

# The Essence of Coercive Air Power: A Primer for Military Strategists

Dr. Karl Mueller

## Introduction

This essay is designed to provide the warfighter with a basic and somewhat informal overview of coercion, emphasizing but not limited to the coercive use of air power.<sup>1</sup> The subject is central to almost all military strategy, yet it is not often addressed in a systematic way in either military education or military doctrine. This lack of comprehensive attention is due to a variety of factors, ranging from the philosophical misperception that because it is a matter of politics, coercion falls outside the principal sphere of military concern, to the practical obstacles to study that are posed by a field developed by independent theorists who often do not share even a common vocabulary. This article will argue that it is nevertheless essential for the strategist—especially the air power strategist—to understand the essentials of military coercion, and will try along the way to dispel some of the "fog of theory" that often clouds this subject.

## Coercion and Warfare

Coercion, in its broadest sense, is causing someone to choose one course of action over another by making the choice that the coercer prefers appear more attractive than the alternative. In the international arena, coercion is usually intended to change the behavior of states, and this essay will focus on states as the targets coercion, although most of what follows also applies to other sorts of coercion. Similarly, this discussion will center around the use of coercion for major security issues, such as deterring war, compelling surrender in wartime or the sacrifice of national territory, and the like, although much coercion involves far less serious stakes.

This definition of coercion obviously covers a lot of theoretical ground. First, it includes both deterrence and compellence, that is efforts to make the adversary not do something it otherwise might do (such as attacking the coercer) and efforts to make the adversary take an action it otherwise would not (such as ceding territory to the coercer). There are important differences between deterrence and compellence—mainly, other things being equal, compellence tends to be more difficult than deterrence because of factors such as policy inertia—but the two forms of coercion resemble each other far more than they differ. Moreover, much coercion falls into the gray area between deterrence and compellence, such as coercion intended to make an adversary halt an invasion; this can be interpreted either as compelling the enemy to stop, or as deterring the enemy from advancing further. In such cases, drawing a clear line between deterrence and compellence becomes a matter of pure semantics, so it is usually better to think of deterrence and compellence as opposite ends of a continuum rather than separate and distinct categories.<sup>2</sup>

Second, this definition does not say anything about the means being used to coerce the adversary. Coercion can involve the threat or actual use of military force,<sup>3</sup> economic sanctions, or a whole range of other political pressures. Usually it involves more than one at the same time. Of course there are differences between coercion using threats of war and coercion through threats of diplomatic criticism, for example, but most of the same basic principles apply to coercion regardless of the tools being employed. Similarly, coercion need not involve gradual escalation in the application of force; this is obvious for deterrence, but even in compellence there is no requirement that coercive force be applied in a restrained or limited manner.

Finally, this definition does not exclude coercion through promises and rewards instead of threats and punishment, which may seem strange. It is certainly possible to treat "positive sanctions" as something separate from coercion—after all, in everyday life "coercion" refers to something negative, such as your boss's threat to fire you if you don't work overtime, but not an offer to pay you extra as an incentive to do so. However, drawing this line is not actually as easy as it sounds. Coercion depends not just on making what you want the adversary not to do appear unappealing, but on making it look less appealing than what you want them to do instead. Thus policies that make complying with coercive demands attractive have the same effect as those that make resisting unattractive, and the coercive strategist must pay attention to both sides of the balance. In addition, many of the same factors that determine whether a coercive threat will be effective also apply to promises, though there are some interesting differences between the two.<sup>4</sup> This essay will return to the subject of coercion through rewards later, although it will focus mainly on coercion through threats of harm since this is how coercive air power is most often used.

### Punishment, Denial, and Destruction

Coercive force—either threatened or applied—is intended to change the behavior of the adversary. Thus it differs from force that is employed for the simple purpose of destroying a target.<sup>5</sup> At the tactical level of war, "pure force" predominates, for the goal of attacks is usually the physical destruction or incapacitation of an enemy unit or vehicle. In contrast, at the strategic level destruction is rarely the ultimate goal of armed force. There are exceptions to this generalization—for example, the 1981 Israeli attack against the Osirak nuclear reactor, which was intended to destroy the target and thus temporarily cripple Iraq's nuclear weapons program, and was (presumably) not expected to discourage Baghdad from continuing to pursue nuclear weapons development or to intimidate Iraq into a less anti-Israeli foreign policy—but these are relatively uncommon. When a state seeks to make an enemy surrender, it is engaged in coercion, for the goal is to cause the enemy to choose to capitulate. Wars in which no surrender will be accepted do occur, but they tend to be very expensive to fight. Of course, coercion usually seeks concessions much more limited than national surrender.

It is useful to think of purely destructive force and purely punitive coercion as opposite ends of a spectrum. At the destruction pole are efforts to produce entirely physical effects, such as the annihilation or incapacitation of an adversary state. This may of course change the enemy's behavior, by removing the capability to take some action that the attacker does not like, but it does not cause the target state to choose not to do something, so it is indifferent to the enemy's

will. Destruction is conceptually simple, but can be difficult to carry out if the goal is an ambitious one, like entirely eliminating an adversary's ability to fight.

At the other end of the spectrum lies coercive punishment, the use of force to change the adversary's policy choice without affecting its abilities. Examples of such policies using air power range from huge assured destruction threats designed for deterring nuclear attacks to minor punitive raids such as the 1986 U.S. strike against Libya or Israel's frequent retaliatory strikes against terrorist targets in Lebanon. Executing such an attack has no significant effect on the adversary's ability to take or persist in the undesired action, but instead the attack (or just the threat of it) seeks to make the enemy choose to comply with coercer's demands because this appears to be a better choice than not complying. Although in practice many forms of punishment do have some collateral effect upon the enemy's capabilities, punitive coercion essentially seeks directly to affect the enemy's will to resist rather than their ability to do so.

Between these extremes lies another approach to coercion, typically called denial. Denial involves changing the enemy's behavior by making the undesired course of action appear pointless, either through actually reducing the enemy's ability to carry it out successfully, or by persuading the enemy that it lacks the ability to succeed. Instead of raising the costs of defiance to the point that compliance appears preferable even to successful resistance, denial makes defiance appear unlikely to succeed, in the hope that the enemy will consider compliance to be better than defiance that will ultimately fail anyway. In short, denial seeks to change the enemy's will to resist by reducing their perceived capability for resistance, reducing the adversary's perceived options to a choice between surrendering now and surrendering later.

Denial has much in common with destruction: both seek to make the enemy's objectives unachievable in some sense, and usual focus on attacking military forces or the resources and infrastructure that support them. However, denial is coercive, for it is directed against the adversary's beliefs about the future, and it calls upon the adversary to make a policy choice. Destruction is a matter of objective reality. The attacks one mounts in a denial strategy are likely to resemble those contained in a pure destruction campaign, since the best way to convince someone that defeat is inevitable is usually to make it inevitable; however, a strategy to make an adversary surrender is likely to have significant differences from an effort simply to destroy the enemy outright.<sup>6</sup>

## Coercion and Victory

Destruction is simpler than coercion. Of course, making purely destructive military strategy is difficult enough, since warfare is a complicated business that can take a lifetime to master, even for an unusually clever general. But making good coercive strategy requires understanding not only military art and science, but also additional layers of politics (and often economics and psychology), since it is necessary to predict both what the enemy will be able to do, and what the enemy will choose to do given its capabilities, at the grand strategic as well as the military level.

Yet most warfare is to a greater or lesser degree coercive. States usually seek the capitulation of their enemies rather than their complete incapacitation, although denial strategies

sometimes make it possible to pursue both goals at the same time, by allowing the coercer to fall back on a strategy of destruction if coercion fails (as the Allies did against Germany in World War II). The reasons are obvious: bringing the contest to an end while the enemy still has the means to resist offers the prospect of conflicts that are less expensive for the coercer and probably for the enemy as well, and successful coercion may avert warfare altogether through deterrence or compellence that relies on threats rather than the actual use of force. Often states pursue coercion in situations where they would never consider seeking victories through pure force because the costs of doing so would be prohibitively high.<sup>7</sup> This is particularly true when the stakes are less than vital interests for the coercer.<sup>8</sup>

Thus, coercion is successful when the adversary complies with the coercer's demands, and would not have done so in the absence of the coercive effort. Coercion has failed if the adversary does not comply with the coercer's demands; in the case of deterrence, failure is easy to recognize, while unsuccessful compellence can end with the coercer backing down, or with the coercer pressing ahead and achieving its goals through brute force. If the coercer's demands are met, but not because of the coercer's threats, coercion is neither successful nor unsuccessful, but merely irrelevant to the outcome; this often happens in deterrence, when a state seeks to deter an attack that the adversary had little inclination to launch in the first place. As a result, even long after the fact it can be difficult to determine with certainty whether a particular coercion effort succeeded or not if the adversary acted in accordance with the coercer's wishes.

Simple assessments of the success or failure of coercion can be complicated further when the adversary complies with some of the coercer's demands but not all of them. Such cases are common, and can lead to endless debates over whether the result should be counted in the win or the loss column of the coercion scorecard. It is better by far to recognize that coercive success is rarely an all-or-nothing affair, and since coercion results will frequently be ambiguous the analyst should consider what was and was not achieved through coercion rather than worrying too much about how to label the outcome.<sup>9</sup>

### Requirements for Coercion

Because coercion is matter of the adversary's perceptions, it depends entirely on a set of subjective factors, some of which are more obvious than others at first glance. The most commonly listed items on coercion checklists are the credibility, capability, and communication that lie behind coercive threats, but there is more to coercion than these "three Cs".

Credibility is the most often discussed feature of coercive threats. A threat will only carry coercive weight to the degree that the adversary believes the coercer will actually carry it out if compliance is not forthcoming.<sup>10</sup> Whether the adversary's perception is correct is irrelevant, all that matters is how much the threat is believed. This does not mean that coercive threats must be entirely believable, however. Even a small chance that a coercer will follow through on a threat to inflict great harm (such as launching a nuclear attack) may be sufficient to carry considerable coercive weight. In general terms, the more frightening a threatened action is, the less credible it needs to be. This works out nicely, because more severe threats are typically—but not always—more expensive to carry out, and thus are less likely to be entirely credible, than milder ones, since the coercer has greater incentives to renege on costly threats than inexpensive ones.<sup>11</sup>

Because credibility is so central to coercion, and can often be quite difficult to establish, a large proportion of coercion theory is devoted to discussing ways in which the credibility of threats can be enhanced.<sup>12</sup>

Capability is also a vital but often neglected part of coercion. If the adversary does not believe that the coercer has the ability to carry out a coercive threat, it is worthless as a coercive instrument, even if the coercer's will to try is not in doubt. Although it goes hand-in-hand with credibility, capability usually draws far less attention in coercion theory, largely because American nuclear strategists (whose concerns dominated coercion theory for most of the cold war) have long been able to count on a great surplus of coercive capability. However, capability can become quite problematic for less powerful states, and even for the United States in areas such as economic sanctions, or conventional military coercion against states that are not military pygmies.

Communication plays a secondary but important role in coercion. Coercive demands and threats must be communicated in order to be effective, which is often a simple matter, but one that can become challenging if the messages involved are complex and the coercer wishes to send them through actions rather than words. It is equally critical to communicate what will happen if the adversary does accede to the coercer's demands, since threats of harm need to be recognized as being conditional on the target state's behavior if they are to encourage compliance.

It is often suggested—usually by coercion skeptics—that coercion requires the adversary to behave rationally, but this is not entirely correct. Coercion theory does assume a minimal degree of rationality in the target state's behavior, since it must choose to follow the course of action it prefers rather than those that it does not prefer. However, it is more accurate to say that coercion theory simply requires that the adversary not behave completely irrationally, for even if a less-than-perfectly-rational state tends to make poor decisions as a result of its handicap, a big enough coercive threat ought to be able to overcome the interference. Of course, a state's behavior can fall short of the rational ideal for many reasons—including mentally defective leaders, organizations and interest groups pursuing parochial instead of national interests, inefficient government bureaucracies, imperfect information, motivated and cognitive biases—which may make coercion either easier or more difficult, depending on the details of the case. However, truly irrational state behavior, which should not be confused with states rationally pursuing objectives that seem senseless or unfathomable to others, is very unusual in the international system.

A final factor that profoundly shapes the success and failure of coercion often receives less attention than it deserves: the interests at stake in the confrontation. Whether the adversary will comply with the coercer's demands or instead resist them to the death ultimately depends more than anything else on what is being demanded. It seems obvious that almost nothing will persuade most states to sacrifice their sovereignty or national survival, while even very limited pressure may be enough to coerce an adversary to give up something trivial. Yet observers persist in treating the failure of feeble pressure to produce huge coercive concessions as significant—the "failure" of the U.S. grain embargo against the USSR in response to the 1979 Soviet invasion of Afghanistan is one of the more striking cases of this sort. The same pattern sometimes appears in discussions of coercive air power.

The fact that stakes are central to coercion does not mean, however, that the side in a dispute that cares more about the dispute will necessarily prevail. Coercion is indeed usually competitive, with the target state seeking in turn to coerce the coercer to abandon its efforts.<sup>13</sup> Thus, if the two sides have similar resources to apply to the contest, a disparity in interests may determine which side gives up first. However, it is typical for one state to be more powerful than the other, in which case superior strength may overcome superior commitment. In the end, it is the state with the greater will to win relative to the coercive pressure being applied against it that should prevail. The next section attempts to represent these dynamics in a more systematic way.

## The Coercion Calculus

Coercion is a matter of changing the adversary's expectations to make compliance with the coercer's demands appear more attractive than resisting them (for deterrence, this means making not attacking look like a better option than attacking). In more concrete terms, this can be disaggregated into a set of distinct but interconnected variables: the expected benefits and costs of compliance, the benefits and costs anticipated from successful and from unsuccessful resistance, and the expected probability that resistance will succeed.<sup>14</sup> Ideally, the coercer would like to maximize the expected costs of resistance and benefits of compliance, and to minimize the benefits of resistance, the likelihood that resistance will be successful, and the costs of compliance.

Punishment strategies seek to increase the costs of resistance, and can be directed against anything the enemy values, including civilian population, military forces, economic wealth, national infrastructure, or international influence. Punitive coercion is intended to cause fear of future pain, as in Giulio Douhet's prescription for city bombing; inflicting actual pain may be a means to this end, but only destruction strategies cause pain for its own sake. Because pure punishment strategies do nothing to help the coercer if coercion fails, the credibility of punishment threats is likely to be questioned if they are costly to carry out.

Denial strategies seek to reduce the likelihood that resistance will be successful, most often attacking the adversary's ability to fight by damaging military forces or the industry and other systems that sustain them. Where punishment strategies rely upon anticipated pain for coercion, denial strategies seek to cause hopelessness. Since reducing the enemy's chances of successful resistance usually increases the coercer's prospects for achieving a pure force victory if coercion fails, denial threats tend to be relatively credible, though the more expensive they are to carry out, the less true this will be.

On rare occasions reducing the expected benefits of successful resistance can be an important element of coercion, for example in the case of deterrent scorched earth threats to destroy assets that a prospective invader might hope to acquire through aggression.

Finally, a variety of positive sanctions can be used to reduce the costs and increase the benefits of complying with the coercer's demands. Both reassurance and bribery involve dangers of encouraging blackmail in the future, but they can be an effective and efficient way of achieving coercive objectives in many cases.

In practice, a single threat or application of force will frequently have both punishment and denial (and often destruction as well) effects. This is certainly true of coercive air power, which almost always inflicts pain while pursuing denial (for example, in bombing enemy war industry or troops in the field), and usually damages military capabilities when inflicting punishment (such as bombing civilian infrastructure). However, the terms of the coercion calculus can also interact in more complicated ways than simple "two-for-one" effects. For example, developing the ability to defeat an attacker can also encourage aggression if it frightens one's neighbors.<sup>15</sup>

## Coercive Strategy

Given this menu of strategic options, what sorts of coercive strategies are best? The logic of coercion indicates that success is most likely when the expected net costs of resistance are high, when the costs of compliance appear low, and when there is little or no prospect that resisting the coercer's demands will lead to a result that would be better than complying with them. The higher the stakes, the more important denial will become, because the harder it will be to make the costs of successful resistance outweigh its expected benefits.<sup>16</sup> This does not, however, tell the strategist very much about how to go about making good coercive strategy.

Perhaps the most useful piece of guidance to be found in the coercive air power literature is Robert Pape's admonition for strategists to focus not on the targets to be attacked, but on the coercive mechanism that they expect will lead to the strategy achieving its political objective.<sup>17</sup> In short, a coercive target set is only as important as the chain of events that attacking it will trigger, so what to attack should be decided only after the strategist knows why to attack it.

Coercive mechanisms usually include many things, either explicitly or implicitly, including expectations about the second- and third-order effects that will follow from air attacks, theories about how the enemy makes policy decisions, models of how the enemy's armed forces, economy, and society work, and beliefs about the individual and collective psychology of enemy leaders and citizens. From Giulio Douhet to John Warden and beyond, the evolutionary history of air power theory is littered with strategies built on fatally flawed, or just severely underdeveloped, coercive mechanisms.<sup>18</sup>

Looking across this varied intellectual history, some recurrent patterns of error appear. Many air power theorists have made the mistake of assuming that enemy societies are fragile mechanisms that can be easily and catastrophically disrupted by bombing, when in fact their economies and morale both tend to be fairly resilient.<sup>19</sup> This is especially true of very modern states, whose robust economies and educated populations give them great—and frequently underestimated—capacity for adaptation.<sup>20</sup> Similarly, airmen are often seduced by the quest for small but critical "panacea target" sets, the destruction of which they optimistically believe will unhinge the adversary's will or ability to resist—yet some, such as Arthur Harris, have erred in the other direction, failing to recognize that some targets really are more important than others. In reality, opportunities do exist to achieve both physical and coercive effects against some adversaries that are quite out of proportion to the limited effort required for the attacks, but identifying these usually requires very serious and sophisticated analysis of the specific adversary's economy, society, and military, rather than a simple list of standard target sets.<sup>21</sup> Many coercive mechanisms fail to disaggregate the enemy, treating as unitary an adversary that in reality needs

to be understood as a group of competing governmental or domestic interests, each of which may respond differently to a particular coercive policy.<sup>22</sup> Finally, some strategies are built on false analogies between people and states, assuming for example that the cumulative psychological effects of bombing upon entire societies or governments are merely a larger version of bombing's tactical-level shock effects upon individuals.

### Making Coercion Work

Given potential pitfalls such as these, how can the coercive air strategist maximize the chances of succeeding? There is no simple prescription for coercive success, but historical experience does provide some guidance, much of it in the form of reasons why coercion often fails.

Many coercion failures can be attributed to a straightforward mismatch between coercive pressures and political demands. The importance of the stakes in coercion cannot be overstated, and a strategy that applies relatively small amounts of pressure in an effort to cause the adversary to sacrifice vital interests is almost certainly doomed to failure from the outset, as the United States eventually discovered in Vietnam.<sup>23</sup> Other failures can be attributed to the sorts of inadequate or faulty coercive mechanisms described above, leading to underestimating the enemy's physical or psychological resilience; this had much to do with the failures of coercive air power (and blockade) against Britain and Germany in the Second World War, and against the Afghan resistance in the 1980s. Finally, failures can result from operational defects in the application of force—failing to inflict the damage called for by the strategy, or abandoning a sound strategy before it has time to work. All of these are problems that an astute strategist can do much to avoid.

However, coercive air power also faces limitations that no amount of cleverness can entirely overcome. Bureaucratic inertia and emotional resistance will almost always cause coercion to be slower than purely rational models would predict. Conflicts and major crises tend to make the perceived importance of the issues in dispute rise over time, as lives are lost, nationalist rhetoric escalates, and leaders' reputations are staked on victory. Conceding to the coercer's demands will sometimes appear to represent a death sentence to enemy leaders, either figuratively or literally, which may be sufficient to make them resist no matter how costly and pointless doing so becomes. On the technological front, precision-guided weapons are only useful if there are suitable (and identifiable) targets for them to attack. All of these factors, and others, mean that air power is not an omnipotent coercive instrument, though its capabilities have increased dramatically during the past generation.

As an imperfect rule of thumb, it is fair to say that coercion has a good chance of succeeding if the coercer can bring about four related conditions, and do so prior to succumbing to the enemy's counter-coercion. First, the enemy should believe that victory is impossible, because even a slim hope of eventual success may be sufficient motivation to hold out against great coercive pressure. Second, particularly if the stakes are high, the enemy should be further convinced that continued resistance offers no hope of leading to any result better than complying with the current demands would be; even when victory appears out of reach, the enemy is likely to grasp at straws such as the prospect of forcing a negotiated compromise settlement. Third, surrender

now should appear to be a better deal than surrender later, either because resistance is costly, or because the terms being demanded are likely to become more severe as time passes; otherwise, even futile resistance will not be unattractive. Finally, complying with the coercer's demands must be at least minimally acceptable to the enemy in absolute terms, for if surrender looks too awful to contemplate, then any alternative is likely to appear preferable, no matter how unpleasant, hopeless, or desperate. Coercion may actually succeed without achieving all of these conditions, particularly if the coercer's demands are not great, but failure to fulfill any of them may be sufficient to make a coercive strategy fail.

It is important to recognize that in some cases, not even the best possible coercive strategy will produce success, even for a coercer as powerful as the United States. Sometimes a coercer will lack the resources or the ability to carry out a sufficiently powerful coercive strategy to achieve its ends, while there are occasional cases in which coercing the enemy is beyond the means of any state, or even the entire international community. On the other hand, there are always strategic options that are ill-conceived enough to fail. For the air power strategist, it is necessary not only to be able to craft optimal strategies for coercion, but also to be able to identify cases in which no strategy promises success at a reasonable price, and other instruments of power—or a policy other than coercion—are required. Developing the expertise in coercion required to do these things is an intellectually challenging task of the highest order, but without mastery of coercion, there is no full mastery of war.

#### Notes

1. For lengthier and more detailed discussions of many of these subjects by the same author, see Karl Mueller, "Strategies of Coercion: Denial, Punishment, and the Future of Air Power," *Security Studies*, Vol. 7, No. 3 (Spring 1998), pp. 182-228, and "Strategic Airpower and Nuclear Strategy: New Theory for a Not-Quite-So-New Apocalypse," in Phillip S. Meilinger, ed., *Paths of Heaven: The Evolution of Airpower Theory* (Maxwell AFB, Ala.: Air University Press, 1997), pp. 279-320. On coercive air power in particular, see also Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca: Cornell University Press, 1996), and Daniel Byman, Matthew Waxman, and Eric Larson, *Air Power as a Coercive Instrument*, MR-1061-AF (Santa Monica: RAND: 1999).
2. On deterrence and compellence, see Thomas C. Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966), pp. 69-91. On defining coercion, see among others Thomas W. Milburn, "What Constitutes Effective Deterrence?" *Journal of Conflict Resolution*, Vol. 3, No. 2 (1959), pp. 138-45, and Lawrence Freedman, ed., *Strategic Coercion: Concepts and Cases* (New York: Oxford University Press, 1998).
3. It is probably obvious to the modern reader that deterrence does not have to involve nuclear weapons. As recently as twenty years ago, however, deterrence theory was so strongly associated with nuclear deterrence that many people considered "conventional deterrence" to be something of a novelty.
4. See David Baldwin, "The Power of Positive Sanctions," *World Politics*, Vol. 24, No. 1 (October 1971), pp. 19-38.

5. For the seminal discussion of coercion and "brute force," see Schelling, *Arms and Influence*, ch. 1.

6. This distinction between coercion and destruction parallels the relationship between the often conflated concepts of deterrence and defense. Deterrence involves changing the enemy's expectations about what war will be like so they will choose not to attack, while defense involves making war better (or less bad) for yourself if deterrence fails. Since deterrence exists in the mind of the enemy while defense involves real capabilities, secret weapons can defend but cannot deter, and dummy weapons and other bluffs can deter but contribute nothing to defense if deterrence fails (see Glenn H. Snyder, *Deterrence and Defense* (Princeton: Princeton University Press, 1961), ch. 1). The concept of non-defensive deterrents reaches its pinnacle in Stanley Kubrick's 1964 film *Dr. Strangelove* (for which Thomas Schelling was an early script consultant). In the movie, the Soviets have constructed a doomsday machine (a device conceived in the real world by deterrence theorist Herman Kahn), which will automatically destroy the world if the USSR is attacked, thus providing complete deterrence but no defense. Unfortunately, Moscow delays revealing the secret invention, which means it cannot deter the nuclear attack that is then launched by a deranged U.S. Air Force officer.

7. This is also why we rely predominantly on coercion to shape human behavior in domestic law enforcement, motor vehicle traffic control, and child rearing, to name just a few non-military spheres of endeavor.

8. Because almost all warfare is coercive to some degree, it is nonsensical to argue that military power should not be used for coercion. In fact, most of those who decry coercion as a misuse of the military are actually complaining about particular sorts of military coercion strategies, such as gradual escalation or the use of coercive force in pursuit of minor national interests. It is certainly possible to argue that coercive force should never be used in situations where the coercer is not willing to prosecute the conflict to the point of achieving a victory through pure destruction if coercion fails, but this does profoundly restrict the use and the utility of military power. For elaboration on this point, see Karl Mueller, "Politics, Death, and Morality in U.S. Foreign Policy," *Aerospace Power Journal*, Summer 2000, forthcoming.

9. See Mueller, "Strategies of Coercion," and David A. Baldwin, "The Sanctions Debate and the Logic of Choice," *International Security*, Vol. 24, No. 3 (Winter 1999/2000), pp. 80-107.

10. Note that a threat that is severely lacking in credibility (or severity) may still have value for purposes other than coercion, for example it may provide domestic political benefits for the government that makes it.

11. Credibility works the same way for promises of rewards as for threats of harm, just one of the ways in which positive sanctions resemble negative ones.

12. The foremost work on the subject is still Schelling's *Arms and Influence*.

13. On this point see Byman, Waxman, and Larson, *Air Power as a Coercive Instrument*, and Daniel Byman and Matthew Waxman, "Defeating U.S. Coercion," *Survival*, Vol. 41, No. 2 (Summer 1999), pp. 107-20

14. This can be represented symbolically, for those who are not afraid of algebra, in the following inequality (with successful coercion expected when the left side is greater than the right):

$$B_C - C_C > P_S(B_{SR} - C_{SR}) + (1 - P_S)(B_{UR} - C_{UR})$$

where B is benefits, C is costs, c indicates compliance, <sub>SR</sub> and <sub>UR</sub> indicate successful and unsuccessful resistance, and P<sub>S</sub> is the probability that resistance will succeed. For the specific case of deterring aggression, substitute <sub>SQ</sub> (status quo) for C, <sub>V</sub> (victory) for S and <sub>SR</sub>, and <sub>D</sub> (defeat) for <sub>UR</sub>. For a longer and more tediously detailed discussion of the coercion calculus, see Karl Mueller, *Strategy, Asymmetric Deterrence, and Accommodation* (Ph.D. diss., Dept. of Politics, Princeton University, 1991).

15. On such "security dilemmas," see among others Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics*, Vol. 30, No. 2 (January 1978), pp. 167-214.

16. Robert Pape argues that punitive conventional bombing never works, but his argument is based on the coercive stakes being extremely high. See Pape, *Bombing to Win*, and the analysis in Mueller, "Strategies of Coercion."

17. See Pape, *Bombing to Win*, chap. 3, and Thomas P. Ehrhard, "Making the Connection: An Air Strategy Analysis Framework" (Maxwell AFB: Air University Press, 1995).

18. Mueller "Strategies of Coercion," pp. 186-87. For an historical survey of major air power theories, see Phillip S. Meilinger, ed., *Paths of Heaven: The Evolution of Airpower Theory* (Maxwell AFB, Ala.: Air University Press, 1997).

19. See Stephen T. Hosmer, *Psychological Effects of U.S. Air Operations in Four Wars 1941-1991*, MR-576-AF (Santa Monica: RAND: 1996).

20. See Mancur Olson Jr., *The Economics of the Wartime Shortage* (Durham: Duke University Press, 1963).

21. See Mancur Olson Jr., "The Economics of Target Selection for the Combined Bomber Offensive," *Royal United Service Institution Journal*, Vol. 107 (November 1962), pp. 308-14, and Alfred C. Mierzejewski, *The Collapse of the German War Economy, 1944-1945* (Chapel Hill, NC: University of North Carolina Press, 1988).

22. On the importance of disaggregating different actors and interests within the adversary state, see Jonathan Kirshner, "The Microfoundations of Economic Sanctions," *Security Studies*, Vol. 6, No. 3 (Spring 1997), pp. 32-64; Wallace J. Thies, *When Governments Collide: Coercion and Diplomacy in the Vietnam Conflict 1964-1968* (Berkeley: University of California Press, 1980)

provides such an analysis of North Vietnam in explaining the failure of Operation Rolling Thunder.

23. It is worth noting that many hopeless coercion efforts of this sort are never intended to succeed, but rather are carried out for other reasons, such as domestic or international political consumption.

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#### Contributor

Dr. Karl Mueller is a Professor of Comparative Military Studies at the U.S. Air Force's School of Advanced Airpower Studies (SAAS), at Maxwell AFB, Alabama. In 2001 he will become an Associate Political Scientist at the RAND Corporation in Washington, D.C.

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