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Why Do US Nuclear Force Numbers Matter for Deterrence?

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The US debate about nuclear forces and policy often descends into arcane details. These details can be important, but it also is important to address a basic question: for deterrence, does the United States need more and different types of nuclear capabilities than the very limited number and types of nuclear weapons necessary to threaten to “destroy” an opponent’s society? While it appears incongruous, a minimum US nuclear deterrent typically is defined as a second-strike (i.e., retaliatory) capability sufficient to threaten the destruction of an opponent’s societal or urban/industrial assets, such as “a nation’s modern economy, for example, electrical, oil, and energy nodes, transportation hubs.”¹

That adequacy standard for deterrence, i.e., the nuclear capabilities necessary to threaten the destruction of an opponent’s societal assets, is “easy” to meet in quantitative and qualitative terms given the high vulnerability of unprotected, fixed societal targets (e.g., urban-industrial areas) to nuclear strikes.² Indeed, the number of US retaliatory, or “second-strike” weapons typically considered adequate to meet a minimalist standard for deterrence ranges from “several” weapons to hundreds of weapons.³ Such numbers are modest compared to the approximately 2000 US nuclear weapons reportedly now deployed.⁴

US nuclear capabilities beyond those necessary for threatening opponents’ societies and populations typically are criticized by minimalists as unnecessary and destabilizing. Indeed, these are the criticisms now leveled against the Obama administration’s current, fledgling US nuclear modernization programs.⁵

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The connection between the advocacy of minimal US nuclear capabilities and a deterrence policy of targeting opponents' societies has been explicit for decades. For example, in 1961, a prominent academic commentator observed, "Would the Soviets be deterred by the prospect of losing ten cities? Or fifty cities? No one knows, although one might intuitively guess that the threshold is closer to ten than to either two or fifty."⁶

More recently, two prominent commenters recommended a US "responsive force" of 400-500 nuclear warheads because this number of weapons would be adequate to target Russian sites, "affecting industrial recovery – the major nodes in the electric power grid and air, ground, and rail transportation systems, as well as major industrial sites."⁷ In 2010, a minimum deterrence-oriented assessment by US Air Force personnel concluded that a US nuclear force of "311 weapons" would be more than adequate because, "There is not a state on the planet that could withstand that sort of punishment or a leader who would run that sort of risk."⁸

The critical question here is, "how much is enough?" for deterrence. As illustrated above, precise answers derived from the minimum deterrence approach range from several weapons to hundreds. However, every Republican and Democratic administration for five decades has rejected this minimalist standard for and approach to nuclear deterrence.⁹ There are six basic reasons for rejecting the minimalist standard of adequacy for US nuclear capabilities that everyone who cares about this subject should understand.

First, as illustrated above, there are many claims regarding the number of nuclear weapons adequate for deterrence. The problem with all such claims is that no one knows with precision the minimal US nuclear capability necessary to deter attack, now or in the future. Omniscience would be required to predict how many and what types of weapons will deter across a spectrum of circumstances and opposing leaderships. And, if that number somehow could be known, it would likely change rapidly with shifting circumstances. That is, the US requirement for effective deterrence is not some known, set number of weapons or capability; it will change depending on the opponent, the time, and the context.¹⁰

Developments in circumstances that can shift deterrence requirements may be technical, political, operational, or even personal to a given leadership. For example, the possibility that a US nuclear system could experience an unexpected reliability problem that would disable or degrade many US weapons may best be mitigated by having a level of diversity and overlapping capabilities in the deterrent arsenal. This factor alone could lead US requirements beyond the typical minimal definitions of adequacy. We do not want to plan only for a minimal US deterrent because no one knows what that capability is, and because the goal of preventing nuclear war is so crucial that it is better to hedge with flexible, diverse and overlapping capabilities rather than risk the failure of deterrence due to a reliability problem, or otherwise having too few or the wrong types of nuclear forces needed to deter.

Consequently, every Republican and Democratic administration for five decades has concluded that US nuclear deterrence forces should be diverse, flexible and overlapping to help ensure that the US always possesses the capabilities necessary to deter attack across a wide spectrum of threats and circumstances.¹¹



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Second, to pose a retaliatory deterrent threat, US nuclear forces must be able to survive an opponent's "first-strike" attack on those US forces themselves. US forces vulnerable to a first strike would be useless as a retaliatory deterrent threat. Consequently, the US deterrent must be sufficiently large and diverse to survive a nuclear first strike by a determined foe under all conditions. This requirements has led to a 50-year consensus in favor of ensuring that the United States possesses a sufficient number of nuclear weapons to survive an attack and a diverse nuclear triad of carriers for those weapons, i.e., nuclear bombers, sea-based missiles (SLBMs) and land-based missiles (ICBMs). The diversity of this overlapping triad of nuclear systems, with their different operations and locations, helps to ensure that under all conditions an opponent could not anticipate destroying the US retaliatory nuclear deterrent in a first strike. This is one of the rationales for and great values of the US nuclear triad that again takes US nuclear capabilities beyond the numbers typically associated with a minimal deterrent.

Third, as noted above, intentionally planning to destroy societal or urban-industrial centers establishes a minimal set of deterrence requirements for US nuclear capabilities, i.e., it makes for "easy" nuclear deterrence requirements. But, it also involves the intentional planning to kill innocents and non-combatants on a massive scale. Thus, it is widely considered immoral, a potential violation of international law, and inconsistent with the Just War tradition. Instead, the US should strive for deterrence capabilities that are not limited to, and do not depend on threatening opponents with societal destruction. The US nuclear deterrent must have the diverse US nuclear capabilities necessary to pose a threat to a variety of other types of targets and indeed to avoid to the extent possible an opponent's societal centers—thereby potentially reducing the destruction of an opponent's innocent non-combatants. This deterrence standard imposes US force requirements that are likely more diverse qualitatively and larger quantitatively than typically is deemed adequate to meet the "easy" minimal deterrence standard of threatening the destruction of an opponent's population and societal assets.

It should be noted here that this particular point stings advocates of minimal US nuclear capabilities. They clearly want to avoid being charged with advocacy of an approach to deterrence that so offends all humanitarian concepts. Consequently, they often claim in response that the types and scale of US nuclear capabilities and the targeting plans underlying US deterrent threats essentially make no real difference in the prospective level of societal destruction in a nuclear war,¹² i.e., they claim that a minimal deterrent is no more guilty of violating humanitarian norms than any other approach to nuclear deterrence. There is, however, no doubt whatsoever that the types of nuclear weapons and the targeting plans followed can dramatically affect the levels of destruction and casualties—with the weapons and targeting plans advocated by minimalists unsurprisingly causing the greatest levels of societal destruction. Many careful studies over decades have reached this conclusion.¹³ The United States should not help to ensure that any use of nuclear weapons leads to unmitigated levels of societal destruction by adopting an approach to deterrence that is "easy" simply because societal targets are so vulnerable to nuclear weapons that few are needed to threaten them.

Fourth, and related to the above, for US deterrence strategies to function most reliably, the US deterrent must be able to threaten retaliation against those potentially different types of assets that opponents value most highly. In some cases, the minimalist deterrence threat to destroy an opponent's societal



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infrastructure as the basis of US deterrence strategy will *not* threaten what an opponent values most. There are many historical examples wherein leaderships have willingly and knowingly accepted a high risk of societal destruction in pursuit of a goal judged to be *more important* than avoiding that risk.¹⁴ In short, threats against an opponent's society embraced by minimalists may deter in some cases; in other cases, the opposing leadership's goals and values may suggest that an alternative approach to deterrence is necessary and requires more and different types of US nuclear forces.

During the Cold War, for example, US deterrence policy reportedly was based in part on the expectation that Soviet leaders placed highest value *not* on urban-industrial centers, but on Soviet political and military assets, including the Soviet control structure itself and Soviet military/nuclear capabilities. As the Carter administration's Secretary of Defense, Harold Brown said in 1980, the US deterrent should be capable of posing a threat to "what the Soviets consider most important to them,"¹⁵ which could include, Soviet conventional and nuclear military forces, the Soviet political and military control structure ("their power structure"), and military industry.¹⁶ Thus, US forces had to be large enough in size and possess the diverse qualities necessary to threaten for deterrence purposes those assets valued most highly by the Soviet leadership. This was a standard for US deterrent forces well beyond the relatively small number of weapons typically deemed adequate to meet the minimal deterrence standard of threatening society. Why? Because Soviet political control and military assets were numerous and often protected.

In today's international threat context, there is no reason to assume that current and future opponents, potentially including Russia and China, will not similarly place greatest value on numerous assets that are realistically vulnerable *only* to US nuclear threats,¹⁷ and impose higher standards of adequacy on US deterrence capabilities than a minimal deterrent. The size and diversity of the US nuclear arsenal for deterrence must be paced accordingly.

Fifth, the minimum deterrence approach to sizing US nuclear forces provides little, if any provision for the failure of deterrence, i.e., in most plausible contingencies, it would provide a President the most miserable options possible were the United States or allies to suffer a nuclear attack. In the event of a nuclear attack, a President certainly would want the scope and size of any US response to help discourage any further nuclear escalation by the opponent. Yet, retaliating against, say, many Russian or Chinese societal targets, per minimum deterrence notions, would be likely to undo whatever targeting restraint Moscow or Beijing might have practiced in the initial attack, and do little or nothing to protect the United States from further attack. Then-Secretary of Defense Robert McNamara emphasized precisely this point in 1962: "In the event of war, the use of such a force against the cities of a major nuclear power would be tantamount to suicide."¹⁸ There is almost no conceivable circumstance in which US retaliation against numerous societal targets in the event of an initial Russian or Chinese attack could help to restore deterrence and limit the carnage. The President, instead, would want flexible and diverse US nuclear retaliatory options to have available a response best suited to the crisis and to limiting further escalation and levels of destruction.

The hope that escalation can be limited in the event of war may be a faint hope, but the United States should not by the narrowness of its capabilities and rigidity of its planning be limited to a response that would likely ensure that nuclear escalation proceeds unabated. Again, the US deterrence goal should



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be, and has been, to have flexible and diverse response options, not the very narrow types of responses imposed by a minimum deterrence approach to sizing US forces. This point is not a rejection of deterrence or a call for a US “nuclear war-fighting” policy; it is a call for diverse US capabilities that make available to the President a variety of options best suited for reestablishing deterrence and limiting nuclear escalation in the event deterrent fails. Once again, this goal can require a US arsenal beyond the number and types of weapons deemed adequate for minimum deterrence.

Sixth and finally, the United States has formal extended deterrence responsibilities to provide a “nuclear umbrella” for over 30 allies. Many of these allies consider the US nuclear umbrella essential to their security (particularly those in close proximity to Russia and China). However, a minimalist US nuclear deterrent capability limited to threatening an opponent’s society may be judged *incredible* as an extended deterrent (i.e., not believed by the opponent) because of the well-recognized US desire to limit civilian destruction in its military operations and also, again, because of the likelihood that a US nuclear response against an opponent’s society could lead that opponent simply to launch strikes in return against US urban-industrial centers. In this case, a US extended deterrent threat focusing on an opponent’s society essentially would be a US threat to commit national suicide on behalf of an ally. Opponents may understandably doubt that any US President would ever choose to proceed along such a course. Indeed, former Secretary of State Henry Kissinger long-ago publicly explained to allies that they should never expect the United States to follow such a course.¹⁹ An opponent’s doubts along these lines would render that US minimal nuclear deterrent threat incredible for extended deterrence purposes. Even if the United States clearly possesses a minimal deterrent capability, it will be of little deterrent value if opponents deem it incredible.

Consequently, for decades, US policy has been to have a diversity of flexible and limited nuclear response options, including Dual Capable Aircraft (DCA) deployed in NATO countries and intended to be more credible for extended deterrence purposes than a minimal deterrent. DOD officials in the Obama administration fully recognize this need for “diverse nuclear options,” and the corresponding continuing need for the US triad and DCA. Why? Because, “sustaining a diverse set of U.S. nuclear capabilities is essential for the role they play in regional deterrence.”²⁰

For all of the reasons noted above, US officials have long recognized a minimalist US nuclear arsenal as inadequate to support US deterrence requirements. Minimal US nuclear force numbers may sound appealing, but in general, the smaller and less diverse is the US force, the less survivable it is, the less flexible it is, the more narrow are the available US deterrent threat options, and the less credible it is likely to be in some potentially critical contingencies.

It must be acknowledged that there is considerable speculation regarding “how much is enough?” in both the minimum-deterrence approach to US nuclear forces sizing and the decades-long US approach that instead seeks flexible, diverse, and overlapping capabilities. But, while both approaches involve speculation, the now-traditional US approach to deterrence is by far the more prudent in an area that begs for prudence.



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Why so? Because deterrence is an art that includes numerous moving parts with some inherent and irreducible uncertainties. “How much is enough” for deterrence is not fully predictable because we have an inherently limited capacity to predict reliably and precisely how prospective foreign leaders will think and act in crises. Given the great variety of international threats and the equally great variation in the perceptions, values and decision-making modes of foreign leaderships, no one knows with any level of confidence that a small, minimum deterrence-oriented US arsenal will deter on any given occasion, much less universally for all plausible occasions now and in the future.

Given this reality, the most imprudent approach to deterrence is to have an “easy” small and narrow set of US deterrence threat options based on the presumptions that opponents will be deterred by nuclear threats to their societies and that the United States can make such threats credibly. The effective functioning of deterrence is too important to depend on the assumption that the US will face only opponents who are susceptible to minimum deterrent threats. The US goal must be for deterrence to work in all cases, which again suggests the value of diverse, flexible and overlapping capabilities that are adaptable for deterrence purposes across a wide variety of potential circumstances.

In addition, US planning must recognize the possibility that deterrence will fail. Yet, as noted above, minimum deterrence makes no useful provision for the failure of deterrence. Indeed, it likely maximizes the prospects for uncontrolled societal destruction if deterrence fails. The functioning of deterrence is not foolproof and thus making no provision for its failure is grossly imprudent.

In summary, while all approaches to determining “how much is enough” for deterrence involve speculation about how opponents will think and act, for the United States, the possession of flexible, diverse and overlapping capabilities is the most prudent approach. This is particularly so in the contemporary threat environment characterized by an expansionist, revanchist and hostile Russia that is adding to its nuclear arsenal and making explicit nuclear first-use threats,²¹ and also by an increasingly aggressive, expansionist China that also is adding to its nuclear capabilities.²²

Advocates of a minimal US nuclear deterrent continue to call for revising US nuclear deterrence policies and targeting plans per the minimum deterrence adequacy standard to facilitate lower US nuclear force requirements.²³ They actually argue against diverse and flexible US forces,²⁴ typically because those attributes suggest the requirement for retaining larger US force numbers than they prefer. But, given the stark reality of increasing nuclear threats to the United States and allies, US deterrence policies should not be determined by how well they meet “easy” standards and provide a rationale for eliminating US nuclear capabilities; US deterrence policies serve purposes other than rationalizing the elimination of US nuclear forces. The adequacy of US nuclear forces and policies should be determined primarily by the requirements for deterring enemies and assuring US allies in the most prudent manner possible. Consequently, the reasons described here for rejecting a minimalist US nuclear deterrent force continue to be sound.



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2. Robert Jervis, "Why Nuclear Superiority Doesn't Matter," *Political Science Quarterly*, Vol. 94, No. 4 (Winter 1979-80), pp. 617-618. See also, Steven Pifer and Michael O'Hanlon, *The Opportunity: Next Steps in Reducing Nuclear Arms* (Washington, D.C.: Brookings Institution Press, 2012), pp. 20-21.
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4. Hans Kristensen and Robert Norris, "Nuclear Notebook: United States Nuclear Forces, 2016," *Bulletin of the Atomic Scientists*, Vol. 72, No. 2 (2016), pp. 63-64.
5. See for example, Center for Arms Control and Nonproliferation, *Is a New Nuclear Cruise Missile Necessary?*, February 2, 2016, available at <http://armscontrolcenter.org/is-a-new-nuclear-cruise-missile-necessary/>.
6. Glenn Snyder, *Deterrence and Defense: Toward a Theory of National Security* (Princeton, NJ: Princeton University Press, 1961), p. 57.
7. Sidney Drell and James Goodby, *What are Nuclear Weapons for? Recommendations for Restructuring U.S. Strategic Nuclear Forces* (Washington, D.C.: Arms Control Association, October 2007), p. 15.
8. James Wood Forsyth, Col. B. Change Saltzman, USAF, Gary Schaub, op. cit., p. 6.
9. The Obama administration too has explicitly rejected "minimum deterrence". See, Department of Defense, *Report on Nuclear Employment of the United States Specified in Section 491 of 10 U.S.C.*, June 12, 2013, p. 4.
10. See Keith B. Payne, *Fallacies of Cold War Deterrence* (Lexington, KY: University Press of Kentucky, 2001), chapters 1-4.
11. See for example, National Security Council, National Security Decision Memorandum 242, *Policy for Planning the Employment of Nuclear Weapons*, January 17, 1974 (declassified June 29, 2007); The White House, Presidential Directive NSC-59, *Nuclear Weapons Employment Policy*, July 25, 1980 (declassified July 24, 2012); and, Department of Defense, *Report on Nuclear Employment of the United States Specified in Section 491 of 10 U.S.C.*, op. cit.
12. See, Federation of American Scientists, Natural Resources Defense Council, and Union of Concerned Scientists, "Toward True Security," *Union of Concerned Scientists* (Cambridge, MA: February 2008), pp. 17-18, available at <http://www.ucsusa.org/assets/documents/nwgs/toward-true-security.pdf>.; See also, Daryl Kimball and Matthew McKinzie, "Nuclear Dangers: Myth, Reality, Response," *Defense News*, February 23, 2015, p. 21; and, Walter Pincus, "Nuclear Weapons Modernization: Not Fast Enough for Kyl," *WashingtonPost.com*, February 27, 2014, available at https://www.washingtonpost.com/world/national-security/nuclear-weapons-modernization-not-fast-enough-for-kyl/2012/02/25/gIQANAJoeR_story.html.
13. A study by the Natural Resources Defense Council showed that a small "countervalue" strike with up to 192 weapons would inflict 54-56 million casualties in an exchange with Russia, while a very large "counterforce" strike employing many times that number of weapons (approximately 1,300) would inflict 11-17 million casualties. See Matthew McKinzie, et al., *The U.S. Nuclear War Plan: A Time for a Change* (New York: National Resources Defense Council, June 2001), pp. x, 125. Other studies find far fewer casualty levels from "counterforce" targeting scenarios and much higher possible casualty levels from intentional "countervalue" targeting. The distinction here involves literally scores of millions of potential casualties. See for example, United States Senate, Subcommittee on Arms Control, International Law and Organization of the Committee on Foreign Relations, Hearing, *Briefing on Counterforce Attacks*, 93rd Congress, 2nd Session, September 11, 1974, pp. 12-22; Keir Lieber and Daryl Press, "The Nukes We Need: Preserving the American Deterrent," *Foreign Affairs*, Vol. 88,



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14. See Payne, *The Fallacies of Cold War Deterrence*, op. cit., and Keith B. Payne, *Deterrence and the Second Nuclear Age* (Lexington, KY, University Press of Kentucky, 1996), especially chapters 2-4.
 15. See, the testimony by Secretary of Defense Harold Brown in, U.S. Senate, Committee on Foreign Relations, *Nuclear War Strategy*, Hearings, 96th Congress, 2nd Session (Top Secret hearing held on September 16, 1980; sanitized and printed on February 18, 1981), (Washington, D.C.: USGPO, 1981), p. 10. See also, Harold Brown in, Committee On Armed Services, Hearing, *MX Missile Basing System And Related Issues*, 98th Congress, 1st Session (Washington, D.C.: USGPO, 1983), pp. 6-7.
 16. See, the testimony by Secretary of Defense Harold Brown and the "Administration's Responses to Questions Submitted Before the Hearing," in *ibid.*, pp. 10, 16, 25, 29-30. See also, *Remarks Prepared for Delivery by the Honorable Harold Brown, Secretary of Defense, at the Convocation Ceremonies for the 97th Naval War College Class, Naval War College, Newport, Rhode Island, August 20, 1980*; and, the discussion in, Walter Slocombe, "The Countervailing Strategy," *International Security*, Vol. 5, No. 4 (Spring 1981), pp. 18-27.
 17. For reasons explained in, Keith B. Payne and James Schlesinger, et al., *Minimum Deterrence: Examining the Evidence* (Fairfax, VA: National Institute Press, July 2013), pp. 22-25.
 18. Remarks by Secretary McNamara, NATO Ministerial Meeting, 5 May 1962, Restricted Session (Top Secret; declassified in part, August 17, 1979) pp. 11-12, quoted in, Kurt Guthe, *Ten Continuities in U.S. Nuclear Weapons Policy, Strategy, Plans, and Forces* (Fairfax, VA: National Institute for Public Policy, 2008), p. 50.
 19. Henry Kissinger, "The Future of NATO," in, *NATO, The Next Thirty Years*, Kenneth Myers, ed. (Boulder, CO: Westview Press, 1981), p. 8.
 20. Robert Scher, Statement of Robert Scher, Assistant Secretary of Defense for Strategy, Plans, and Capabilities Before the Senate Armed Services Subcommittee on Strategic Forces, February 9, 2016, p. 4.
 21. See Keith B. Payne, John S. Foster, et al., *Russian Strategy: Expansion, Crisis and Conflict* (Fairfax, VA: National Institute Press, 2016).
 22. U.S.-China Economic and Security Review Committee, 2015 Report to Congress (Washington, D.C.: Government Printing Office, November 2015), available at http://origin.www.uscc.gov/sites/default/files/annual_reports/2015%20Annual%20Report%20to%20Congress.PDF. See also, Bill Gertz, "China Adds Warheads to Older DF-5s," *The Washington Times*, February 10, 2006, available at <http://www.washingtontimes.com/news/2016/feb/10/inside-the-ring-china-adds-warhead-to-older-df-5s/>.
 23. See, for example, Hans Kristensen and Robert Norris, "Reviewing Nuclear Guidance," Arms Control Association, November 2, 2011, available at http://www.armscontrol.org/act/2011_11/Reviewing_Nuclear_Guidance_Putting_Obama_Words_Into_Action; and, Adam Mount, "The Fiscal Threat to Nuclear Strategy," *The Bulletin of the Atomic Scientists*, March 15, 2015, available at <http://thebulletin.org/fiscal-threat-nuclear-strategy8080>.
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