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January 2012

IDA Paper P-4801
Log: H 12-000115

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About This Publication

This work was conducted by the Institute for Defense Analyses (IDA) under contract DASW01-04-C-0003, Task DC-6-3143, "Continuing Nuclear Arms Reductions: Challenges and Possible Solutions," for the Defense Threat Reduction Agency. The views, opinions, and findings should not be construed as representing the official position of either the Department of Defense or the sponsoring organization.

Acknowledgments

The author wishes to thank George Quester and Thomas Mahnken, who were the formal reviewers, and others who read the paper and offered constructive suggestions, including Victor Utgoff, Heather Williams, and Jessica Knight of IDA, and David Hamon and Seth Snyder of DTRA. I also wish to thank Daniel Rosenfield for research assistance, and Elizabeth Johnson for exceptional editing. The paper has benefited from their involvement. The responsibility for the paper, of course, rests in the final analysis with the author.

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Executive Summary

For decades, the United States has had massive and uncontested nuclear superiority over China. That may slowly be changing. Although it is unlikely that China will seek to sprint to parity, as the United States progressively reduces its nuclear forces, and China slowly expands its own, the gap will narrow. The price of engaging China in multilateral nuclear arms control at some point in the future may well be formal numerical nuclear parity. Thus, understanding the implications of what nuclear parity with China might involve is not simply an academic question.

Independent of the future of arms control, it also is important to understand what nuclear parity with China might entail, because China's attitudes toward its nuclear posture also may change in the future. China is growing increasingly powerful after more than thirty years of economic growth exceeding 9 percent a year. This places it on a trajectory with outcomes ranging from peaceful integration into the existing world order to overthrow of that order. Stability issues are at stake, and America's nuclear relationship with China is one of those issues.

This paper places the issue of nuclear parity in context by briefly examining the evolution of American policy toward dealing with nuclear issues writ large, explaining how numerical nuclear parity came to define the nuclear relationship between the United States and Russia (formerly the USSR), and exploring how the Chinese nuclear challenges are different than those posed by Russia. This paper does not attempt to answer the question of whether, on balance, accepting numerical nuclear parity with China is in America's interest. It does posit a framework for beginning to answer that question.

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1. Introduction

For decades, the United States has had massive and uncontested nuclear superiority over China. That slowly may be changing as the United States pursues nuclear arms control. This chapter places the discussion in context by explaining the genesis and objectives of American policy seeking to control dangerous nuclear activities in a manner consistent with America's security interests in a dangerous world.

A. The Global Nuclear Weapons Landscape

Three days after Hiroshima, President (Harry S.) Truman reported to the nation that "The atomic bomb is too dangerous to be loose in a lawless world. . . . We must constitute ourselves trustees of this new force—to prevent its misuse and turn it into channels of service to mankind."[1] The spirit which inspired that report continues to animate American nuclear policy today.

The United States did not use its brief period of nuclear monopoly to impose a *pax atomica* on the world or to fight a preventive war against the Kremlin. Nor did the United States use its power to preserve a nuclear monopoly.[2] Rather, as America emerged from decades of isolation and assumed the role of global leadership, it sought to create the institutions, processes, and norms that—backed by judicious application of American power—defined a framework for what it meant to exercise responsible nuclear trusteeship in a dangerous world.[3]

When President Truman spoke to the nation and the world in August 1945, the nuclear landscape was fairly simple. By the time President Obama announced the current American nuclear agenda in Prague in April 2009, that landscape had become enormously complex. Options for controlling nuclear weapons changed over time. Before proceeding to the main topic of this analysis, which is to explore the path ahead in efforts to manage and control nuclear weapons, through the lenses of the concept of nuclear parity, it is useful to have some appreciation of the major changes in the nuclear landscape.

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[1] President Truman's radio address of August 9, 1945, is reprinted as Appendix 3 in the useful U.S. Department of State report, *International Control of Atomic Energy: Growth of a Policy* (Washington, DC: U.S. Government Printing Office, 1947). This is a useful official compendium of early American nuclear policy.

[2] See George H. Quester, *Nuclear Monopoly* (New Brunswick, NJ: Transaction Publishers, 2000).

[3] See Michael O. Wheeler, *Nuclear Weapons and the National Interest: The Early Years* (Washington, DC: National Defense University Press, 1989).

- In August 1945, there were two nuclear weapons in existence representing two simple designs and relatively modest yields by contemporary standards, in the hands of one power. Today there are some 21,000 nuclear weapons worldwide, of much more sophisticated design, with explosive power exceeding that of 1945 by at least several orders of magnitude, in the hands of at least nine countries.[4]
- In August 1945, there was enough fissile material coming out of the production pipeline to produce, slowly, a handful of additional weapons in what was essentially a laboratory setting. Today, there are industrial production facilities. Today, there is enough fissile material in existence to assemble another 100,000 nuclear weapons.[5] Although most of this material is in the United States and Russia, another thirty countries have weapons-usable materials in their territory. [6]
- In August 1945, the United States had a virtual monopoly on the most critical elements of nuclear knowledge: how to produce fissile material, and how to design and assemble a nuclear weapon. Today, there is no such monopoly, and nuclear expertise is widely dispersed.
- In August 1945, there were a handful of uranium enrichment facilities, production reactors, and plutonium separation plants in the Manhattan Project. Today there is a vast commercial nuclear industry as well as the military programs of several nations.[7]

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[4] The unofficial nuclear weapons database most commonly used by analysts is the one maintained by Hans M. Kristensen and Robert S. Norris, which is periodically updated and published in the *Bulletin of the Atomic Scientists.* About 95 percent of the nuclear weapons are held by the United States and Russia, down from the estimated 76,000 they collectively held at one time. Of the estimated 20,000 American and Russian nuclear weapons today, about half are thought to be awaiting dismantlement. There also are the nuclear components from dismantled weapons, constituting an additional (but unknown) number. In May 2010, the United States provided what appears to be a one-time snapshot of its active and inactive nuclear stockpile, placing it at some 5,000 weapons. This does not include retired nuclear weapons in the queue for dismantlement, or component parts of previously dismantled weapons. Russia has not provided a similar public statement. No other nuclear weapon state is thought to have more than 500 nuclear weapons in its arsenal today.

[5] The unofficial fissile material database used in this discussion is the one maintained and updated by the International Panel on Fissile Materials. This article uses their fourth annual report, *Fissile Material Report 2009: A Path to Nuclear Disarmament* (2010), which places global stockpiles of fissile material at an estimated 1600 ± 300 metric tons of highly enriched uranium (HEU) and 500 ± 25 metric tons of separated plutonium (Pu). The estimate of weapons that could be made is based on International Atomic Energy Agency (IAEA) assumptions about the amount of fissile material needed to make a first-generation weapon.

[6] Nuclear Threat Initiative (NTI), *Nuclear Materials Security Index* (Washington, DC: Nuclear Threat Initiative, January, 2012). This first-of-its-kind public benchmarking project was developed with the Economist Intelligence Unit (EIU).

[7] There are over 440 nuclear power reactors operating today in thirty countries, providing about 14 percent of the world's electricity. Notwithstanding the backlash associated with the nuclear accident at Fukushima Daiichi in 2011, this is likely to grow. China is building twenty-eight of the sixty-two nuclear reactors currently under construction, over fifty countries operate research reactors, and naval nuclear reactors power some 140 ships and submarines. See World Nuclear Association, "Factsheet on Nuclear Power in the World Today," accessed December 29, 2011, http://www.world-nuclear-org/info/inf0.1.html. For a broad discussion of the weapons

- In August 1945, there had been a single experimental test of a nuclear weapon. That test was modestly instrumented by later standards, and provided a very primitive early database for American nuclear designers to use. Today, there have been over 2,000 known nuclear tests conducted by at least eight states, with much more sophisticated instrumentation and presumably massive electronic databases that have been assembled on a number of weapons designs and performance characteristics.

In short, today's global nuclear complex is vast, sophisticated, and—public discussion notwithstanding—has many dark corners.

B. Principles for Controlling Nuclear Weapons

There is no way for political leaders, no matter how sincere and determined, to turn the clock back to before the nuclear age. Nuclear expertise cannot be replaced by nuclear amnesia. Global zero, if ever achieved, cannot mean what it meant before August 1945. Nuclear weapons cannot be "dis-invented" but they can conceivably be controlled. The United States has interpreted its trusteeship mission since 1945 to include establishing seven fundamental principles of control.[8]

- No private ownership of nuclear weapons
- No nuclear weapons in the hands of terrorists
- Development of peaceful uses of nuclear energy under international safeguards
- Stringent safety and physical security for nuclear weapons and materials
- High-level civilian control of nuclear weapons
- No further nuclear weapons proliferation
- Negotiated reductions in nuclear weapons to the lowest level needed for security

President Obama's Prague speech, which laid out the current American nuclear agenda, was delivered against the backdrop of years of American efforts to develop and apply these principles. American policy has long embraced the triple challenge of relying upon nuclear weapons for its security and the security of allies, while seeking to delegitimize nuclear proliferation and nuclear terrorism, while encouraging the development of nuclear energy for peaceful purposes under appropriate safeguards. Reconciling these often conflicting objectives remains a work in progress.

And, of course, circumstances change. In World War II, developing and using nuclear weapons to win the war motivated American nuclear policy. During the Cold War, deterring the

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proliferation issues associated with nuclear power, see the two special issues of *Daedalus*, the journal of the American Academy of Arts and Sciences, on the global nuclear future (Fall 2009 and Winter 2010).

[8] Another principle, which often is proposed but which the United States rejects, is no first use of nuclear weapons.

Soviets and facilitating the growth of peaceful nuclear activities under international safeguards, had priority in American policy. When the Cold War ended, coincident with the First Gulf War, preventing nuclear proliferation became the focus of policy, and after 9/11, preventing nuclear terrorism surged to the top of the policy agenda. The Nuclear Posture Review (NPR) of April 2010 records these shifting priorities, specifying that "the most immediate and extreme danger is nuclear terrorism . . . [and] the other pressing threat is nuclear proliferation," while managing nuclear relationships with major powers like Russia and China is "the more familiar challenge of ensuring strategic stability."[9] Strategic stability is not defined, but can be understood, at a minimum, as seeking to preserve constructive relationships with Russia and China where deterrence is in the background, while hedging against the possibility that the relationships could turn hostile and that deterrence again would move to the foreground. President Obama, in his Prague speech, said:

> The existence of thousands of nuclear weapons is the most dangerous legacy of the Cold War. . . . In a strange turn of history, the threat of global nuclear war has gone down, but the risk of a nuclear attack has gone up. More nations have acquired these weapons. Testing has continued. Black market trade in nuclear secrets and nuclear materials abound. The technology to build a bomb has spread. Terrorists are determined to buy, build or steal one. Our efforts to contain these dangers are centered on a global non-proliferation regime, but as more people and nations break the rules, we could reach the point where the center cannot hold. [10]

Fear that the center could not hold appears to mean that a tipping point is approaching in nuclear proliferation, that the twentieth century firebreaks and shock absorbers in the canonical U.S.-Soviet deterrent relationship might not apply to other nuclear states in the twenty-first century, that nuclear terrorism is a clear and present danger, that the knowledge and ability to make nuclear weapons is widely available, and that the world is awash in fissile materials. It was this type of logic that appears to be behind the January 2007 *Wall Street Journal* article by Henry Kissinger, Sam Nunn, Bill Perry and George Shultz, that catalyzed the current "path to zero" movement. In his Prague speech, President Obama coupled the Truman vision of America's moral responsibility of trusteeship, with an explicit acknowledgment of "America's commitment to seek the peace and security of a world without nuclear weapons."[11] This statement recalls President Truman's report to Congress in October 1945 that "The hope of civilization lies in international arrangements looking, if possible, to the renunciation of the use and development of the atomic bomb."[12]

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[9] Department of Defense, *Nuclear Posture Review Report* (April 2010), iv.

[10] "Remarks by President Barack Obama, Prague, Czech Republic" (The White House Office of the Press Secretary, April 5, 2009).

[11] Ibid.

[12] Harry S. Truman, "Special Message to the Congress on Atomic Energy," October 3, 1945, accessed January 9, 2012, http://www.trumanlibrary.org/publicpapers/index.php?pid=165.&st=&stl=.

This paper will not take sides in the ongoing debate on whether giving the process of nuclear disarmament so much emphasis is necessary to achieve America's nuclear nonproliferation and counter-terrorism goals today, or whether it is wise policy, given the realities of world politics and the nuclear landscape as they have changed since 1945, to hold the prospect of nuclear abolition as a practical policy objective.[13] Even many of the critics who would reject abolition, however, appear to agree that reductions to the lowest levels of nuclear force needed for security and stability makes sense.[14] This logic of reductions is a subtext for what can be called the parity principle, which is at the heart of the U.S.-Russian bilateral reductions process. A recent report from the Royal United Services Institute in London explains the dilemma of trying to apply this principle to multilateral negotiations.

> Too great an emphasis on 'balance' in such a regime could lead to several states insisting on the need to have a nuclear arsenal equivalent to the combined arsenals of all their potential adversaries. Russia could seek parity with the NATO nuclear-weapon states, as it has sought to do in the past. The US could insist on being able to confront Russia and China together, and seek a binding assurance that China will maintain an arsenal well below the US/Russian levels. China would probably resist signing an 'unequal treaty', forbidding it from matching the US or Russia numerically, especially if it could not obtain guarantees that the US would limit its missile defences. And it is hard to see the US or Russia accepting a common ceiling for all countries, fearing that this would be used by others (notably China) to legitimize the build-up of their own forces.[15]

Why is *balance* in the U.S.-Russian nuclear relationship defined in terms of nuclear parity? The following discussion first explores how the concept of parity has developed in American policy toward its to its nuclear relationship with Russia, and then examines what may be the more challenging issue of how it may evolve relative to the nuclear posture of China in future years.

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[13] For a representative sampling of the critics' views, see Harold Brown and John Deutch, "The Nuclear Disarmament Fantasy," *Wall Street Journal*, November 19, 2007, 19; Harold Brown, "New Nuclear Realities," *The Washington Quarterly* (Winter 2007-08): 7–22; Christopher A. Ford, "Debating Disarmament: Interpreting Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons," *Nonproliferation Review* 14, no.3 (November 2007): 401–28; and Fred C. Iklé, "Nuclear Abolition, A Reverie," *The National Interest* (Sept/Oct 2001): 4–7; and Josef Joffe and James W. Davis, "Less Than Zero: Bursting the New Disarmament Bubble," *Foreign Affairs* (January/February 2011).

[14] This was the policy of the George W. Bush administration, recorded in the 2001 NPR, and was championed by the Republican presidential nominee, John McCain, in the 2008 presidential election.

[15] Malcom Chalmers, Andrew Somerville and Andrea Berger, eds., *Small Nuclear Forces: Five Perspectives*, Whitehall Report 3-11 (London, UK: Royal United Services Institute, 2011), 3.

2. Nuclear Parity with Russia

The United States first accepted the principle of nuclear parity, in its relationship with the Soviet Union. That was a slow and controversial process, however, which sheds some light on the complex nuclear landscape we live in today.

A. The Nuclear Arms Race Commences

The Anglo-American fragile alliance with Stalin to defeat Germany and Japan did not survive for long after World War II. By the late 1940s, the desperate nuclear arms race that American officials had feared if political arrangements were not negotiated, was well underway. America sought to maintain nuclear superiority over the Soviet Union, partly to offset the conventional advantages that Moscow was believed to have in Europe and thus to underwrite America's commitment to its new North Atlantic Treaty Organization (NATO) allies, but also to buttress the overall American approach to taking risks to shape the international environment after 1945 in ways conducive to American values and interests. Today's *National Security Strategy* (NSS) emphasizes that "as we face multiple threats – from nations, nonstate actors, and failed states – we will maintain the military superiority that has secured our country, and underpinned global security for decades."[16] *Superiority*, much like *stability*, is one of those concepts often invoked but seldom defined. By 1950 (and perhaps earlier), American military superiority was understood primarily in nuclear terms. That is not the case today, although there are areas (such as the American relationship with China) where nuclear superiority still applies.

Less than one year after the Soviets broke America's nuclear monopoly, the Cold War took a dangerous turn with the Korean War, and the nuclear arms race accelerated. Prominent voices in the United States called for preventive war before the Soviets acquired a significant nuclear capability. This strategy was firmly rejected by the Truman and Eisenhower administrations. By 1955, Eisenhower's NSS (then called the Basic National Security Strategy, or BNSP, and not published in unclassified form, unlike today's NSS), acknowledged that the United States and its allies could not stop the growth of Soviet nuclear capabilities without resorting to preventive war, which the strategy explicitly rejected.[17] By 1956, American policymakers privately

[16] *National Security Strategy* (Washington, DC: The White House, May 2010), 2.

[17] NSC 5501, "Basic National Security Policy," January 7, 1955, originally Top Secret, in U.S. Department of State, *Foreign Relations of the United States, 1955–1957*, Volume XIX, *National Security Policy* (Washington, DC: U.S. Government Printing Office, 1990), 31. Hereafter referred to as *FRUS.*

recognized in the classified strategy what was described as "the coming of nuclear parity" with the Soviets in the near future.[18]

B. Accepting Parity with Russia

In 1956, the Eisenhower administration quietly conducted a highly classified study entitled "Achieving and Maintaining U.S. and Free-World Technological Superiority Over the U.S.S.R." This study concluded that a stable nuclear deterrent balance could be maintained at numerical parity provided neither side achieved a technological breakthrough, which then led it to believe it could engage in significant military operations against the other while keeping its own homeland immune from devastating retaliation. "The U.S.," the study went on, "even if it achieved such [technological] superiority, would not indulge in preventive war, but no such assurance can be felt for the Soviet Union. Thus the maintenance of technological superiority by the U.S. over the U.S.S.R. could mean the difference between peace and general war."[19]

President Eisenhower gave a great deal of thought to how he could reflect the classified nuclear policy and operational planning that was done out of the public eye in restricted government circles, in his administration's public discussion of nuclear issues.[20] He managed the bomber-gap and missile-gap debates, resisted political pressures to invest in crash programs such as massive civil defense, and nurtured European recovery (to include a collective sense of security) within the North Atlantic Alliance. He pursued the psychological uses of nuclear advantage while acknowledging privately that nuclear advantage was vanishing. And when Sputnik challenged the idea of American technological superiority, he approved programs to reinforce faith, at home and abroad, in the credibility of the American deterrent. The American strategist, Andy Marshall, recalls Eisenhower's attitude at the time: "As we were facing gradual deterioration in our strategic advantage, not an immediate crisis [in the late 1950s], Eisenhower believed that we should re-establish America's strategic superiority in a calm and measured way."[21]

By contrast, John F. Kennedy abandoned "calm and measured" progress and made urgently restoring strategic superiority a highly visible part of his 1960 presidential campaign and of his presidency. So did Lyndon Johnson, although with more modest goals for strategic systems

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[18] NSC 5602/1, "Basic National Security Policy," originally Top Secret, March 15, 1956, in *FRUS, 1955–1957,* Volume XIX, *National Security Policy*, 247.

[19] "Report by the ODM-Defense Working Group on Achieving and Maintaining U.S. and Free-World Technological Superiority Over the U.S.S.R." December 20, 1955, originally Secret, in *FRUS, 1955–1957,* Vol XIX, *National Security Policy*, 174.

[20] See Robert R. Bowie and Richard H. Immerman, *Waging Peace: How Eisenhower Shaped an Enduring Cold War Strategy* (New York, NY: Oxford University Press, 1998), 223–6.

[21] Andrew Marshall, a strategic analyst at RAND in the late 1960s, has been the director of the Office of Net Assessment in the Pentagon since 1973. Quoted in Gordon S. Barrass, *The Great Cold War: A Journey Through the Hall of Mirrors* (Stanford, CA: Stanford University Press, 2009), 115–6.

acquisitions. Richard Nixon reluctantly acknowledged that strategic superiority had to give way to *equivalence* (parity) because he recognized that Moscow was not going to unilaterally stop building nuclear force capabilities and, with Vietnam as a backdrop, that Congress would not support the budgets or authorize the programmatic actions needed for the United States to stay ahead in a numerical nuclear competition. The first bilateral U.S.-Soviet strategic arms agreements grew out of this dynamic, with the Nixon administration relying on American technological advantages (at least in the near term) in multiple independently targeted reentry vehicles (MIRVs), missile accuracy, modern bombers, and sea-based ballistic missiles, to offset the larger number of strategic systems that Moscow was allowed in SALT I (Strategic Arms Limitation Talks).[22]

Domestically, this was a highly controversial compromise, and it reinforced the efforts of critics of détente and arms control like Senator Henry 'Scoop' Jackson to oppose SALT I. Although Jackson and his fellow critics did not have the votes to defeat the first arms control agreements, they were able to insert language in the joint resolution on SALT I, which became known as the Jackson Amendment. The language specified that the Congress "urges and requests the President to seek a future treaty that, inter alia, would not limit the United States to levels of intercontinental forces inferior to the limits provided for the Soviet Union."[23] This effectively became a mandate rather than a request, and it reinforced the powerful symbolism of the idea that maintaining at least a posture of *numerical* parity with a nuclear-armed adversary is a guiding principle of American nuclear policy.[24]

Following SALT I, negotiations commenced on SALT II. In July 1974, Secretary of State Henry Kissinger held a press conference at the end of the third (and final) Moscow summit of the Nixon presidency. Kissinger was visibly frustrated with the arms control discussions conducted under the shadow of the unfolding Watergate scandal, which soon would lead to Richard Nixon's resignation. Although Nixon's resignation was not a foregone conclusion at the time of the Moscow summit, the president's political weakness at home had reinforced domestic opposition to SALT II, and gave the Soviets in Moscow the incentive to press for advantages the United States was not willing to concede. Kissinger responded at the press conference to a

[22] Henry Kissinger discusses this in the first volume of his memoirs, *White House Years* (Boston, MA: Little Brown and Company, 1979), 198.

[23] For a concise discussion of the process by which the United States shifted from the objective of superiority to sufficiency, and the background to the Jackson Amendment, see McGeorge Bundy, *Danger and Survival* (New York, NY: Random House, 1988), 552–6.

[24] Parity can be understood in other than numerical terms. For instance, President Franklin D. Roosevelt endorsed devoting massive resources to the Manhattan Project to insure that Germany did not acquire a nuclear weapon without the allies having one. President Truman made his controversial decision to pursue thermonuclear weapons based on the argument that Moscow might otherwise achieve them first and have a monopoly. This urge to not permit American's enemies to achieve militarily significant superiority reflects the spirit of the parity principle.

question about what would happen by 1985 if Washington and Moscow had failed to conclude a new strategic arms agreement, by saying:

> If we have not reached an agreement well before 1977, then I believe you will see an explosion of technology and an explosion of numbers at the end of which we will be lucky if we have the present stability, in which it will be impossible to describe what strategic superiority means. And one of the questions which we have to ask ourselves as a country is: *What in the name of God is strategic superiority? What is the significance of it, politically, militarily, operationally, at these levels of numbers? What do you do with it?* (emphasis added)[25]

This is a frequently quoted statement in the literature, but one should not read too much into this statement. It has the appearance of a frustrated, off-the-cuff answer by a tired statesman to a difficult question. Elsewhere Kissinger explains that by the summer of 1974, he in fact "had been haunted by the loss of our strategic superiority for nearly twenty years."[26] He believed that the Soviets had not pressed its enormous advantage in conventional land forces in Europe during the 1950s, primarily for fear of being confronted by the nuclear superiority of the United States. By the time Nixon took office, Moscow was newly assertive, and, as Kissinger recalls, "*even with equality*, or a slight superiority, any new Administration would face an unprecedented challenge. Our defense strategies had to be reexamined in the harsh light of the new realities."[27]

C. Managing Parity with Russia

In the 1970s, a consensus emerged in Washington that the shifting military balance favored the Soviets. Some argued that the Soviets had a deliberate policy of moving toward military superiority in order to fight and win a nuclear war. Others discounted this war-winning view, but feared that if the Soviets achieved nuclear superiority, they would be inclined to take greater risks in crises, and would be more willing to challenge Western interests in the shadow and proxy wars in the developing world. Associated with these fears was the perennial question of how to sustain the credibility of American security guarantees to its allies, as the military balance shifted. Out of this dynamic, and consistent with an American arms control policy that had evolved since the late 1940s, there emerged a consensus in Washington that the United States must effectively hedge against the possibility that Moscow would cheat from within, or break out of, arms control arrangements. [28]

The American approach to managing risks in the nuclear balance included monitoring the adversary's forces on a 24/7 basis, taking unilateral and negotiated steps to increase early warning of any change for the worse, and improving the capacity to respond quickly and

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[25] Henry Kissinger, *Years of Upheaval* (Boston, MA: Little, Brown and Company, 1982), 1175.

[26] Ibid.

[27] Kissinger, *White House Years*, 198.

[28] See Michael O. Wheeler, "A History of Arms Control," in *Arms Control: Cooperative Security in a Changing Environment*, ed. Jeffrey A. Larsen (Boulder, CO: Lynne Rienner Publishers, 2002), 19–39.

effectively if the threat increased. By the 1970s, the United States had built a strong military-industrial base and a robust nuclear design, production, and test and evaluation infrastructure, in support of the nuclear posture. Nuclear forces could be surged if the Soviets tried to creep out from under, or sprint away from, nuclear parity. If what was perceived as a significant imbalance (e.g., the Soviet heavy Intercontinental Ballistic Missiles (ICBMs)) became an issue, the United States could counter with the modern MX Peacekeeper. If the Russians deployed the SS-20 that threatened America's allies, the United States could counter with the modern Pershing II and ground-launched cruise missiles (GLCMs). The United States could expand its advantage in strategic bomber and submarine nuclear forces. And with Congressional-Executive agreement, the United States could have competed in numbers if the need arose.

This was the ultimate Cold War hedge. Moreover, there was every reason to believe in that hedge. The United States repeatedly had demonstrated it could muster the political will to surge when needed, as it did in its defense buildup after the invasion of Korea, in the nuclear arms races of the 1950s and early 1960s, and after the Soviet invasion of Afghanistan. Of course, there were waste and inefficiencies in the surges, but the system could absorb them. The United States had a strong economy, broad expertise, and a robust infrastructure. When America accepted the challenge of major-power arms racing, it could dominate the competition and prevail, something we now know to have heavily influenced Soviet thinking and induced them towards arms control.[29] This hedge made parity (as then defined in numerical terms) acceptable to American policymakers and influenced their decisions on what was acceptable in strategic nuclear arms control.

D. The Shifting Context for Nuclear Parity with Russia

The concept of parity that shaped American nuclear policy through the remainder of the Cold War was an uneasy reconciliation of the attempt to negotiate limits on non-symmetric nuclear force postures, with the evolution of technological advantages to offset asymmetries. The American side pressed to limit MIRVed ICBMs, especially MIRVed heavy ICBMs, while seeking to protect its advantages in sea- and air-based nuclear forces, and to keep British, French, and forward-deployed American nuclear forces out of the negotiations. The Soviets pressed to limit development of cruise missiles, keep the lid on American ballistic missile defenses, and insure that heavy bombers were constrained. Subsequent agreements (SALT II, Intermediate-Range Nuclear Forces (INF) Treaty, Strategic Arms Reduction Treaties (START I and START II)) evolved from that dynamic. At the same time, the conventional balance matured, as the United States introduced its Air-Land Battle (ALB) concept to Europe, as conventional arms control agreements were achieved, and as the Soviet Union sought to draw back from its over-extended commitments that were bankrupting the nation.

[29] See Aleksandr' G. Savel'yev and Nikolay N. Detinov, *The Big Five: Arms Control Decision-Making in the Soviet Union* (Westport, CT: Praeger, 1995).

The Cold War ended suddenly. What has evolved, in the two decades since the end of the Cold War, is an ironic reversal of roles. Where Washington once saw nuclear forces as necessary to offset the conventional imbalance, this now is Moscow's view. Russian authorities, never reconciled to the loss of empire and deeply resenting NATO's expansion into Moscow's traditional spheres of influence, today object to American and NATO missile defense activities.[30] When the United States wished to substitute an informal process in place of formal arms control, Moscow strongly objected, which led to Washington's acquiescing in negotiating the Treaty of Moscow in 2002. This short treaty relied upon the verification procedures of START I, which still was in force at the time. The Obama administration took office in early 2009 determined to negotiate a replacement for START I, but disagreements between Moscow and Washington persisted and START I expired in December 2009. Diplomacy continued and the New START treaty was negotiated and finally signed in April 2010 and entered into force in January 2011.

Preparations now are underway, albeit slowly, for a next round of negotiations, which the United States wants to use to comprehensively address the nuclear postures of both sides— non-deployed as well as deployed nuclear weapons, non-strategic as well as strategic systems. American and Russian authorities also have announced the intent to begin to involve other nuclear-weapons states in the process. Preliminary meetings of the P-5 nuclear powers, couched in terms of preparations for the 2015 Non-Proliferation Treaty (NPT) review conference, have begun, with the prospect of eventual multi-party arms talks in the background.[31]

How might China fit into this picture? To answer that question, it is useful first to describe where China's nuclear posture appears to be today, and why.

[30] The United States withdrew from the Anti-Ballistic Missile Treaty (ABMT) in 2002 over Russian objections, to address new threats posed by hostile regional powers like North Korea and Iran.

[31] The P-5 powers are the United States, Russia, Britain, France, and China—the five states that had manufactured and exploded a nuclear explosive device prior to January 1, 1967, as specified in Article IX of the NPT. "P" denotes the fact that each incidentally is a permanent member of the United Nations (UN) Security Council.

3. China and The Bomb

China became the fifth nation to acquire nuclear weapons when it exploded a nuclear device in 1964. Since then, understanding China's approach to nuclear weapons has settled into a sort of conventional wisdom, which one should view alongside the abiding difficulties of comprehending China's strategic behavior.

A. China's Nuclear Forces

China is thought by most accounts to have no more than 200–400 nuclear weapons in its stockpile, deployed for a modest nuclear force (by American and Russian standards) of 50–75 ICBMs, perhaps 100 shorter-range ballistic missiles that are nuclear-armed, about 100 older bombers that are nuclear capable, a relatively small nuclear-capable tactical air force, and a small (and apparently still struggling) ballistic missile submarine force.[32] Precise information on China's nuclear posture is notoriously difficult to come by, however, and the numbers may be understated by an order of magnitude. A recent Georgetown University student project, supervised by Professor Philip Karber, suggests that the size of the Chinese nuclear arsenal may be as high as 3,000. Karber stresses, however, that his main point is not the exact number, but rather the uncertainty. As quoted in the *Washington Post*, he says: "I don't have the slightest idea how many nuclear weapons China really has, but neither does anyone else in the arms-control community. . . . That's the problem with China—no one really knows except them."[33]

The Defense Department's *2006 Quadrennial Defense Review* (QDR) report identified China as the emerging power having "the greatest potential to compete militarily with the United States and field disruptive military technologies that could over time offset traditional U.S.

[32] See *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China, 2011* (Washington, DC: Department of Defense, August 2011); Evan S. Medeiros, "'Minding the Gap': Assessing the Trajectory of the PLA's Second Artillery," in *Right-Sizing the People's Liberation Army: Exploring the Contours of China's Military*, Roy Kamphausen and Andrew Scobell (Carlisle, PA: Strategic Studies Institute, US Army War College, September 2007), 143-189; and Gregory Kulacki, *China's Nuclear Arsenal: Status and Evolution* (Washington, DC: Union of Concerned Scientists, May 16, 2011).

[33] William Wan, "Digging Up China's Nuclear Secret," *Washington Post* ,November 30, 2011, 1; Hui Zhang, "The defensive nature of China's 'underground great wall,'" *Bulletin of the Atomic Scientists*, January 16, 2012, http://www.thebulletin.org/web-edition/features/the-defensive-nature-of-chinas-underground-great-wall. Hui Zhang, who is the China expert of the Project Managing the Atom in the Belfer Center for Science and International Affairs at Harvard University, places the upper limit on a hypothetical Chinese stockpile at 680–1,000 warheads.

military advantages absent U.S. counter strategies."[34] Nuclear weapons are one such disruptive technology.

China's military modernization has proceeded steadily since the end of the Cold War.[35] It has involved "a mixture of incremental innovation, creative innovation, and creative adaptation."[36] One of the targeted sectors for modernization has been China's nuclear forces. The Chinese are introducing mobile basing for elements of their land-based missile force, and probably will deploy missiles with MIRVs in the near future. China also is pursuing a maneuvering ballistic missile re-entry vehicle, a wide array of cruise missiles, and a more capable submarine-based missile force, and is developing a carrier aviation capability which, someday, could assume a nuclear mission.[37] More will be said about the delivery systems and the operational forces later in this paper.

Since their first nuclear test in October 1964, the Chinese are thought to have conducted a total of forty-six explosive nuclear tests over a period of thirty-two years, the last apparently taking place in 1996. American nuclear scientists familiar with the Chinese program offer different perspectives on its quality. For instance, former director of Los Alamos National Laboratory (LANL), Siegfried Hecker, contends that as of the mid-1990s, "the Chinese weapons program was not as sophisticated as the Russian program," much less that of the United States.[38] On the other hand, Thomas Reed (who began his career as a nuclear weapons scientist at Lawrence Livermore National Laboratory (LLNL) and is a former Secretary of the U.S. Air Force) and Danny Stillman (formerly the chief of foreign intelligence at Los Alamos) contend that "China's nuclear weapons program was and remains on a technical par with that of the United States. In some areas, it displays sophistication unknown in the West."[39] One can

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[34] *Quadrennial Defense Review Report* (Washington, DC: Department of Defense, February 6, 2006), 29.

[35] "Since the early 1990s, PRC leaders have sustained an ambitious and broad-based military modernization program intended to transform the PLA into a modern force. . . . For the PLA, this modernization effort remains a work in progress." *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China: 2011*, 27.

[36] Thomas G. Mahnken, "China's Anti-Access Strategy in Historical and Theoretical Perspective," *Journal of Strategic Studies* 34, no.3 (2011): 301.

[37] China has built its first aircraft carrier, using a Russian-designed hull acquired from Ukraine. In July 2011, a spokesman for the Chinese Defense Ministry said that the program was providing a basis for long-term experimentation and development. (Jeremy Page, "China Says Carrier Won't Alter Naval Strategy," *Wall Street Journal*, July 28, 2011, A6.) The Chinese carrier entered sea trials in August 2011. DOD sees the pursuit of this initial carrier as the start of a larger program and that China will proceed to build indigenous aircraft carriers. (DOD Press Briefing on the 2011 Annual Report to Congress: Military and Developments involving the People's Republic of China, by Michael Schiffer, Deputy Assistant Secretary of Defense for East Asia, The Pentagon, August 24, 2011.)

[38] Siegfried S. Hecker, "Adventures in scientific nuclear diplomacy," *Physics Today* 64, no.7 (July 2011): 31–37. Hecker, who was director of the Los Alamos National Laboratory from 1986 to 1997, began lab-to-lab interactions with the Chinese in 1994.

[39] Thomas C. Reed and Danny B. Stillman, *The Nuclear Express: A Political History of the Bomb and Its Proliferation* (Minneapolis, MN: Zenith Press, 2009), 233.

reconcile both views, depending on what aspect of the Chinese nuclear program one chooses to emphasize.[40]

Based on open sources, it is difficult to assess the technical quality of China's nuclear weapons program. There is evidence leading some to argue that Chinese espionage into American nuclear designs has allowed China to significantly improve its nuclear capability,[41] and some commentators see the alleged espionage as further proof of a rapidly emerging China threat.[42] Others contend that the allegations of nuclear espionage, and their purported consequences, are less clear.[43]

A particularly important enabler of nuclear weapons design activities in today's no-testing environment is the use of high-speed supercomputers. China challenges American technology in this area, not only in supercomputers[44] but also in developing the ability to make the microprocessor chips used by supercomputers.[45]

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[40] There are many ways to assess the quality of a nuclear weapons program: sophistication of designs, quality of diagnostics, reliability of the weapons, etc.

[41] In May 1999, the U.S. Congress released a declassified, redacted version of the three-volume Cox Commission Report, prepared by the House Select Committee on Intelligence. The report concluded, inter alia, that the PRC had stolen classified information on the United States' most American thermonuclear weapons, and had used this information for its modern thermonuclear weapons. See Chapter 2, Volume I, of the *Report of the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China, Report 105-851* (Washington, DC: U.S. Government Printing Office, 1999), accessed September 22, 2011, http://www.house.gov/coxreport. In December 1999, Wen Ho Lee, a Taiwan-born Los Alamos scientist, was indicted by a federal grand jury of passing information on U.S. nuclear weapons to the PRC. Federal investigators were unable to prove the initial accusations and Lee eventually pleaded guilty to improperly handling restricted data, as part of a plea settlement. In 2006, Lee was awarded $1.6 million by the federal government and five media organizations, to settle a civil suit he filed for leaking his name to the press before any charges were filed against him. The federal judge, who initially had denied bail and placed Lee in solitary confinement, apologized to Wen Ho Lee and strongly criticized the government for how it handled the case. A great deal of mystery still surrounds the Wen Ho Lee episode.

[42] Bill Gertz contends that "Today [2000], China's nuclear missiles, most of whose warheads are targeted on American cities, are more lethal in terms of the missile guidance systems, and better crafted than just a few years ago," as a result of Chinese espionage. Bill Gertz, *The China Threat: How the People's Republic Targets America* (Washington, DC: Regerny Publishing, Inc, 2000), 59.

[43] See Michael M. May, ed., *The Cox Committee Report: An Assessment* (Stanford, CA: Center for International Security and Cooperation, December 1999), accessed June 29, 2011, http://iss.db.stanford.edu/pubs/10331/cox.pdf. The Stanford critique was led by Michael May, a former director of Lawrence Livermore National Laboratory. The chapter that analyzes the claims concerning nuclear design information was written by the late W. K. H. Panofsky.

[44] In June 2011, the Japanese Fujitsu "K" supercomputer reclaimed the title from China as the world's fastest supercomputer. The competition between Japan, China, and the United States in supercomputers is placed in perspective by Bruce Goodwin and Thomas Zacharia in "Our supercomputer challenge," *Washington Post*, June 24, 2011, A17. Bruce Goodwin heads the nuclear weapons program at Lawrence Livermore National Laboratory.

[45] In October 2011, China announced that it had made its first supercomputer based on Chinese microprocessor chips, surprising American high-performance computer specialists. See John Markoff, "China Has Homemade Supercomputer Gain," *New York Times*, Saturday, October 29, 2011, A9.

As for ballistic missile programs, in 2010 the U.S. Department of Defense reported that "China has the most active land-based ballistic and cruise missile program in the world."[46] Many of the new Chinese shorter-range missiles are thought to be conventionally armed, but presumably could be equipped to carry nuclear weapons if China decided to do so.[47] From the perspective of crisis stability, if the missiles are dual-capable and used in combat, defenders would not know if they were nuclear- or conventionally-armed until the warheads detonated.

The Second Artillery, which operates China's missile forces (nuclear and conventional), has a direct reporting channel to China's highest military body, the Central Military Commission (CMC), and is believed to have much the same command-and-control system for nuclear and conventional missile operations. China also is pursuing a blue-water navy, an advanced air force, an ambitious space and cyberspace program, and a host of other elements of military power. It also is engaging in highly provocative practices, such as espionage in cyberspace. In its most recent report, the American Office of the National Counterintelligence Executive took the unusual step of publicly highlighting Chinese actors as "the world's most active and persistent perpetrators of economic espionage."[48]

Although China appears to remain at least a generation behind the U.S. military in many important respects, the United States has underestimated China's progress in the past. How quickly China can modernize its capabilities is a critical question. Thus while one should be careful not to exaggerate China's current military capabilities, the fact remains that the trajectory of Chinese force modernization (to include its nuclear forces) is on the rise, at the same time that the United States and Russia are limiting their nuclear force levels, and in a budget environment in Washington and Moscow that appears to be far more challenging than the one in Beijing.

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[46] *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2010* (Washington, DC: Department of Defense, May 2010), 1, accessed June 14, 2011, www.defense.gov/pubs/pdfs/2010_CMPR_Final.pdf. The driving force behind China's early missile program, Qian Xuesen (Tsien Hsue-shen), came to the United States in 1935 on a Boxer Rebellion scholarship and became a gifted protégé of Theodore von Kármán at Caltech. Although Qian became a U.S. citizen, he was deported to China in 1955 in a still-contested decision. See Iris Chang, *The Thread of the Silkworm* (New York, NY: Basic Books, 1995).

[47] Hui Zhang, at the Project on Managing the Atom in the Belfer Center for Science and International Affairs at Harvard University's John F. Kennedy School of Government, estimates that as of late 2010, China has stockpiles of 16 ± 4 tons of highly enriched uranium (HEU) and 1.8 ± 0.5 tons of plutonium (Pu) available for weapons. These are lower than most previous estimates which placed China's stockpiles at up to 26 tons of HEU and 6.6 tons of Pu. All estimates are conjectures, since China has kept information about its nuclear weapons program secret. See Hui Zhang, "China's HEU and Plutonium Production and Stocks," *Science and Global Security* 19, no. 1: 68–69 (online publication date April 14, 2011). For descriptions of China's nuclear weapons enterprise, see the Jonathan Medalia, et al., Congressional Research Service (CRS) Report for Congress, *Nuclear Weapons R&D Organizations in Nine Nations*, CRS R40439 (February 28, 2011); and the China sections of Reed and Stillman, *The Nuclear Express: A Political History of the Bomb and Its Proliferation*.

[48] Office of the National Counterintelligence Executive, *Foreign Spies Stealing US Economic Secrets in Cyberspace: Report to Congress on Foreign Economic Collection and Industrial Espionage, 2009–2011* (Washington, DC, October 2011).

B. Forecasting China's Strategic Behavior

Whether it was the Korean War of 1950, the Taiwan Straits crises of the following decade, the 1962 Sino-Indian border war, or the 1969 Sino-Russian border clashes, China took moves that caught American officials by surprise, and once events were underway, America more often than not failed to discern China's underlying objectives. Henry Kissinger, who has more and longer contact with senior Chinese officials than any other American, recalls that "[i]t was in precisely these most traditional aspects [of great power politics] that the superpowers had the most difficulty comprehending Mao's strategic motives."[49] There is a continuing question whether Mao's decisions reflected his idiosyncratic leadership style, or deeper patterns of Chinese behavior that continue to shape Chinese policy.

Kissinger is not the only one to make this point of how difficult it is to read Chinese strategic intent.[50] Chinese decision-making was, and in many important ways remains, opaque, as do Chinese intentions. The Chinese often take actions in the short run, which not only catch others by surprise, but leave them guessing whether they are seeing opportunistic tactical moves, mid-level operational choices, or the unfolding of a long-term strategic plan.[51]

The declassified record of the American intelligence community in trying to forecast Chinese nuclear force trends over the longer term also is not promising. In the summer of 1974, for instance, as the United States was pursuing a new relationship with China, the intelligence community reported that while the Chinese program to develop and deploy nuclear weapons had slowed since 1971, the trends suggested that over the next decade, China "almost certainly will seek to deploy a stronger deterrent force against the US and the USSR," and that China's

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[49] Henry Kissinger, *On China* (New York, NY: The Penguin Press, 2011), 103.

[50] A number of scholars have worked with newly available materials since the end of the Cold War, to assess the misunderstandings. See, for instance, Shu Guang Zhang, *Deterrence and Strategic Culture: Chinese-American Confrontations, 1949–1958* (Ithaca, NY: Cornell University Press, 1992), and "Between 'Paper' and 'Real Tigers': Mao's View of Nuclear Weapons," in *Cold War Statesmen Confront the Bomb*, eds. John Lewis Gaddis et al. (New York, NY: Oxford University Press, 1999), 194–215; Christopher P. Twomey, *The Military Lens: Doctrinal Difference and Deterrence Failure in Sino-American Relations* (Ithaca, NY: Cornell University Press, 2010); Michael S. Gerson, *The Sino-Soviet Border Conflict: Deterrence, Escalation, and the Threat of Nuclear War in 1969* (Washington, DC: Center for Naval Analyses, 2011); Lyle J. Goldstein, "Do Nascent WMD Arsenals Deter? The Sino-Soviet Crisis of 1969," *Political Science Quarterly* 118, no. 1 (2003), 53–79; and Yang Kuisong, "The Sino-Soviet Border Clash of 1969: From Zhenbao Island to Sino-American *Rapprochement*," *Cold War History* 1, no. 1 (August 2000): 21–52.

[51] Thomas J. Christensen, based on his analysis of instances of PRC use of force, concludes that China uses force even against superior foes, to influence trends when it perceives an opening window of vulnerability or a closing window of opportunity. He argues: "That is not to say that the PRC is particularly prone to use force or that CCP leaders are particularly eager for conflict, but rather that the reasons that the PRC has used force in the past would not always appear obvious to the casual observer, who might not expect a weaker actor to lash out at much stronger states or those states' allies." Thomas J. Christensen, "Trend Analysis and Beijing's Use of Force," in *New Directions in the Study of China's Foreign Policy*, eds. Alastair Iain Johnston and Robert S. Ross (Stanford, CA: Stanford University Press, 2006), 52.

"ultimate objective is to build a strategic nuclear capability befitting a major power."[52] The National Intelligence Estimate (NIE) judged that if China chose to accelerate its programs, it could have a force of some 150 nuclear-armed missiles (30 of which would be ICBMs), well over 100 bombers, and four nuclear missile submarines by 1980.[53]

What appears to have happened is quite different. China slowly developed its nuclear forces, and appears to have stopped considerably short of the levels that were anticipated. In 2011, half a century after its first nuclear test, China is thought to have no more than 200–400 nuclear weapons in its arsenal, and deploys a modest nuclear force posture by American and Russian standards.[54]

If the consensus view is correct and China in fact has such a modest nuclear force today, why did it not build more nuclear force capacity in the past, especially since the end of the Cold War? China had the necessary infrastructure to expand and could have found the resources. The land-based missile forces of the Second Artillery and the bombers units in the PLA Air Force, arguably could have handled the organization, training, and logistics associated with a larger nuclear force structure.

It even is conceivable that a slow but steady expansion could have been accomplished without triggering a reaction by the United States or Russia. Struggling in the 1990s following the collapse of the Soviet Union, Moscow did not have the resources to respond to a Chinese nuclear buildup, nor (one can speculate) the incentive. Russia spent much of the 1990s courting China for arms sales to provide desperately needed cash.[55] As for Washington, the American military came out of the Cold War with its nuclear forces recently modernized and with arms control agreements that had been concluded largely on American terms. In those circumstances, American policy focused less on the strategic nuclear balance and more on nuclear proliferation concerns, where Washington sought Beijing's cooperation. The United States was building up its capacity for high-technology, non-nuclear warfare. The United States also was preoccupied

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[52] National Intelligence Estimate (NIE) 13-8-74, which was declassified and approved for public release in May 2004, is part of the collection of China NIEs at CIA's Center for the Study of Intelligence. It, and the other NIEs, can be accessed through the CSI Web site at http://www.cia.gov/csi/index.html.

[53] Ibid.

[54] China is the least transparent of the major nuclear powers, and is known to have located at least part of its nuclear capability in underground facilities. Dr. Phillip A Karber, director of the Asian Arms Control Project at Georgetown University, has been conducting a study under contract to DOD of what is known from open sources about the project the PLA calls the "Underground Great Wall"—3,000 miles of tunnels associated with nuclear weapons activities. The executive summary of Dr. Karber's report was released at the request of the Strategic Forces Subcommittee of the House Armed Services Committee, on October 14, 2011. For context, see Bret Stephen, "How Many Nukes Does China Have?" *Wall Street Journal,* October 25, 2011, 17.

[55] China made a vast purchase of Russian military equipment beginning about 1992. For the next fifteen years, Russia was China's largest arms supplier, providing an estimated $20–30 billion per years of arms. A tipping point was reached about 2007 or 2008, when China quit placing major arms orders with Moscow and began producing its own advanced weapons, including export versions. See Jeremy Page, "China Clones, Sells Russian Fighters," *Wall Street Journal,* December 6, 2010, A1.

geopolitically in the 1990s with regional problems in places like Iraq and the Balkans. For a host of such reasons, the United States let much of its nuclear weapons policy drift and delayed replenishing its nuclear expertise, for well over a decade.[56] Evidence of American problems was in the public domain, and presumably was known to attentive strategists in the PRC.

C. China and the Minimum Deterrence Narrative

The reason most commonly given to explain China's modest nuclear force expansion is that China has a *minimum deterrence* policy. This paper will not engage in the spirited debate among experts on just what type of deterrence China pursues (*minimum*, *limited*, or the like),[57] or on whether the English phrase deterrence is appropriate for conveying the meaning of China's basic policy.[58] This analysis uses the phrase minimum deterrence as shorthand for describing what appears to be China's concept of military sufficiency, that is to say, the official view in China of what its nuclear forces are intended to do, and how much is enough to do it. The latest version of China's defense white paper, published in March 2011, repeats the official position that China "has never deployed nuclear weapons in foreign territory and has always exercised the utmost restraint in the development of nuclear weapons, and has never participated in any form of nuclear arms race, nor will it ever do so. It will limit its nuclear capabilities to the minimum level required for national security."[59]

What, from China's point of view, is the minimum level of nuclear capability required for national security? China does not disclose its guidance for employing nuclear forces, or the details of its nuclear contingency plans. This is not unusual. All nuclear powers keep such information highly classified and rigidly compartmented. Nuclear guidance addresses such things as types of targets to hold at risk and at what levels of anticipated damage, what targets to avoid, when and how to transition to nuclear alert, and the like. War planning requires assumptions about performance of nuclear forces under stress: e.g., whether the forces are to

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[56] See, for instance, the *Report to Congress and the Secretary of Energy of the Commission on Maintaining Nuclear Weapons Expertise* (Washington, DC, March 1, 1999), also known as the Chiles report.

[57] For an appreciation of the sorts of issues involved in the debate, see Michael S. Chase and Evan Medeiros, "China's Evolving Nuclear Calculus: Modernization and Doctrinal Debate," in *China's Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the Chinese People's Liberation Army,* eds. James Mulvenon and David Finkelstein (Alexandria, VA: Center for Naval Analyses, 2003), 119–57.

[58] Deterrence (*weishe*) is used in the *English-Chinese Chinese-English Nuclear Security Glossary,* compiled by the U.S. National Academy of Sciences and the Chinese People's Association for Peace and Disarmament (Washington, DC: National Academies Press, 2008), in the Western, largely defensive sense: "The prevention from action by fear of the consequences. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction," 16. Others in China, however, including reportedly the Second Artillery, interpret the Western phrase *deterrence* as *ezhi,* which conveys a pejorative, offensive meaning more akin to the Western concepts of compellence, coercion, intimidation, and the like. See Gregory Kulacki, "Chickens Talking With Ducks: The U.S.-Chinese Nuclear Dialogue," *Arms Control Today* 41, no. 8 (October 2011): 15–20.

[59] *China's National Defense in 2010* (Beijing: Information Office of the State Council of the People's Republic of China, March 31, 2011), 35.

launch from an alerted posture having survived a first strike or can launch in other modes, how quickly to retaliate, how reliably the systems are expected to perform, their ability to penetrate enemy defenses, and methods of nuclear attack (e.g., air- or ground-burst). Contingency planning also requires assumptions about whether the nuclear exchange is bilateral, or involves other nuclear powers. Presumably, the Chinese do modeling and gaming of force performance under various conditions of war. The United States lacks hard data on these matters, and that is unlikely to change.

What the United States has is a broad body of scholarship that advances the minimum deterrence argument. Analysts base their view on memoirs, interviews, open- and gray-source documents, discussions at conferences, the occasional fragments of official information that the Chinese choose to release, and analysis from first principles.[60] Typical of the narrative is the argument by civilian scholars Chu Sholong and Rong Yu, who write:

> In 1964, one Chinese nuclear weapon might have been sufficient to serve the purpose of "minimum deterrence." And in the 1990s when there was no missile defense, 200–400 strategic weapons might have been required to serve the goal. But in the early decades of the twenty-first century, as the United States develops and deploys missile defense systems, the current quantity, quality, and structure of China's strategic force may not be sufficient to fulfill the mission of "minimum deterrence." Thus the "minimum" is likely to increase, although it may not reach the level of the strategic forces of the superpowers.[61]

PLA military scholar Yao Yunzhu, a frequent contributor to the dialogue in American circles, says:

> In the foreseeable future, the most significant factor that will influence China's nuclear calculus will be U.S. deployment of national and advanced theater missile defenses. China has to reevaluate the sufficiency of its nuclear arsenal to counter U.S. missile defense systems and retain a guaranteed ability to retaliate. However, such reevaluation will result only in the variation of the size of nuclear arsenals, not in any change to the policy's basic nature . . . [which is] a credible deterrent . . . survivable in the face of a first nuclear strike, even if that strike is overwhelming and devastating. In the Chinese literature, "few but effective"

[60] John Wilson Lewis and Xue Litai of Stanford University have, since the late 1980s, produced an impressive body of work that compiles and updates known information on China's nuclear forces. See the following works, all published by Stanford University Press. *China Builds the Bomb* (1988), *Uncertain Partners: Stalin, Mao, and the Korean War* (1993, co-authored with Sergei N. Goncharov), *China's Strategic Seapower: The Politics of Force Modernization in the Nuclear Age* (1994), and *Imagined Enemies: China Prepares for Uncertain War* (2006).

[61] Chu Shulong and Rong Yu, "China: Dynamic Minimum Deterrence," in *The Long Shadow: Nuclear Weapons and Security in 21st Century Asia*, ed. Muthiah Alagappa (Stanford, CA: Stanford University Press, 2008), 161–187. At the time of writing, Chu Shulong was a professor at Tsinghua University, Beijing, and Bong Yu was a PhD candidate at the School of Public Policy and Management at Tsinghua University.

(*jinggan youxiao*) are the words most frequently used to describe the necessary arsenal.[62]

The consensus view of American scholars that follow China also appears to be that China's minimalist policy is likely to continue. For example, Paul Bracken, a strategic studies generalist, writes that China "has no need to take on the United States in strategic forces. It only has to be strong enough to threaten vulnerable U.S. bases in Asia, while maintaining a minimum nuclear deterrent against the United States."[63] Chris Twomey (a Mandarin-reading security expert) says:

> China is substantially modernizing its nuclear missiles and nuclear warheads. It is deploying road-mobile, solid-fueled ICBMs far less vulnerable to a "bolt from the blue" first strike than China's previously fielded systems. It is also in the process of deploying a small fleet of more reliable ballistic missile submarines and its force will eventually include long-range sea-launched ballistic missiles (SLBMs). Nevertheless, the core doctrine underlying China's force posture—minimum deterrence—has remained fairly consistent.[64]

As stated earlier, this paper does not seek to add to the speculation of what China means by its minimalist policy.[65] Instead, it accepts the thesis that China has some kind of minimum deterrence policy, and also accepts the corollaries that China has a policy of no-first-use[66] and does not extend a nuclear umbrella to any nation (including North Korea).[67] The presumption of

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[62] Yao Yunzhu, "Chinese Nuclear Deterrence and the Future of Minimum Deterrence," in Christopher P. Twomey, ed., *Perspectives on Sino-American Strategic Nuclear Issues* (New York, NY: Palgrave Macmillan, 2008), 111–124. At the time of writing, Senior Colonel Yao of the People's Liberation Army was director of the Asia-Pacific Office at the Department of World Military Studies of the Chinese Academy of Military Science, China. Yao is a frequent speaker in the United States on nuclear deterrence issues, and contributes to discussions in American military settings. For instance, she gave a panel presentation at the 2009 U.S. Strategic Command (USSTRATCOM) Strategic Deterrence Symposium, and authored an article on "China's Perspective on Nuclear Deterrence" in the spring 2010 issue of the U.S. Air Force Air University's *Air & Space Power Journal.*

[63] Paul Bracken, *Fire in the East: The Rise of Asian Military Power and the Second Nuclear Age* (New York, NY: HarperCollins, 1999), 115. Bracken is a professor at Yale.

[64] Twomey, *The Military Lens*, 242–3. Twomey is a professor at the Naval Postgraduate School and a frequent organizer of US-Chinese Track II talks on nuclear-related national security issues.

[65] An interesting twist which Li Bin gives to the discussion is to translate China's nuclear weapons policy as *counter-coercion*. Li Bin was trained in China as a physicist, and formerly was director of the arms control division at the Institute of Applied Physics and Computational Mathematics in Beijing, and professor of international relations at Tsinghua University. Li Bin is a frequent participant in U.S.-China dialogues on nuclear matters in academic and think tank settings. He has used the phrase counter-coercion as preferable to minimum deterrence in several settings, including his June 2007 presentation at the Carnegie International Nonproliferation Conference.

[66] Since its first nuclear test in 1964, Chinese authorities repeatedly have reaffirmed that China's nuclear policy is one of no-first-use, notwithstanding the occasional internal debates in China that make it into the public domain in episodic forms. This paper will not assess those debates, or what the Chinese may in fact mean by no first use of nuclear weapons.

[67] To say that China does not extend a nuclear umbrella, however, is not to say that China may not enter into nuclear assistance under other guises. In the late 1980s, Saudi Arabia purchased some 30 to 120 DF-3A (CSS-2) missiles from China. These reportedly were conventionally armed, having been modified for export from the nuclear-armed Chinese single-state intermediate-range ballistic missile (IRBM) that had initially been developed for the

minimum deterrence frames the space for thinking about how China is likely to react in the face of continued nuclear reductions, within its own definitions of sufficiency.

2nd Artillery in 1971 and deployed in China with nuclear warheads. The missile has a range of 2,800 km, or if flown with a reduced payload, a range of 4,000 km. The inaccuracies of the missile, and its throw weight of 2,000 kg, led to speculation on whether they would be armed with nuclear weapons. Saudi Arabia signed the NPT in 1988 and stated it would not arm the missiles with either nuclear or chemical weapons. The missiles are aging, but still are maintained, probably with Chinese assistance. China also is widely suspected of having helped Pakistan in the early 1980s with nuclear weapons design, materials production, and the construction of nuclear infrastructure (and Saudi Arabia probably assisted the Pakistanis with financing). Little is known of the triangular Chinese-Saudi-Pakistani nuclear diplomacy during and since the 1980s. Applying logic alone, one can surmise situations where, if Iran acquires nuclear weapons, Pakistan will transfer nuclear warheads for the missiles to Saudi Arabia, with Chinese assistance. This could be a form of "extended deterrence with Chinese characteristics." For background, see Sean O'Connor, "Saudi Arabia's Ballistic Missile Force," *IMINT & Analysis*, February 10, 2009, accessed January 4, 2011, http://geimint.blogspot.com/2009/02/saudi-arabias-ballistic-missile-force.html; and Reed and Stillman, *The Nuclear Express*, 247–50.

4. How China Might View Nuclear Parity

It is not clear that China would welcome nuclear parity, even if offered the option.

A. Will China Sprint to Parity

"Sprint to parity" is a colorful metaphor to capture the idea that as the United States and Russia reduce their nuclear forces in negotiated agreements, they will "lower the bar" for nuclear parity and encourage China to increase its nuclear forces to equal or even exceed the size of the U.S. and Russian arsenals. Former Chairman of the Joint Chiefs of Staff, General Peter Pace (USMC, Ret), testified to Congress in the fall of 2011 that:

> [i]n unclassified numbers, I think the Chinese have about 300 nuclear weapons [today]. Right now, if we have 2,200 and they've got 300, they're probably not sitting there thinking to themselves, let's spend the money on adding to our nuclear arsenal. They've got plenty to do [to accomplish] what they need to defend themselves, and they're probably not thinking let's allocate those resources. There's a number out there, as we come down to it, [however,] that they might say to themselves, hmm—all we need to do is build a couple hundred more to have absolute parity with the United States; let's do it.[68]

The following analysis agrees with the arguments of those who contend that it is highly unlikely that China will seek to sprint to parity.[69] Whether examined through the traditional lenses of great-power geopolitics crafted in rational-actor, cost-benefit terms, or through doctrinal lenses which take into account China's strategic culture and unique national security experiences and narrative, China is unlikely to choose a nuclear sprint. There are a number of plausible reasons why China would not make that choice. Among them are:

- Not rocking the boat. A policy of steady force improvements at a deliberate pace to preserve sufficiency fits with China's behavior to date. China's nuclear program has progressed slowly since its inception.
- Since 1979, Chinese force modernization has been given a lower priority than economic development. Even with the sustained annual increases in China's military budget over the past twenty years, the burden on the economy appears negligible.

[68] Gen Peter Pace, USMC (Ret), Hearing of the House Armed Services Committee, September 8, 2011.

[69] See, for instance, Caroline S. Reilly, "Assessing the Prospect of China's Potential 'Sprint to Parity'," in *A Collection of Papers from the 2011 Nuclear Scholars Initiative* (Washington, DC: Project on Nuclear Issues, Center for Strategic and International Studies, December 2011), 156–73.

- China has crafted its nuclear diplomacy around the theme that it is a leader in minimum deterrence, and that the other nuclear powers should follow the Chinese lead. A sprint toward parity would undercut that theme.
- A sprint to parity also risks further frightening its neighbors into increasing their own defense programs (arms races already are underway), and moving even closer to the U.S. Nations like Japan and South Korea also might be led to reconsider their non-nuclear status, if China were perceived to be sprinting toward nuclear parity. China does not want more military nuclear programs in its neighborhood.
- A sprint to parity with the United States also is a sprint to parity with Russia. China would have to consider Russia's reactions, which would likely not be benign.
- Achieving nuclear parity is not a matter of honor for China. Chinese leaders never have set that goal. Moreover, China has no allies or third parties it would seek to impress with a sprint to parity.
- Not sprinting to nuclear parity preserves resources for other priority military programs. China appears to be building toward a military capability designed to deny the United States freedom of action in the region, to challenge the United States in the global commons (space, air, sea, cyber), and to guard Chinese access to overseas oil and other strategic materials. Finding resources for these programs would compete with a sprint to nuclear parity.[70]
- China is undergoing a leadership transition in 2012/13, and already is grooming its so-called *sixth-generation cadres* who will take over in the 2020s.[71] Had China been planning to sprint toward nuclear parity anytime in the near future, hints would likely have entered the complicated politics of the Chinese Communist Party (CCP), and surfaced in trial balloons. That does not appear to have happened.

To argue that a sprint to parity is unlikely, however, does not address the more fundamental issue of how the United States thinks about China and prepares for future stages of arms control, which requires some understanding of how China itself might view the prospect of nuclear parity. From China's perspective, parity may appear more problematic than many suspect, especially when associated with arms control.

[70] The IISS *Military Balance: 2010* estimates that China had a 2010 defense budget of $76.4 billion, second only to the United States (which was $692.8 billion). The Department of Defense *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China 2011* estimated that China's total military-related spending for 2010 was over $160 billion, using 2010 prices and exchange rates.

[71] See, for instance, Willy Lam, *Changing of the Guard: Beijing Grooms Sixth-Generation Cadres for 2020s* (Washington, DC: The Jamestown Foundation, September 2010).

B. China's Suspicions

Since its first nuclear test in 1964, China has called on the world's nuclear powers to adopt a no-first-use policy and to completely eliminate their nuclear weapons. Refusing to engage on unequal terms, China remained aloof from multilateral nuclear diplomacy until after the Cold War ended. Since the demise of the Soviet Union, China has reversed course. It acceded to the Non-Proliferation Treaty (NPT) in 1992, signed (but has not yet ratified) the Comprehensive Nuclear-Test-Ban Treaty (CTBT) in 1996, and applied for membership in the Missile Technology Control Regime (MTCR) in 2004. Since at least the early 1990s, Chinese authorities have avoided directly answering the question of when and how they might join a process of formal nuclear disarmament, by countering that they already are low, and that the United States and Russia first must drastically reduce their nuclear arsenals in a verifiable and irreversible manner.[72] What will China's attitude be, if Washington and Moscow oblige?

Consider the following thought experiment. Chinese leaders wake up tomorrow and find that the United States and Russia somehow have met their stated conditions by reducing their forces to levels where numerical nuclear parity either has arrived or is very near, but that geopolitics otherwise are largely unchanged. They call upon China to now engage in arms control. China would be faced with hard choices.

One gains some insight into possible responses through the work of scholars like Lora Saalman, a Beijing-based American associate in the Nuclear Policy Program at the Carnegie Endowment and the first American to earn a doctorate from the Department of International Relations at Tsinghua University in Beijing. For the past several years, Dr. Saalman has been conducting a survey of Chinese strategic studies literature, coupled with interviews with Chinese experts on their views toward nuclear issues.[73] Drawing on her findings, and those of other China specialists, one can speculate that something like the following might characterize CCP inner-circle discussions;

- The United States calls for greater transparency in Chinese military affairs not to build trust and stabilize the balance, but instead to expose the weaknesses of China's minimum deterrent posture. Arms control will facilitate that aim.
- Strong countries use arms control to manipulate and control weak ones. Unless China has built up substantial comprehensive power, the stronger countries will dominate any nuclear arms talks. Comprehensive power includes economic and political, as well as

[72] See Bates Gill, "China and Nuclear Arms Control: Current Positions and Future Policies," *SIPRI Insights on Peace and Security* 2010, no.4 (April 2010).

[73] Lora Saalman, "How Chinese Analysts View Arms Control, Disarmament, and Nuclear Deterrence after the Cold War," in *Engaging China and Russia on Nuclear Disarmament,* Occasional Paper No. 15, eds. Christina Hansell and William C. Potter, eds, (Monterey, CA: James Martin Center for Nonproliferation Studies, Monterey Institute of International Studies, April 2009), 47-71, and Lora Saalman, *China & the U.S. Nuclear Posture Review*, The Carnegie Papers, Carnegie-Tsinghua Center for Global Policy (Washington, DC: The Carnegie Endowment, 2011).

military, might. China slowly is building its comprehensive power, but is a long way from matching that of the United States. This makes entering negotiations on China's nuclear forces risky. Washington used its comprehensive power during the Cold War to prevail in arms control talks with Russia, where the agreements were shaped in America's favor. China must avoid that trap.

- The Americans cannot be trusted to abide by their commitments. When it suits its purposes, Washington will withdraw from treaties, as evidenced in the sudden demise of the ABM Treaty. Moreover, the American political system works against long-term commitments. No matter what any American administration may promise at a particular point in time, its successors will not feel bound by those promises, and elements in Congress always disagree. Strategic agreements with the United States lack reliability and longevity. This also is true of strategic agreements with Russia, but less relevant given Russia's weakness.
- Washington continues to pursue absolute security at the expense of other powers. It demands military superiority. Even if nuclear weapons were eliminated, U.S. dominance in high-technology warfare would allow it to retain, if not strengthen, its global hegemony.
- Washington's long-term goal is to contain China and to seek the demise of CCP control of the nation, and its replacement with Western-style democracy.

These are not the only arguments, but are likely to be among the most common ones. What lies behind China's suspicions? CCP leaders have a long and complex history of relations as a weaker power with both Russia and the United States. This paper will not explore the question of Sino-Russian history and the topography of their strategic nuclear relationship, in order to focus the discussion on the roots of China's suspicions regarding the United States.[74] As stated earlier, however, Russia would enter into Chinese calculations.

China views the United States through a peculiar set of lenses. In 1948, as the CCP was moving toward victory on the mainland in the civil war it had been waging on-again, off-again since the 1920s with Chiang Kai-shek's Kuomintang (KMT) Nationalist forces, CCP leaders concluded that American policy not only favored the KMT but was fundamentally hostile toward the CCP. "The policy of the U.S. Government," Mao is reported to have said, "is to use the so-called mediation [of the mission led by General George Marshall] as a smoke screen for strengthening Chiang in every way and suppressing the democratic [i.e., CCP] forces in China

[74] There are a number of excellent treatments of the roots of Sino-Russian relations, and the suspicions engendered in the Chinese. See, especially, Sergei N. Goncharov, John W. Lewis, and Xue Litai, *Uncertain Partners: Stalin, Mao, and the Korean War* (Stanford, CA: Stanford University Press, 1993).

through Chiang Kai-shek's policy of slaughter so as to reduce China virtually to a U.S. colony."[75]

The allegation that America's ultimate intention always has been to contain, dominate, and control China, and that Washington will use negotiations to disguise its pursuit of such goals, resonates in elements of the Chinese elite today, and is reinforced by China's strategic culture. Thomas Fingar, a long-time China expert and former senior intelligence official, argues that China instinctively sees a hidden agenda behind discrete events. "The Chinese," he writes, "often evince a proclivity to see precedents, patterns, and parallels where Americans see unique and unrelated developments. This cultural difference is sometimes compounded by a Chinese tendency to interpret any development or policy statement with potential consequences for China as having been crafted specifically to achieve the imputed impact."[76] The Chinese find it hard to believe, for instance, that the May 1999 bombing of the Chinese embassy in Belgrade, during the war on Serbia, was accidental, coming as it did on the heels of the release of the Cox Commission Report on Chinese espionage, and in the midst of the ongoing spying investigation into the case of Los Alamos scientist Wen Ho Lee that resulted in his indictment late in 1999.[77]

Chinese authorities suspect, with good cause, that Washington's ultimate intention is a form of regime change. In January 1993, in his confirmation hearings to be Secretary of State, Warren Christopher presented a statement that said inter alia that "Our policy will seek to facilitate a peaceful evolution of China from communism to democracy by encouraging the forces of economic and political liberalization in that great country."[78] Although American officials are less explicit today, that arguably remains American policy. Experts like Aaron Friedberg see this at the heart of Chinese policy. "China's current rulers," he writes, "have every intention of preserving the one-party system over which they presently preside. It is largely because they see the United States as the most serious external threat to their continued rule that they feel the need

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[75] Quoted in Shu Guang Zhang, *Deterrence and Strategic Culture*, 18.

[76] Thomas Fingar, "Worrying About Washington: China's views on the US Nuclear Posture," *The Nonproliferation Review* 18, no. 1 (March 2011): 54. Thomas Fingar, currently the Oksenberg-Rohlen Fellow at Stanford University, formerly was deputy director of national intelligence for analysis and, concurrently, chair of the National Intelligence Council, and before that, head of the intelligence bureau in the State Department and one of State's chief China analysts.

[77] For discussion of the Wen Ho Lee case from different perspectives, see Wen Ho Lee with Helen Zia, *My Country Versus Me* (New York: Hyperion, 2001); Dan Stober and Ian Hoffman, *A Convenient Spy: Wen Ho Lee and the Politics of Nuclear Espionage* (New York, NY: Simon and Schuster, 2001), and Notra Trulock, *Code Name Kindred Spirit: Inside the Chinese Nuclear Espionage Scandal* (San Francisco, CA: Encounter Books, 2003). There are many unanswered questions still about the Wen Ho Lee episode.

[78] Warren Christopher, *In the Stream of History: Shaping Foreign Policy for a New Era* (Stanford, CA: Stanford University Press, 1998), 31. Preparation of Christopher's statement was supervised by his then chief of staff, Tom Donilon, who today is the National Security Adviser to President Obama.

to constrict its military presence and diplomatic influence in the Western Pacific, pushing it back and ultimately displacing it as the preponderant power in East Asia."[79]

Chinese suspicions also are reinforced by the difficulties that foreigners have when they follow strategic debates in the United States. The United States is an argumentative society, proud of protecting the rights of free speech, an open press, and academic inquiry, and preserving the boisterous processes of constitutional democracy and transparent government operations. What appears to outsiders as a messy and undisciplined public debate, to Americans reflects their deepest values. The Chinese who pay attention to nuclear issues not only interact with American officials on a formal level, but listen to American legislators, read the views of public intellectuals and pundits, follow articles in American academic and policy-oriented journals, and attend a wide range of conferences and Track II dialogues. It is not surprising that the Chinese have difficulty sorting out what is authoritative from what is speculative or contrarian, in American nuclear matters.

There are other cultural explanations. Although Fareed Zakaria, a leading American public intellectual, cautions against exaggerating the importance of such explanations, he still concludes that there are "some real and important differences between Chinese and Western (particularly American) worldviews that are worth exploring."[80] One he cites is:

> Western businessmen have often noted that their Chinese counterparts seem to place less stock in rules, laws, and contracts. Their sense of ethics is more situational. If a Chinese businessman or official thinks the law is an ass (to quote an Englishman), he will ignore or go around it or simply suggesting making up a new contract. The veneration of an abstract idea is somewhat alien to China's practical mind-set. Social relations and trust are far more important than paper commitments.[81]

It is difficult to avoid concluding that many in China do not trust the United States (or Russia, for that matter). If pressed to commit to when they would be willing to engage in arms control should parity be on the horizon, participants in CCP leadership circles would be likely to raise questions like the ones identified earlier. Are the Americans and Russians conspiring to use arms control to contain and weaken the Chinese nuclear program, as they did in the early 1960s with the first nuclear test ban agreements? Is the United States seeking to gain relative advantage under the guise of nuclear parity?

Caroline Ziemke-Dickens, of the Institute for Defense Analyses (IDA), has developed a strategic personality matrix for understanding state behavior. She argues that China's strategic personality is defensive of its internal prerogatives and its ability to pursue its core interests free

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[79] Aaron L. Friedberg, *A Contest for Supremacy: China, America, and the Struggle for Mastery in Asia* (New York, NY: W. W. Norton & Company, 2011), 2.

[80] Fareed Zakaria, *The Post-American World: Release 2.0* (New York, NY: W. W. Norton & Company, 2011), 121–22.

[81] Ibid., 125.

from interference and international restrictions imposed by powers like the United States. China, she contends, also finds the highly context-dependent calculations of the United States to be confusing, and seeks to fill in the blanks to understand issues of key importance.[82]

What the above lines of argument suggest, is that China may not feel comfortable with the consequences of what nuclear parity with the United States and Russia might entail, if the geopolitical context for parity remains unchanged, and if the price of parity is entering into arms control. On the other hand, if China could achieve nuclear parity either outside arms control—or within arms control if the suspicions could be overcome, there are counterarguments for why they might go in that direction. There is a strong element of realism in Chinese strategic culture—a realism that Alastair Iain Johnston of Harvard points out, "assumes that conflict is a constant feature of human affairs, that it is due largely to the rapacious or threatening nature of the adversary, and that in this context the application of violence is highly efficacious for dealing with the enemy."[83] Nuclear weapons are not simply about prestige for China. They primarily are about security.

Thomas Mahnken, an American scholar and strategist who had defense policy planning responsibilities during the George W. Bush administration, emphasizes that Chinese strategists promote "the propensity of things" (*shi*) to achieve their objectives. He quotes the French Sinologist Francois Jullien who has written: "According to the ancient treatises, the key to Chinese strategy is to rely on the inherent potential of the situation and to be carried along by it as it evolves."[84] From this point of view, proceeding to parity might be seen as a smart strategic move, if parity was seen as serving security concerns.

Chinese authorities probably would not want closing the nuclear gap with the United States to add to the suspicions China already has triggered in the Asia-Pacific region about its growing military power.[85] These suspicions have contributed to military countermoves and nudge

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[82] See Caroline F. Ziemke, Philippe Loustaunau, and Amy Aldridge, *Strategic Personality and the Effectiveness of Nuclear Deterrence*, IDA Document D-2537 (Alexandria, VA: Institute for Defense Analyses, November 2000). The key elements in the matrix are whether a state is extroverted or introverted in its orientation toward the external world; sensing or intuitive in what kinds of information it pays attention to and considers credible; and thinking or feeling in how it analyzes that information, defines its interests, and decides how to act. China and the United States are exact opposites in this typography: China is introverted, sensing, and thinking, while the United States is extroverted, intuitive, and feeling.

[83] Alastair Iain Johnston, *Cultural Realism: Strategic Culture and Grand Strategy in Chinese History* (Princeton, NJ: Princeton University Press, 1995), 249.

[84] Thomas G. Mahnken, *Secrecy & Strategem: Understanding Chinese Strategic Culture* (Double Bay, Australia: Lowry Institute for International Policy, 2011), 21.

[85] There are a number of studies on the emerging Asian security environment, and how China is viewed in that region. Ones consulted in preparing this paper include: Christopher P. Twomey, "Asia's Complex Strategic Environment: Nuclear Multipolarity and Other Dangers," *Asia Policy* 11 (January 2011), 51–78; Muthiah Alagappa, "Asia's Security Environment: From Subordinate to Region Dominant System," in *The Long Shadow: Nuclear Weapons and Security in 21st Century Asia*, ed. Muthiah Alagappa (Stanford, CA: Stanford University Press, 2008), 37–77; Jonathan Holslag, *Trapped Giant: China's Military Rise* (London, UK: The International Institute for Strategic Studies, November 2010); and Jonathan D. Pollack, "The Transformation of the Asian

countries closer to the United States, especially when China acts provocatively and assertively, as it did for much of 2011.

David Shambaugh, a long-time student of Chinese affairs, points out that "China remains a deeply conflicted rising power with a series of competing international identities."[86] China's ultimate intentions depend on which identity prevails. How China officially would view the prospect of nuclear parity (or superiority) depends in part on security calculations and in part on who dominates the senior and intermediate echelons of the CCP. With respect to arms control, for instance, some leaders would find it much harder to overcome suspicions than others.

Security Order: Assessing China's Impact," in *Power Shift: China and Asia's New Dynamics*, ed. David Shambaugh (Berkeley, CA: University of California Press, 2005), 329–346. For an interesting methodology for assessing Chinese transparency from a comparative point of view, see Michael Kiselycznyk and Phillip C. Saunders, *Assessing Chinese Military Transparency*, China Strategic Perspectives 1 (Washington, DC: National Defense University Institute for National Security Studies, June 2010).

[86] David Shambaugh identifies a spectrum of contemporary Chinese identities that range from the 'nativist' tendency (populist, xenophobic, nationalist, Marxist), that distrusts the outside work and seeks total national autonomy, to the 'globalist' tendency (which would have China shoulder responsibilities commensurate with its size, power, and influence). In between these two extremes are several intermediate views, which he calls "realism with Chinese characteristics," "the major power school," "Asia First," "the global first school," and "selective multilateralism." These are explained in his article, "Coping with a conflicted China," *The Washington Quarterly* (Winter 2011), 7–27.

5. The Path Ahead

This paper has addressed a topic which has not been dealt with seriously heretofore, but which has important stability implications for the emerging world.

A. The Near Term

The need to understand the dynamics of possible nuclear parity with China is not a pressing matter for American nuclear policymaking. It falls in the category of what senior State Department officials call "doing our homework" for future arms control negotiations, and even there is has a low standing relative to other more urgent near term issues. As discussed earlier, China is unlikely to attempt a sprint to parity, and especially unlikely to do so (short of some external shock) during the current leadership transition period in China, which is to expected to extend through March 2013. As for U.S.-Russian nuclear negotiations, movement toward a new round of START talks—presumably a prerequisite to any future multilateral negotiations—also has bogged down. Presidential elections will be held in Russia early in 2012, and Putin's emergence as the leading candidate has cast a new chill over the future of U.S.-Russian relations.[87] The United States also has entered a presidential election year. These converging political cycles lower the prospect for meaningful bilateral negotiations in the near term on such difficult issues as the relation of missile defense to further nuclear reductions, controls on Russian non-strategic forces, and direct control of nuclear stockpiles. There thus is time to do the analysis in Washington to understand the dynamics of possible nuclear parity with China.

As for official and unofficial discussions with the Chinese, there also is not much prospect for serious discussion of first-order nuclear issues in the near term. As the United States disengages from its decade-long wars in Iraq and Afghanistan in the winter of 2011/2012 and begins to execute what is being called a *strategic pivot* toward Asia, Washington is strengthening alliance and partnership arrangements in the Asia-Pacific region, continuing phased deployment of missile defenses, developing new war fighting concepts and capabilities to counter anti-access/area-denial strategies, and generally giving higher priority to the Asia-Pacific region in its defense planning. This adds to the atmosphere of suspicion and will reinforce Chinese incentives to keep their nuclear capabilities veiled.

[87] See Charles Clover, "Spectre of Putin's return sours ties with US," *Financial Times* (January 3, 2011), 2. Clover cites a statement by Aleksei Pushkov, recently named chairman of the foreign affairs committee in the state Duma, saying that the "reset" in U.S.-Russian relations had been "cancelled."

What all this suggests is that while American-Chinese strategic stability talks may continue, as will American-Chinese Track II discussions on nuclear matters, and P-5 discussions on nuclear transparency, one should not expect more than modest results from these talks in the near term. Attempting to seriously discuss what nuclear parity might mean in any of these bilateral Sino-American channels is likely to be unproductive.

B. A Longer-term View

Over the longer term, understanding the dynamics of nuclear parity is important for American policymakers not only for arms control purposes but to inform American policy planning for the stability of the overall relationship with China. China has experienced over thirty years of economic growth at a rate of over 9 percent, which is unprecedented for a major economy in recorded history. This growth, coupled with China's size, geography, and history, raise troubling questions about how China will use its power and are the subject of an expanding "rise of China" literature. Chinese authorities are conscious of the anxiety that their rise engenders, and try to manage it. In 2006–2007, for instance, Chinese television aired a twelve-part public education series called "The Rise of the Great Nations," which examined the impact of nine powers on the international system over the past several centuries. The message of the series was that a nation's greatness lie in its economy power and that militarism, empire, and aggression lead to decline and failure. Leading American commentators familiar with the series characterized it as thoughtful and intelligent.[88] Whether it reflects likely outcomes, however, or reflects future Chinese policy remains to be seen.

One possible outcome of China's rise, captured in the full title of Martin Jacques' book—*When China Rules the World: The End of the Western World and the Birth of a New Global Order*—posits the thesis of a world where China replaces the United States as the dominant power and reshapes (if not rewrites) the rules of international politics.[89] Studies of alternative futures, such as the National Intelligence Council's *Global Trends 2025: A Transformed World,* look at a variety of scenarios that explore possible impacts of the rise of China in the context of other international trends. [90] Senior statesmen search for ways to describe the new relationship between the leading established power (the United States) and the rising power (China); Henry Kissinger settles on "co-evolution."[91] The Obama administration calls China a "21st century center of influence," and explains:

> We will continue to pursue a positive, constructive, and comprehensive relationship with China. We welcome a China that takes on a responsible

[88] Zakaria, *The Post-American World,* 120.

[89] Martin Jacques, *When China Rules the World* (New York, NY: The Penguin Press, 2009).

[90] National Intelligence Council, *Global Trends 2025: A Transformed World* (Washington, DC, November 2008). The latest version of *Global Trends* currently is under development.

[91] Kissinger, *On China,* 526.

> leadership role in working with the United States and the international community to advance priorities like economic recovery, confronting climate change, and nonproliferation. We will monitor China's military modernization program and prepare accordingly to ensure that U.S. interests and allies, regionally and globally, are not negatively affected. More broadly, we will encourage China to make choices that contribute to peace, security, and prosperity as its influence rises.[92]

This analysis does not try to forecast the future. China may continue to prosper and rise or it may collapse due to internal problems. China's rise may be peaceful, or it may violently disrupt the international order. China's leaders may be pragmatists or they may be xenophobic nationalists. China may evolve toward a democracy, or may institutionalize increasingly adaptive modes of one-party authoritarian rule. Any of these futures are possible.

As the United States seeks to encourage Chinese choices for outcomes compatible with the American view of stable regional and international order, American policymakers should have an understanding of what the future U.S.-Chinese nuclear relationship will entail. What is the appropriate U.S.-Chinese nuclear relationship over the long term, and how can the United States best shape evolution of that relationship? The analysis needed to answer that first-order question requires answers to more detailed questions like the following.

- How does one answer Henry Kissinger's oft-quoted question in twenty-first century terms, and especially for China? What is strategic superiority? What is the significance of strategic superiority, politically, militarily, operationally? What do you do with it relative to China today? Can you give it up without compromising American security or weakening the credibility of American extended deterrent guarantees?
- Is numerical parity the right way to define nuclear parity? What other metrics and frameworks are available?
- How do you achieve transparency with China at least to the levels achieved with Russia? What is ground-truth about China's nuclear doctrine? About its nuclear forces and the size of its nuclear arsenal and stockpile of fissile materials? What is in the tunnels?
- Does China have a *theory of victory* for use of military force and, if so, what is it and how do nuclear weapons enter into that theory?[93]
- What role should nuclear weapons play in American defense policy as relations with China evolve?

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[92] *National Security Strategy* (May 2010), 43.

[93] *Theory of victory* is used in the sense specified by William C. Marshall of the Fletcher School at Tufts University in his book, *Victory in War: Foundations of Modern Strategy*, revised and expanded edition (Cambridge, UK: Cambridge University Press, 2011).

- Could the United States engage with China in a nuclear arms race if China began one? Should the United States?

These questions should be dealt with seriously, hopefully in analysis that is out of the spotlight of heated public debate. When the Obama Administration released the results of its nuclear posture review in April 2010, its language regarding America's nuclear relationship with China was selected very carefully so as to leave open the door for a meaningful "dialogue on strategic stability" with China "to provide a venue and mechanism for each side to communicate its views about the other's strategies, policies, and programs on nuclear weapons and other strategic capabilities," in order to "enhance confidence, improve transparency, and reduce mistrust."[94] Less than two years later, President Obama went to the Pentagon to unveil the outline of a new defense strategy as the United States disengages from a decade of war and prepares *"of necessity [to] rebalance toward the Asia-Pacific region."*[95] Achievement of American objectives in the Asia-Pacific region depend heavily on how the U.S.-Chinese military balance evolves. That includes the nuclear dimension of the balance. It needs more analysis.

[94] *Nuclear Posture Review Report* (Washington, DC: Department of Defense, April 2010), x–xi.

[95] *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* (Washington, DC: Department of Defense, January 2012), 2.

Appendix A
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Appendix B
Abbreviations

ABMT	Anti-Ballistic Missile Treaty
ALB	Air Land Battle
BNSP	Basic National Security Strategy
CCP	Chinese Communist Party
CMC	Central Military Commission (China)
CRS	Congressional Research Service
CTBT	Comprehensive Nuclear-Test-Ban Treaty
EIU	Economist Intelligence Unit
GLCM	Ground-Launched Cruise Missile
HEU	Highly Enriched Uranium
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
IDA	Institute for Defense Analyses
INF	Intermediate-Range Nuclear Forces
IRBM	Intermediate-range Ballistic Missile
KMT	Kuomintang (Nationalist Party in China)
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
MIRV	Multiple Independently Targeted Reentry Vehicle
MTCR	Missile Technology Control Regime
NATO	North Atlantic Treaty Organization
NIE	National Intelligence Estimate
NPR	Nuclear Posture Review
NPT	Non-Proliferation Treaty

NSS	National Security Strategy
PLA	People’s Liberation Army
PRC	People’s Republic of China
Pu	Plutonium
QDR	Quadrennial Defense Review
SALT	Strategic Arms Limitation Talks
SLBM	Sea-Launched Ballistic Missile
START	Strategic Arms Reduction Treaty
UN	United Nations
USSTRATCOM	U.S. Strategic Command

REPORT DOCUMENTATION PAGE		Form Approved OMB No. 0704-0188

1. REPORT DATE (DD-MM-YY)	2. REPORT TYPE	3. DATES COVERED (From – To)
January 2012	Final	

4. TITLE AND SUBTITLE	5a. CONTRACT NO.
Nuclear Parity with China?	DASW01-04-C-0003
	5b. GRANT NO.
	5c. PROGRAM ELEMENT NO(S).

6. AUTHOR(S)	5d. PROJECT NO.
Michael O. Wheeler	
	5e. TASK NO. DC-6-3143
	5f. WORK UNIT NO.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	8. PERFORMING ORGANIZATION REPORT NO.
Institute for Defense Analyses 4850 Mark Center Drive Alexandria, VA 22311-1882	IDA Paper P-4801

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR'S / MONITOR'S ACRONYM(S)
Defense Threat Reduction Agency John J. Kingman Road, MS6201 Fort Belvoir, VA 22060-6201	DTRA
	11. SPONSOR'S / MONITOR'S REPORT NO(S).

12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

For decades, the United States has had massive and uncontested nuclear superiority over China. That may slowly be changing. Although it is unlikely that China will seek to sprint to parity in the near term, the United States progressively is reducing its nuclear forces while China slowly is expanding its own. The price of engaging China in multilateral nuclear arms control in the future may be formal acknowledgment that China has a right to parity. Even if multilateral arms control does not transpire, China may change its policy. This paper places the issue of nuclear parity in context by briefly examining what it has meant to the United States in the past relative to Russia and what it may mean, in a different context, to a distinctly different Chinese challenge.

15. SUBJECT TERMS

nuclear parity, China, United States, Russia, nuclear arms control, nuclear balance

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NO. OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (Include Area Code)
U	U	U	UU	48	