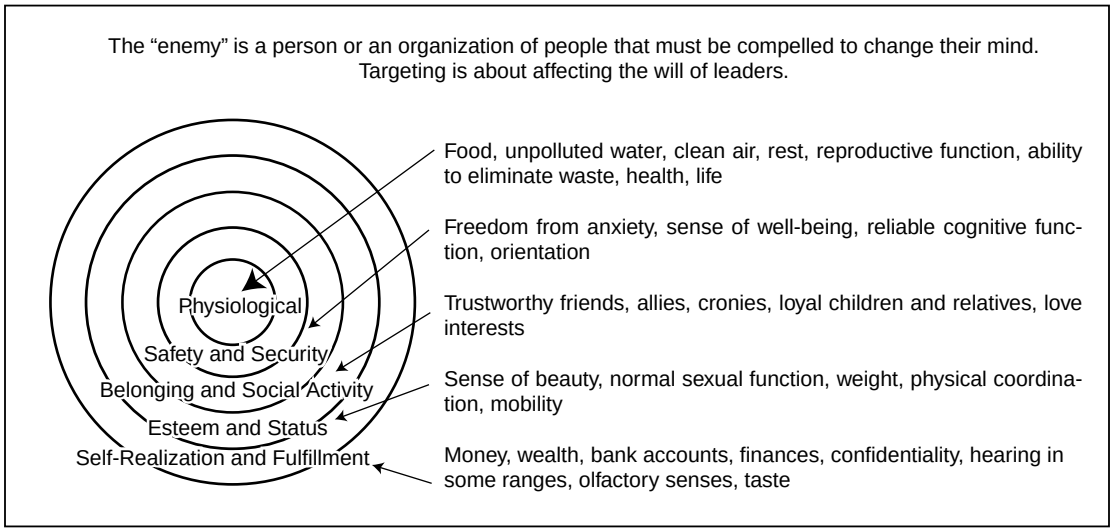
Figure 2. Targeting According to Value

denied to large groups of the population. Democratic values have been shared by many in that totalitarian system, but they certainly had not been fulfilled.

Yet, even in a totalitarian state or group system, the leaders cannot wage war without the support of their people. This may sound contradictory, but the fact that during the Kosovo crisis Milosevic devoted the larger portion of his propaganda campaign to his own population seems to support this observation. While a totalitarian leader is certain that he can control his people's actions, he is uncertain whether he has control over their minds. If he does not attempt to control their minds, he knows he may lose control over their actions in the long run. Denial of access to independent news sources and spreading misinformation over state-controlled media are ways of trying to influence the minds of the people—not only of his own people but also the adversaries' people. Apparently even totalitarian leaders value people's support; without it, the needs of the totalitarian leader cannot be met. Support, or at least acquiescence, is necessary—internally to keep his own people united and in support of the policies, externally to undermine adversaries. In sum, popular support is of high value even to the totalitarian leader.

Through Maslow's lens, popular support may reside at the safety and security level of leaders' needs. Safe and secure, the leader can then move up in the hierarchy to satisfy the need for belonging and social activity, or affiliation, where he can then expand his small circle of friends and feel even more secure. If needs at this level are met, the need for satisfying the next higher level—esteem and status—becomes a powerful motivator. Finally, the leader will strive to satisfy the need for self-realization. All the while, leaders will act to avoid danger to their "selfish genes" to get food and to have the capacity to reproduce (fig. 3).[24]

Compelling the misbehaving leaders of an adversary state or group to do our will requires that we understand and engage what



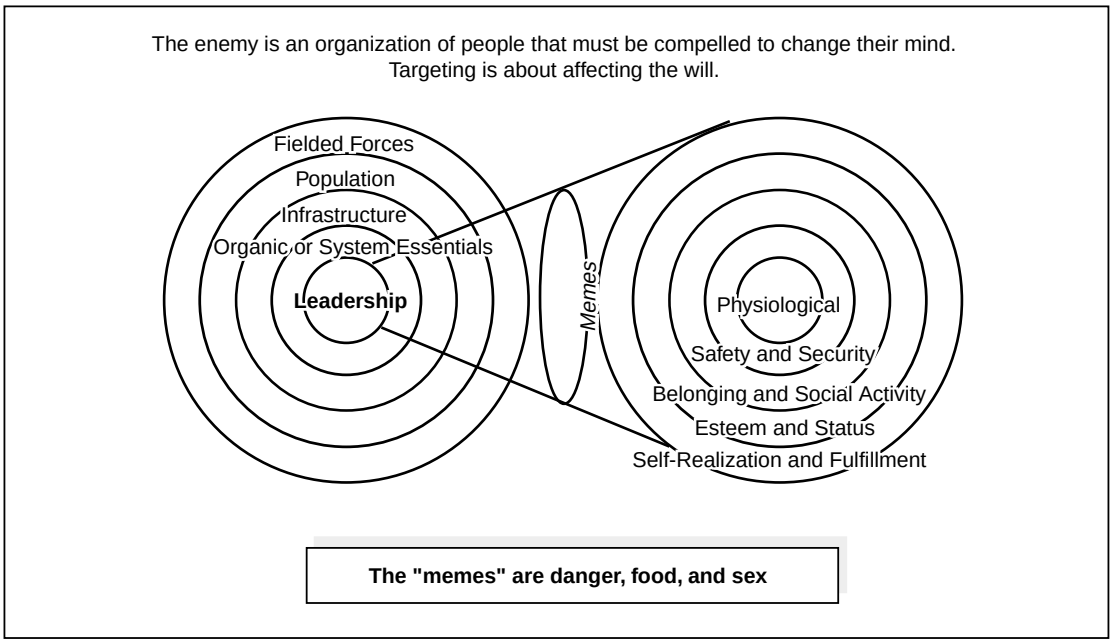
Source: Adapted from Abraham Maslow, *Motivation and Personality* (New York: Harper and Row, 1954)

Figure 3. Value Target Sets

the enemy's leadership needs and therefore values. It then becomes our job to deny the ability to meet those needs, to attack what leaders value, either electronically or by use of kinetic force. Moreover, we believe that this must be done quickly and repeatedly to rapidly force the behavior shift that signifies that a leader has had a change of mind.[25]

Although there is at least one report that this method of targeting (pejoratively called "crony targeting") was used in Operation Allied Force, the advantages of value targeting may not be appreciated fully yet.[26] The objective of this kind of targeting is to focus attention on the national or group leader and leaders at every influential level and to target, or engage, or hold at risk leaders and what leaders value. Thus, each of these elements—leadership's physiological needs, safety and security needs, social and affiliation needs, esteem needs, and self-actualization needs—and all residing in the neocortex, can be engaged in parallel (fig. 4).[27] The advantages are that value targeting can be done in peacetime and that it can be escalated dramatically in wartime.

The elegance of utility targeting is that it is simple to understand and simple to execute. In fact, its only shortcoming as a theory or in practice may be that it does not always work against all adversaries.[28] Destroying stuff, even to the point of significantly diminishing the utility of a war-fighting system, does not necessarily stop belligerence. The leaders or the people may still misbehave. Value targeting, on the other hand, while more difficult to comprehend and riskier to execute, may increase the likelihood of conflict resolution.[29] It is riskier because it requires awareness that conflict termination brings about



Source: Adapted from Richard Brodie, *Virus of the Mind: The New Science of the Meme* (Seattle, Wash.: Integral Press, 1996)

Figure 4. Targeting According to Utility and Value

what Watzlawick, Weakland, and Fisch call "a second-order change" in the enemy's leaders.[30] That is, belligerence intending to fulfill some higher-order need, to secure some desirable objective, will actually result in the deprivation of a more basic need and with it the loss of some more desirable objective. Said another way, occupying Kuwait may satisfy the self-actualization needs of a neighboring nation's miscreant leader, but it might also risk the ability to satisfy some lower-order need that the leader has, like the physiological need to continue breathing. Stealing a purse may be intended to satisfy a gang leader's need for esteem, but a purse owner protecting the purse with a concealed handgun may risk the gang leader's life.

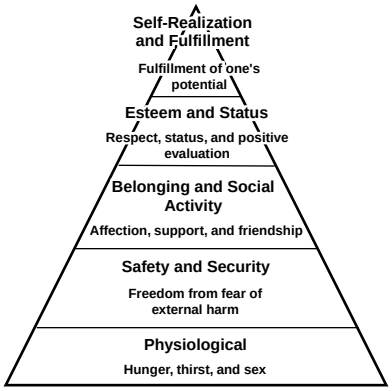
We conclude that the right combination may be value targeting of leadership at every level and utility targeting of those valuable—useful to helping meet needs—military targets that can be engaged. By "engaged" we mean "affected." The means of affecting them can be lethal and catastrophic, or nonlethal.[31] The goal of utility targeting remains to eliminate infrastructure—war-fighting or war-supporting tools. The goal of value targeting is, while eliminating or in some cases even ignoring the utility of leaders' war-fighting tools, to attempt to change their behavior by holding their more highly valued but "lower" and stronger needs at risk. We believe that this may be best done by conducting axiological aerospace operations.

Axiological Aerospace Operations

The aim of axiological aerospace operations is to use air, space, and information power to force a behavior shift in belligerent leadership in the quickest and most economical ways possible. Why aerospace forces and why airpower? Because airpower—air, space, and information power—has the reach and potentially has the technological tools to do this remotely, to conduct expeditions against adversary leaders from afar.[32] The effect of this shift may be interpreted as coercive, and indeed it is, but we must admit that is an interpretation derived from trying to name those things which caused the behavior shift or appear to have been in evidence when and after the shift occurred. Said another way, the precise mechanisms may be invisible or barely visible to any but the target of the engagement. Since historical measures of utility—enemy tanks destroyed, aircraft downed, enemy troops killed—are not the only or the most useful measures that apply, our current understanding of coercion and of using aerospace forces to apply it requires some maturation (fig. 5).

Let us begin that maturation by going far afield and then returning to the center. Let us consider states and their leaders. This is far afield, we believe, because these are the least likely threat in the future. Even so, most democratic nations forbid the assassination of heads of state. They do not seem to forbid the killing of the head of a subnational "group" or an enemy head of state when that head of state is also the commander in chief of the enemy armed forces in wartime. Moreover, the statutes that forbid assassination of a head of state do not seem to prohibit other forms of hurt. For example, in wartime there is no prohibition against causing an enemy head of state to be hungry, or anxious, or depressed. Assassination is inflicting mortal injury. Would not some lesser form of injury, such as maiming, be allowed? That is a thought at the edge of the envelope. Closer to the center, but still a second-order change in the way we think about targeting, are the target sets of value targeting.

In addition to engaging (but not necessarily destroying) the kinds of targets depicted in the illustrations to achieve these kinds of effects in state-to-state warfare, Col Charles J. Dunlap Jr., USAF, theoretically adds "resorts, along with other entertainment, sports, and recreational facilities," and "factories, plants, stores, and shops that produce, sell, or distribute luxury products or, indeed, anything not absolutely indispensable to noncombatant survival" along with "their associated logistics systems."[33] Dunlap's targets are value



Targets: wealth, bank accounts, finances, confidentiality, hearing in some ranges, olfactory senses, taste

Targets: sense of beauty, normal sexual function, physical coordination, mobility

Targets: friends, allies, cronies, loyalty of children and relatives, love interests

Targets: sense of well-being, reliable cognitive function, orientation

Targets: food, water, clean air, rest, reproductive function, ability to eliminate waste, health, life

Source: Adapted from Abraham Maslow, *Motivation and Personality* (New York: Harper and Row, 1954)

Figure 5. Targeting Using Maslow's "Hierarchy of Needs"

or "values" targets engaged essentially in the same way utility targets are engaged.

Dangers

No targeting schema is without risks. Some are obvious, some more subtle. The predominant risk associated with utility targeting is that enemy leaders may not use or value their stuff in the same way we use or value our stuff. We might find ourselves (and usually do) "mirror-imaging" the adversary and puzzled when our notions of causality are frustrated by effects not achieved. Surely we have learned to live with this risk; even today "intelligence" is dominated by "counting" and not by "measuring effects." The more subtle and more critical risk is that we remain mentally and militarily unprepared for value attacks against us. For example, how would we cope with a deliberate attack on Disney World? Worse, how would we cope with a televised mass suicide of hundreds of people killing themselves rather than dying at the hands of allied airpower?[34] How would we cope with a totalitarian leader who surrounds himself or herself with hundreds of women and children wherever the leader felt at risk? Our values—our need for esteem or affiliation—would be held at risk in such a case.

The dangers of value targeting are more numerous. First, we have an immature understanding of what others, including other cultures, value. Second, even if we understand what the main leader values, we may not understand what an adversary successor values. Third, there are leaders at every level and in many categories. Fourth, we may encounter the leader-sociopath, bereft of values, quite willing to live underground in hiding and insensitive to the absence of human comforts upon which others depend. Finally, we may find ourselves transformed by the process of understanding and attacking the lives and minds of adversary leaders. In hunting the sociopath, we may become pathological.

Mitigating the Dangers

Some dangers can be mitigated, and some cannot. To try to mitigate these dangers, we must begin the process of trying to better understand national and group leaders everywhere, but especially in those states, among

those groups, and in those geographical areas where success eluded us in the past: the Balkans, Iran, Iraq, North Korea, and some places in Africa. Next we must capitalize on the attributes of the third-wave information age and the global connectivity that characterizes it. Just as there is a movement toward "transparency" in the physical realm, there is a corresponding move toward greater visibility and greater intelligibility in the psychological realm.

Every move or action in the physical world, either directly or through proxies, is an indication of "revealed preference," or value. One's investment portfolio, for example, reveals one's preferences for risk, the value one places on risk and return. One's choices of books, or automobiles, or friends telegraph one's values. The meals one eats, the restaurant one frequents, and the places one avoids all illuminate value and values. Concerns regarding privacy on the Web are motivated by awareness of the revelations each of us makes through our actions. If there are 10 worrisome countries and each has 50 worrisome leaders with two potential successors each, that is a mere one thousand value-analysis problems to begin solving. A more difficult problem to solve is the problem of the leader-sociopath. These leaders may just have to perish.[35]

And lastly, to avoid becoming sociopathological ourselves, only a few well-chosen, adept, sinister, and Machiavellian people need to be engaged in value targeting: constructing the strategies and operational plans aimed at forcing a behavior shift in adversary leaders. Executing the engagements is, for the most part, a series of mechanical tasks, few of which are unfamiliar to some element of government. Whether bombing an unoccupied "resort" in Dunlap's theoretical scheme or bombing a factory, there should be no doubt that we know how to bomb and have the technology to bomb well. We suspect we have all the means necessary for robust value targeting too, but the mind has yet to move the mass.

Some Risks of Focusing on Utility Targeting Alone

It is not an intractable problem to count tanks and troops and missiles and, given political will, courage, and technology, it is possible to strike them, as allied airmen demonstrated. But one must be prepared for the real likelihood that the actual utility of these target-objects of utility targeting may diminish in the future and that there may be substitutes for some capabilities.[36] This is not a wild speculation. The United States Commission on National Security/21st Century (also known in the United States as the Hart-Rudman Commission) warns American leadership and the American people that

> many of the threats emerging in our future will differ significantly from those of the past, not only in their physical but also in their psychological effects. While conventional conflicts will still be possible, the most serious threat to our security may consist of unannounced attacks on American cities by sub-national groups using genetically engineered pathogens. Another may be a well-planned cyber-attack on the air traffic control system on the East Coast of the United States, as some 200 commercial aircraft are trying to land safely in a morning's rain and fog. Other threats may inhere in assaults against an increasingly integrated and complex, but highly vulnerable, international economic infrastructure whose operation lies beyond control of any single body. Threats may also loom from an unraveling of the fabric of national identity itself, and the consequent failure or collapse of several major countries.[37]

The target of the message is leadership in the United States, but the warning applies equally well to the Netherlands and the other open, democratic societies of Western Europe. The resulting problems caused by these "significantly" different threats are immense. How does one target the conventional war-fighting tools—the infrastructure, the industrial capacity, the aircraft, the tanks, and the troop formations—of subnational groups? How does one preempt or retaliate against cyber-attackers? How will we know where the stores of genetically engineered pathogens are, let

alone how will we know how to attack them? The answers, of course, are that we need new methods for new circumstances (fig. 6).

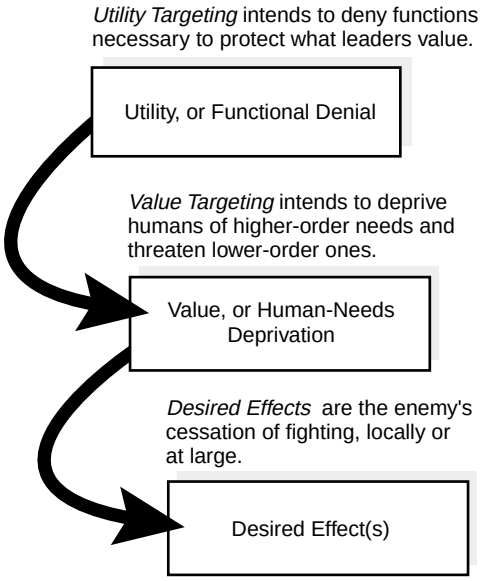


Figure 6. Targeting for Effect and Effects

Achieving Desired Effects

The effects we desire from targeting are a cessation of fighting, either locally or totally. Utility targeting engages physical objects, presuming them to be of value to the adversary. Value targeting engages the minds and needs of leaders at all levels, knowing that they, and not their war-fighting stuff, are the real source of the conflict and its prolongation and the essential ingredient to its resolution. If we begin by utility targeting to deny functionality, we must do this with an eye toward threatening the adversary's ability to use "stuff" to meet some higher-order need. Thus, we actually do value targeting if we focus on the desired effect and if that effect is tightly coupled to the larger effect of changing the minds of enemy leaders. Today we work the problem from the bottom up: kill tanks to prevent the conquest of territory. We need to work the problem, as Warden has long argued, from the top down. In this case we would argue that we ought to "target" needs that lead to the acquisition or production of tanks. If we fail to prevent the acquisition or production of tanks, then we target the needs that might be satisfied by summoning their use in aggression. We believe we need to move forward with implementing the capability to do robust value targeting, to conduct axiological aerospace operations.

Concluding Thoughts on Implementation

Imagine an axiological tasking order (AxTO) developed hand in glove with the more conventional air tasking order (ATO). Our ability to imagine is frustrated by awareness that the work of developing the staff of regional or area experts, psychologists, financial services consultants, media experts, communications specialists, physician-psychiatrists, and others needed to develop the target sets of value targeting probably are chores so different, so idiosyncratic when compared to fleshing out the utility targeting staff, that they are chores likely to remain undone, at least for awhile. The "interagency process" seems ill equipped to create a Bletchley Park,[38] dedicated not to enemy code-breaking but to enemy leader-breaking. Thus, the first steps are transitional steps. There are at least three of these transitional steps.

First, reexamine the effects of utility targeting in Desert Storm and in Operation Allied Force and compare its effects to the effects of any targeting done to engage the unconventional targets that the main leaders held dear.[39] It is necessary to include the main leaders—Saddam and Slobodan, respectively—but not sufficient to stop the analysis there. Said another way, test the relationship between the prewar or midwar conflict-termination theories that were given substance in actual targeting with the actual effects of allied behavior implementing the theories. Counting catastrophic kills may be necessary, but it is not sufficient. Counting is a meritorious en-

terprise only if one believes that destroying stuff is the essence of subduing another's will or changing another's mind.

Second, use the vehicle of war games to exercise different notions and variants of a cell dedicated to value targeting. Essential to these exercises is exploring ways the value targeteers might or should interact with the utility targeting staff. Analyze the target sets and engagement alternatives that the value targeting cell, alone and acting in concert with the utility targeting cell, developed and advanced in games. Upon identifying affinities and categories or classes of actions, vet and establish requirements for developing the engagement systems necessary to prosecute value attacks in the future.

Finally, look to the potentially misbehaving states and groups of the world to provide a fertile ground for actual value-targeting analysis. Then, begin the analysis. Understanding leaders in states will be relatively easier than understanding what substate and nonstate group leaders value and how they go about meeting their needs. After the analysis, the rest will follow apace. The "rest" is the happy future day when aerospace axiological operations and value-targeting contribute all that they can to deterring and resolving conflict. □

Notes

1. "The Vietnam War and the Press," *NewsHour with Jim Lehrer*, Public Broadcasting System (PBS), 6:00 P.M. EST, 20 April 2000. Mr. Kevin Bacon, US assistant secretary of defense for public affairs, said, "The Kosovo conflict was an air war; it was very difficult to cover for that reason; there were no front lines in the traditional sense." See also "Postwar Review Found Fewer Serb Weapons Hit in Kosovo," *Washington Post*, 9 May 2000, 17. Bacon said, "We obviously hit enough tanks and other targets to win."

2. "Clark Recalls 'Lessons' of Kosovo," *International Herald Tribune*, 3 May 2000, 1. See also John A. Tirpak, "The NATO Way of War," *Air Force Magazine* 82, no. 12 (December 1999).

3. See Robert B. Cialdini, *Influence: The Psychology of Persuasion* (New York: William Morrow and Company, Inc., 1993); Edward S. Herman and Noam Chomsky, *Manufacturing Consent: The Political Economy of the Mass Media* (New York: Pantheon Books, 1988); Richard Brodie, *Virus of the Mind: The New Science of the Meme* (Seattle: Integral Press, 1996); and Roger Fisher and William Ury, *Going to Yes: Negotiating Agreement without Giving In* (New York: Penguin Books, 1991).

4. "U.S. Military Debates Link between Kosovo Air War, Stated Objectives," *Inside the Pentagon*, 20 April 2000, 1.

5. If this were the case, then clearly some theories worked better than others in practice. See "Chinese Embassy Bombing: A Wide Net of Blame," *New York Times*, 17 April 2000, 1:

> As with most attacks during the war, especially the strikes in Belgrade, planning and execution were done by Americans. In raids involving the stealthy B-2's and F-117 fighters, many details about the attacks were classified as "U.S. only," mainly for fear of revealing secrets about those aircrafts. After the war, some allies questioned the practice. The French Ministry of Defense's report on the war last November complained of military operations "conducted by the United States outside the strict NATO framework and procedures."
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> A senior NATO diplomat said the United States identified 75 to 80 targets in this way. The Chinese Embassy was one of them.

6. For a theory of conflict termination applied to states and consistent with these views, see Joseph A. Engelbrecht Jr., "War Termination: Why Does a State Decide to Stop Fighting?" (PhD diss., Columbia University, 1992).

7. Craig W. Kirkwood, *Strategic Decision Making: Multiobjective Decision Analysis with Spreadsheets* (Boston: Duxbury Press, 1997). In the decision analysis discipline, utility is a function of risk preference for the levels of a measurable attribute. Decision makers for a decision have one of three risk preferences: they are risk neutral, risk seeking, or risk averse regarding the decision to be made. The preferences for levels of a measurable attribute (tanks, CEP, casualties, or something similar) are assessed using lotteries (i.e., questions involving the uncertainties or probabilities). For example, how many tanks destroyed for certain are equivalent to a 50-50 chance of destroying one hundred or zero tanks? If the number is expected value (50), the decision maker is risk neutral. If the number is less than the expected value, the decision maker is risk averse. If the number is greater than the expected value, the decision maker is risk seeking. Value, on the other hand, measures the returns to scale of each increment of an attribute. Value assumes certainty. If the attribute has constant returns to scale, the value function is linear. If the attribute has diminishing returns to scale, the value function is concave. If the attribute has increasing returns to scale, the value function is convex.

8. Risieri Frondizi, *What Is Value?* trans. Solomon Lipp (LaSalle, Ill.: Open Court, 1963), 6–7.

9. "DOD Leaders to Approve Revised Long-Term Vision," *Jane's Defence Weekly*, 10 May 2000.

> For example, Joint Vision 2020 will re-emphasise the requirement for "full spectrum dominance," ranging from major force-on-force engagements to small-scale contingencies, humanitarian operations and the variety of other crises short of war for which US forces are in high demand. Although this has been a mantra of the Department of Defense (DOD) for some time, "we felt as though that was one thing that got lost" in Joint Vision 2010, which focused primarily on the high end of operations, according to a senior military official who briefed *Jane's Defence Weekly* on the new document.

10. The same is true today: the way we make war is the way we make wealth. See Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century* (New York: Warner Books, 1993), 3.

11. Ibid.

12. Carl H. Builder, "Peering into the Future: Trying to Get the Enterprise Right," lecture, the National Reconnaissance Office, 11 March 1997. Builder's untimely death was a great loss to the US Air Force and to airpower thinking everywhere.

13. One need only scan Frederick, Jomini, Clausewitz, Moltke, Schliefen, and Schlichting to recognize that the machinery of warfare extended to the mechanical way in which massed armies were formed, trained, and employed. Even today, for example, the motto of the German *Fuhrüngsakadamie der Bundeswehr* is "The mind moves the mass." See Daniel J. Hughes, ed., *Moltke on the Art of War*, trans. Daniel J. Hughes and Harry Bell (Novato, Calif., Presidio Press, 1993).

14. R. J. Overy, *The Air War: 1939–1945* (New York: Stein and Day, 1980), 267.

15. We forgot that the Red Army broke the back of the German army by destroying 150 divisions with only modest support from the Allies. See John Ellis, *Brute Force: Allied Strategy and Tactics in the Second World War* (New York: Viking Penguin, 1990); Overy, *The Air War*; and Graham Lyons, ed., *The Russian Version of the Second World War: The History of the War as Taught to Soviet Schoolchildren* (New York: Facts on File, Inc., 1976).

16. Ellis, *Brute Force*, xviii. Ellis records that

> in the last 18 months of the war the Allies put onto the battlefield 80,000 tanks to the Germans' 20,000; 1,100,000 trucks and lorries to 70,000; and 235,000 combat aircraft to 45,000. In these same months the U-boats sank 630,000 tons of merchant shipping whilst the Allied shipyards turned out another 20,000,000 tons; between 1942 and 1945 the Japanese built 13 aircraft carriers, the crucial component of modern naval warfare, but the Americans built 137. The Battle of Production was a walkover.

17. John A. Warden III, "Air Theory for the Twenty-first Century," in Barry R. Schneider and Lawrence E. Grinter, eds., *Battlefield of the Future*: *21st Century Issues* (Maxwell AFB, Ala.: Air University Press, 1997), 103–24.

18. Joseph A. Engelbrecht Jr. observes that

> unfortunately, the targets get hit over and over again because of the weakness of execution and more importantly because his [Warden's] analysis only occurs at the beginning of the campaign when total system functionality is decomposed and targeted. He is not expecting a calculus but a collapse.

19. Warden, 111.

20. Will and Ariel Durant, *The Lessons of History* (New York: Simon and Schuster, 1968), 19.

21. See the "official" Hezbollah Web site at http://www.hezbollah.org/index.html.

22. Abraham H. Maslow, "A Theory of Human Motivation," *Psychological Review* 50 (1943): 370–96; and idem., *Motivation and Personality* (New York: Harper and Row, 1954).

23. David Ronfeldt, "Beware the Hubris-Nemesis Complex: A Concept for Leadership Analysis," RAND Report MR-461 (Santa Monica, Calif.: RAND, 1994), 31.

24. Brodie, 193–95. Similar to Maslow, Brodie identifies "push-button memes, the ones that are fit because they take advantage of our basic human nature": security, crisis, food, sex, problem, dominance, and belonging. These memes can be the basis for a category of engagement or attack that threatens leaders' abilities to satisfy needs.

	Target	Outcome
Security	Command centers and residences	Deny feeling of well-being
Crisis	Urgent, surprise problems	Overload, loss of self-esteem
Food	Imports, delicacies, favorites	Deprivation of esteem
Sex	Partners	Loneliness
Problem	Complex, multidimensional	Overload
Dominance	Successor or allies	Deny feeling of safety
Belonging	Successor or allies	Deny comfort of affiliation

25. Gregory S. Parnell notes that utility targeting has "a strong time component." Many of the targets relate to "future capability. The opponent then has the opportunity to find alternative future capacity." We agree. We believe that value targeting, in threatening to deprive the leaders of present needs, will more quickly lead to a cessation of fighting.

26. William M. Arkin, "Infamous Anniversary," *Washington Post*, Monday, 8 May 2000, n.p.; on-line, Internet, available from http://www. washingtonpost.com. Arkin writes:

> About one month into the air war, U.S. and British planners began to put together what they called the "3M" strategy, for money MUP (Ministry of Interior), and media. Covert operations were already underway in Cyprus, Italy and Belarus to go after the financial resources of Slobodan Milosevic, his family and "cronies." Now, a combination of psychological warfare, computer attacks and bombing would join in a super-secret effort to increase the pressure on Milosevic. The crony targeting plan was born.

27. Richard Szafranski, "Toward a Theory of Neocortical Warfare: Pursuing the Acme of Skill," *Military Review*, November 1994; and idem, "When Waves Collide: Conflict in the Next Century," *JFQ: Joint Force Quarterly*, Winter 1994–1995.

28. It may work least well against adversaries who do not share our values.

29. Col Charles J. Dunlap Jr., USAF, "The End of Innocence: Rethinking Noncombatancy in the Post Kosovo Era," 6. In this article, scheduled for publication in a forthcoming issue of *Strategic Review*, Dunlap argues for the need for a "new paradigm" in targeting:

> What kind of civilian objects would be added to target lists? None that are genuinely indispensable to the survival of the noncombatant population. Not struck, for example, would be many of the infrastructure targets suggested in the *Airman* magazine article. However, almost everything else of any value would be fair game. The new target sets would include such things as banks and financial institutions. Factories, plants, stores, and shops that produce, sell, or distribute luxury products or, indeed, anything not absolutely indispensable to noncombatant survival, might be wonderfully rewarding targets—as could be their associated logistics systems. Reducing the middle and upper classes to a subsistence level through the destruction of access to all but essential goods might pressure the very groups best positioned to effect the desired change.
>
> Additional targets under this proposal could include selected cultural, educational, and historical sites whose existence provides support—to include psychological sustenance—to the malignant ideology that stimulates the behavior the use of force is intended to stop. Furthermore, resorts, along with other entertainment, sports, and recreational facilities could be slated for destruction. Of course, government offices and buildings of every kind would be subject to eradication, even if they do not directly support military activities (except those whose destruction would seriously impede the delivery of

services indispensable for noncombatant survival). Finally, to the extent it is feasible to do so, the personal property of the sentient, adult population ought to be held at risk so long as it is not, again, indispensable to human survival. Milosevic's bank accounts would be high on the target list under the revised model.

30. Paul Watzlawick, John Weakland, and Richard Fisch, *Change: Principles of Problem Formation and Problem Resolution* (New York: W. W. Norton and Company, 1974); and Paul Watzlawick, *How Real Is Real? Confusion Disinformation Communication* (New York: Vintage Books Edition, 1977).

31. For press reporting on alleged information operations during Operation Allied Force, see Lisa Hoffman, "U.S. Opened Cyber-War during Kosovo Fight," *Washington Times*, 24 October 1999, C1; and William M. Arkin, "The Cyber Bomb in Yugoslavia," 25 October 1999; on-line, Internet, available from http://www.washingtonpost.com. For a judgment on the legality of information operations, see Department of Defense, Office of General Counsel, "An Assessment of International Legal Issues in Information Operations," May 1999.

32. We appreciate that if one will not concede that airpower, which to us includes information operations—exercised through the air, space, and cyberspace—does not have a pivotal role in targeting and engaging the things that make it possible for adversary leaders to meet their needs, then one cannot accept that axiological operations are necessarily "aerospace" operations.

33. Dunlap, "The End of Innocence."

34. This scenario was described to one of us by a senior government official to illustrate the strength of our values and the weaknesses those values may cause in some instances.

35. "Barr Calls for End to Assassination Ban: Says Terrorist Leaders Should Be Eliminated," 25 August 1998, n.p.: on-line, Internet, available from http://www.house.gov/barr/p_ban.html, "U.S. Representative Bob Barr (GA-7) called for an end to the ban on assassinating foreign leaders who murder U.S. citizens and sponsor terrorism."

36. Future C^2 or C^4I attacks, for example, have to consider the utility of copper, coaxial cable, fiber, wireless, narrow-band from space, wideband from space, radio, semaphore, smoke, drums, and couriers. Some of these things may be sanctuaried as "noncombatant," "civilian," or "nonbelligerent" state entities.

37. Value targeting is what our adversaries are likely to do against us. It represents a focus of asymmetric operations. The asymmetries are not so much in the military operations as they are in capitalizing on the asymmetries in values. See United States Commission on National Security/21st Century, *New World Coming: American Security in the 21st Century: Major Themes and Implications* (Washington, D.C.: Government Printing Office, 1999), 8.

38. The home of an eclectic and by all accounts idiosyncratic group of code breakers in World War II Britain.

39. The following excerpt is taken from "The Lies Of War: NATO's Balkan Bombing Tally," *Colorado Springs Gazette*, 2 June 2000:

> The actual numbers, as reported by a Munitions Effectiveness Team (MEAT) sent to inspect bombing sites in helicopters and on foot: 14 tanks, not 120; 17 armored personnel carriers, not 220; 20 artillery pieces, not 450, according to *Newsweek*. Out of 744 "confirmed" strikes by NATO pilots, the Air Force investigators, who spent weeks combing Kosovo by helicopter and by foot, found evidence of just 58. Yugoslav forces turned out to have been rather skillful at "spoofing" bomber pilots. "The Serbs protected one bridge," Barry and Thomas wrote, "from the high-flying NATO bombers by constructing, 300 yards upstream, a fake bridge made of polyethylene sheeting stretched over the river. NATO "destroyed" the phony bridge many times. Artillery pieces were faked out of long black logs stuck on old truck wheels. A two-thirds scale SA-9 antiaircraft missile launcher was fabricated from the metal-lined paper used to make European milk cartons."
>
> The exaggeration about destruction of military targets provides a bookend to exaggerations that set the stage for the war. Before the bombing began, U.S. and NATO spokesmen insisted that "cleansing" of Kosovo Albanians was occurring on a massive scale. Estimates of 10,000 or more civilians murdered by Serb-dominated Yugoslav forces were bandied about to justify starting the bombers on their way. After the war, NATO investigators uncovered evidence of about 3,000 Kosovars killed, with a significant amount of the slaughter occurring after the bombing had begun. By comparison, between 3,000 and 5,000 Serbs and Albanians, most of them civilians, were killed by NATO bombing attacks.

Two fundamental lessons of war experience are—never to check momentum; never to resume mere pushing.

—B. H. Liddell Hart, 1944