CHAPTER 1

The Minimum Means of Reprisal

My attitude was clear throughout. For more than a century, imperialists had frequently bullied, humiliated and oppressed China. To put an end to this situation, we had to develop sophisticated weapons such as the guided missile and the atomic bomb, so that we would have the minimum means of reprisal if attacked by the imperialist with nuclear weapons.

—Marshal Nie Rongzhen, Memoirs

Among the five states authorized under the Nuclear Nonproliferation Treaty to possess nuclear weapons, China has the most restrained pattern of deployment: the People’s Republic of China (PRC) deploys just eighty or so operational warheads exclusively for use with land-based ballistic missiles. China’s declared nuclear doctrine rejects the initiation of nuclear war under any circumstances. The PRC does not maintain tactical nuclear forces of any kind, and its strategic forces are kept off alert, with warheads in storage.

The stability of this posture over time and through changes in threat perception suggests that restraint is the result of choice and not expediency. China has long had the economic and technical capacity to build larger forces. Chinese deployment patterns have clearly been subjected to review, alteration, and modification. The apparent implication of the sustained pattern of Chinese restraint is a distinctly different strategic assessment from that developed by Russia and the United States to justify and direct their larger and more actively deployed forces.

Overall, the agreement appears to have chosen nuclear deployment and arms control patterns that reflect the belief that deterrence is relatively

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insensitive to changes in the size, configuration, and readiness of nuclear forces. As a result, Chinese policy has tended to sacrifice offensive capability in exchange for greater political control and lower economic costs.

This choice, evident in Chinese declaratory policy and consistent with China’s deployment history, contradicts the typical strategic assessments of outside observers, especially those that have been most prominently advanced within the United States. These observers have often projected larger forces, the imminent deployment of tactical nuclear weapons (or other forces that would be more actively deployed), and the adoption of operational patterns that reflect commonly held U.S. deterrent conceptions.

The evident problem with Beijing’s choice is that China’s nuclear forces will be subjected to increasing pressure by the evolving capability and declaratory doctrine of U.S. strategic forces. As articulated in the 2001 Nuclear Posture Review, the United States, in an effort to maximize the influence of its strategic forces, seeks credible options to undermine Chinese leaders’ confidence that a small strategic force provides adequate deterrence against a U.S. attack.

If China were subjected to a level of preemptive threat that Beijing judged intolerable, Chinese leaders would likely reject, at least initially, the systematic emulation of U.S. deployment patterns. Although the inner deliberations of China’s leadership are only barely perceptible, patterns in Chinese defense investments, strategic force deployments, and arms control behavior suggest China would consider asymmetric responses that targeted the vulnerable command, control, and intelligence (C2I) systems essential to preventive operations.

There is no evidence yet of a fundamental revision in the traditional deployment pattern of Chinese strategic forces. Instead, the Chinese response has been limited to diplomatic initiatives within the Conference on Disarmament (CD). China is less likely to fundamentally revise its nuclear weapons and arms control policies in response to changes in the objective balance of capabilities—prompted for example by the deployment of a missile defense system to intercept Chinese ballistic missiles—than as a result of Chinese internal politics and bureaucratic interests.

Yet, the 2001 Nuclear Posture Review presents the United States with an opportunity cost. If Chinese leaders begin to lose confidence in their deterrent, there are many things Washington might do, in the interest of stability, to reassure China’s leadership that its nuclear forces are suffi-
cient for deterrence. The United States will not, of course, take these actions if a collapse in confidence among China’s leaders is a policy goal.

In this book, I examine Chinese policy statements and diplomatic actions for two purposes:

- To test the plausibility of China’s apparent strategic logic against the conflicting expectations of prevailing U.S. assessments
- To provide guidance for shaping both the specific U.S. security relationship with China and global security arrangements in general.

HOW MUCH IS ‘ENOUGH’ IN THEORY?

This difference between Chinese deployments and those of the other declared nuclear powers centers on the fundamental questions of nuclear sufficiency: How much is enough? What are the requirements for deterrence? How difficult is it to achieve and maintain deterrence? How important are technical details such as the size, configuration, and readiness of nuclear forces to the goal of maintaining deterrence?

“Enough” describes not just the number of warheads and delivery vehicles, but also their sophistication and operational readiness to conduct nuclear operations. As a nuclear force becomes increasingly capable of conducting operations, it acquires the characteristics of a highly complex organization. In general, investments in operational readiness are

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2 The capability to conduct active operations is not merely a function of the number of delivery vehicles and warheads, but also other forms of capability. For example, a National Academy of Sciences report notes, “In assessing the risks associated with nuclear arsenals, the operational and technical readiness of nuclear weapons for use is at least as important as the number of delivery vehicles or warheads.” National Academy of Sciences, Committee on International Security and Arms Control, *The Future of U.S. Nuclear Weapons Policy* (Washington, DC: National Academy Press, 1997), p. 62.

3 Two such characteristics are “interactive complexity” and “tight coupling.” “Interactive complexity,” Scott Sagan writes, “is a measure, not of a system’s overall size or the number of subunits that exist in it, but rather of the way in which parts are connected and interact.” Tightly coupled systems have two characteristics: “First, tightly coupled systems have more time dependent processes: planned and unplanned interactions occur quickly … Second, in tightly coupled systems, the sequences and coordinated activities needed to produce the product are invariant: there is only one way to make the item and each step must be taken in sequence.” Some nuclear weapons organizations, Sagan argues, are characterized by “interactive complexity” and “tight coupling” and, therefore, are prone to accident. Scott D. Sagan, *The Limits of*
undertaken because policymakers presume they will enhance the credibility of deterrence. Nuclear missions can range from the relatively simple mission of deterring a nuclear attack on one’s own territory to more difficult operations such as protecting allies from attack (extended deterrence), providing superior capabilities at every conceivable level of conflict (escalation dominance), and war-fighting and termination. Even though bureaucratic or organizational imperatives pressing for increasingly capable forces may be decisive, these imperatives—as a policy matter—will usually be expressed in terms of enhancing deterrence.

Investing in the deterrent effect, beyond a minimum retaliatory capability, is subject to declining marginal returns. “Our twenty thousandth bomb,” Robert Oppenheimer predicted, “will not in any deep strategic sense offset their two-thousandth.” Policymakers, as McGeorge Bundy would later note, are unlikely to “double-check the detailed consequences of an exchange, or to review how such a war might be fought.” Leaders are likely to have “a healthy disrespect for such exercises,” recognizing that the avoidance of a nuclear war is imperative. Such arguments are typically made by those who emphasize the importance of custodial competence over readiness to conduct operations, but proponents of extensive preparations for the full spectrum of deterrent operations (including Herman Kahn and Keith Payne) have also observed the “healthy disrespect” for such calculations. During the Cold War, Payne and Colin Gray argued that the extreme caution introduced by nuclear weapons—the so-called Armageddon Syndrome—was a purely American phenomenon that undermined rational defense planning and was subject to technical remedies such as the deployment of confidence-inspiring ballistic missile defenses.

6 One crude method of measuring the operational capability of a nuclear posture, beyond counting warheads or throw weight, is to estimate the number of casualties that a given posture might produce. U.S. nuclear war-fighting proponents, for reasons not entirely clear, seem to have fixated on the figure of twenty million U.S. persons killed to define “victory” in a nuclear conflict, i.e., they believed that U.S. deterrent threats would only be credible if American dead could be kept to that level or below. The corollary to this statement is that
In the process of increasing its ability to conduct a wide variety of nuclear missions, the state incurs certain costs, from the economic burden of large, alert forces to the dangers of an accidental or inadvertent war. In his careful study of nuclear accidents, false alarms, and other safety related concerns, Scott Sagan found compelling empirical evidence that “nuclear weapons may well have made deliberate war less likely, but, the complex and tightly coupled nuclear arsenal [the United States has] constructed has simultaneously made accidental war more likely.”7 At some theoretical point, the risk of accidental war—or the costs associated with more active deployments—will exceed the security benefit from the reduction in the danger of deliberate war. That is the point at which we have “enough”—more would be worse.

Figure 1-1: How Much Is Enough?

Moscow would have received little deterrent benefit from the ability to inflict substantially more than 20 million casualties. Put another way, proponents of nuclear war-fighting believed that Soviet postures capable of inflicting 50 or 100 million casualties would have been equally successful at deterring the United States.

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Figure 1-1 expresses this trade-off. In the graph on the left, the solid line represents the security benefit from increasingly capable forces, subject to diminishing returns. The dotted line represents various costs such as the inadvertent risk of war, economic burdens, and possible costs to the state’s image. The net benefit to security comprises the sum of these two curves, shown by the graph on the right. Once the security benefit levels off, even small costs bend the curve downward. The apex of the curve, or “enough,” represents the optimum capability to conduct active operations.

Of course, we do not know the shape of these curves or the current position of any nuclear weapon state. We can, however, say something about the rationales that determine whether an analyst will believe a country should alter the mix of factors that determine its overall risk.

Policy debates about nuclear weapons typically turn on the slope of the curve representing danger from deliberate attack, with judgments about costs playing a subordinate role. The idea of “enough,” expressed as the need to meet deterrent requirements at the minimum level of capability, is captured by a 1983 NATO Nuclear Planning Group decision declaring that the “policy of the Alliance is to preserve the peace through the maintenance of forces at the lowest level capable of deterring the Warsaw Pact threat.”

Those who favor using nuclear forces for a wide variety of missions typically express concern that deterrence will be very difficult to maintain and will depend very much on the details of the technical balance. Influential early expressions of this argument emphasized uncertainty about future technological developments that might open the theoretical possibility of dramatic changes in the deterrent balance—possibilities that created a “delicate balance of terror.” More recent expressions of the idea, couched in

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8 If one believes that deterrence is very difficult, it is not surprising that an analyst would believe the risk of accident is comparatively low. Nina Tannenwald notes this kind of cognitive consistency in nuclear war planning for North Korea, where opinions about the objective utility of using nuclear weapons in North Korea (expressed as a statement about the presence of suitable targets for nuclear weapons in North Korea and the PRC) was usually consistent with an analyst’s moral or political judgments. Nina Tannenwald, “The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use,” *International Organization*, vol. 53, no. 3 (Summer 1999), pp. 446–448.

9 “The Montebello Decision on Reductions of Nuclear Forces Announced by the Nuclear Planning Group in Ministerial Session,” Montebello, Canada, October 27, 1983.

the language of capabilities-based planning, focus on uncertainty regarding future threats rather than technological change. In both cases, deterrence is elusive and presumably requires increasingly capable forces.

Skeptics of preparing for multiple kinds of nuclear operations, in contrast, have emphasized the destructiveness of nuclear weapons to suggest that the risks of even modest retaliation overwhelm any potential gains from the use of nuclear weapons in any plausible scenario. Deterrence is achieved with the very first deployments of nuclear weapons, with sharply declining marginal benefits from adding complexity to the arsenal after initial deployments. Reflecting on the Cuban Missile Crisis, for example, six of President John F. Kennedy’s advisors wrote:

American nuclear superiority was not in our view a critical factor [during the Cuban Missile Crisis], for the fundamental and controlling reason that nuclear war, already in 1962, would have been an unexampled catastrophe for both sides; the balance of terror so eloquently described by Winston Churchill seven years earlier was in full operation. No one of us ever reviewed the nuclear balance for comfort in those hard weeks.

As Bundy would later explain, the critical factor compelling both sides to a political solution was “a parity of mortal danger that is not sensitive to this or that specific difference in numbers of warheads or megatons.” Looking back at the Cuban Missile Crisis, former Secretary of Defense Robert McNamara concluded that “In 1962 it would have made no difference in our behavior whether the ratio had been seventeen to one, five to one, or two to one in our favor—or even two to one against us.”

The difference between these two schools of thought on deterrence can be characterized as a statement about the sensitivity of the deterrent effect to changes in the size, configuration, and readiness of nuclear forces. If increasing the capability of strategic forces has a large effect on reducing the danger of deliberate attack, then a state will prefer larger, more diverse forces kept on higher rates of alert and will eschew arms

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control (unless political costs compel it to do otherwise). Conversely, if larger or more capable forces add more risk of inadvertent forms of nuclear danger, such as an accident, then some form of restraint, formal or otherwise, will be preferable.

Fundamentally different assessments of the relative nuclear danger from deliberate and inadvertent routes to war produce fundamentally different views about nuclear weapons and arms control policies. Compare two contemporary statements from the National Academy of Sciences and the Defense Science Board concerning proposals for de-alerting U.S. nuclear forces:

During the Cold War, reducing the risk of a surprise attack appeared to be more important than the risks generated by maintaining nuclear forces in a continuous state of alert. With the end of that era, the opposite view is now more credible [to the National Academy of Sciences]. This has important implications for U.S. nuclear policy and calls for dramatically reduced alert levels.15

The [Defense Science Board] Task Force found the current set of arguments for further de-alerting difficult to understand. The arguments stress potential weakness in the Russian command and control system as a source of danger of unauthorized or accidental use. The central issue must be stability. This was the central issue guiding START II goals and the principal driver of the outcome. Hence, to do violence to the stability of the force over a perceived danger not addressed by de-alerting US systems seems unwise in the extreme.16

The tension between secure deterrence and accidental war prevention has been noted by several analysts. The trade-off—whether we describe it as a “usability” paradox in Scott Sagan’s phrase or the “always/never dilemma” as Peter Stein and Peter Feaver did—is a fundamental tension in nuclear weapons policy: the ability to use nuclear weapons whenever necessary works at cross purposes with the desire never to use them accidentally.17

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 Choices about balancing these risks will depend, in part, on beliefs about how other states view the importance of relative force levels. Extensive preparations for deterrent operations have been justified, in the United States, on the grounds that the Soviet Union was said to be undertaking similar preparations. These preparations allegedly revealed a high Soviet tolerance for nuclear danger and keen sensitivity to the balance of forces. In a crisis, U.S. inattention to the technical balance might have created a situation that could have led the Soviets to attempt a limited strike, either to signal resolve or to create a more favorable balance of forces. The latter case, the so-called window of vulnerability scenario, in particular, depended on Soviet perceptions of nuclear superiority. Where American participants in the Cuban Missile Crisis emphasized the irrelevance of nuclear superiority, Paul Nitze suggested the Soviets drew a different lesson:

Harking back to the Soviet penchant for actually visualizing what would happen in the event of nuclear war, it seems highly likely that the Soviet leaders, in those hectic October days in 1962, did something that U.S. leaders, as I know from my participation, did only in more general terms—that is, ask their military just how a nuclear exchange would come out. They must have been told that the United States would be able to achieve what they construed as victory, that the U.S. nuclear posture was such as to be able to destroy a major portion of Soviet striking power and still itself survive in a greatly superior condition for further strikes if needed. And they must have concluded that such a capability provided a unique and vital tool for pressure in a confrontation situation. It was a reading markedly different from the American internal one, which laid much less stress on American nuclear superiority.…

Archival evidence suggests that the Soviet leaders drew much more circumspect conclusions than Nitze imagines, but the logic of his argument is clear: “Ultimately the quality of that deterrence depends importantly on the character and strength of the US nuclear posture versus that

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of the Soviet Union.” The idea that one’s own beliefs about the sensitivity of deterrence might be dangerous could be taken to an extreme—some proponents suggested suppressing research into the climactic effects of a nuclear exchange because of the danger that might result from an asymmetry in beliefs about the environmental consequences of nuclear war. If other countries, however, are easily deterred, then a very different set of policies is appropriate. One’s own preparations will be wasteful and may incur an unnecessary risk of inadvertent nuclear danger. Moreover, such preparations might lead other states to doubt the credibility of their deterrent with respect to one’s own forces.

Alleged Soviet preparations to fight and win a nuclear war were sometimes invoked to justify similar preparations on the part of the United States. For example, Nitze argued that even if Soviet leaders abhorred the prospect of nuclear war, they would “consider themselves duty bound by Soviet doctrine to exploit fully that strategic advantage [conferred by preparations for fighting and winning a nuclear war] through political or limited military means.” Of course, U.S. preparations would provide the same dilemma for the Soviet Union or other parties.

FACTS AND IMPLICATIONS OF THE CHINESE CASE

The attitudes of Chinese policymakers toward nuclear weapons and arms control are not directly available for examination, nor would one expect to find a monolithic set of beliefs among a variety of political, scientific, and military elites. However, some conclusions about the inherent biases within the Chinese planning system may be inferred from the historic and current deployment of China’s strategic forces, as well as Chinese behavior in arms control negotiations.

Figure 1-2 suggests that relative to other states, Chinese deployments are consistent with the belief that the security benefit from nuclear weapons increases much more quickly after a state acquires a small nuclear capability, and that additional capability confers little benefit.

21 Nitze, p. 223.
This view is roughly comparable to the skepticism expressed by U.S. participants in the Cuban Missile Crisis regarding nuclear superiority. In fact, a very similar formulation to the one offered by President Kennedy’s six advisors is found in a text used to train Chinese Communist Party cadres at the Chinese National Defense University:

Though the United States was superior to the Soviet Union in nuclear weapons at that time, if a nuclear war broke out, no country could avoid the destiny of destruction. There is sharp conflict between the super destructive power of the means of war and the thinking of the war launcher who wants to get his interest on one hand, but fears destruction on the other.22

**Figure 1-2: Comparative View of the Security Benefit of Nuclear Weapons**

Chinese force deployments and arms control behavior both suggest that the Chinese leadership has decisively chosen a small nuclear force based on the principle that a more capable arsenal would not substantially enhance deterrence. In other words, “enough” is, in the phrase of Marshal Nie Rongzhen, “the minimum means of reprisal.”23 In a 2000 interview with a newspaper reporter, the PRC’s then-Ambassador for Disarmament Affairs Sha Zukang articulated confidence in the PRC’s nuclear deterrent in terms that Bundy and McNamara would immediately recog-

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nize. Sha argued that even a very small, unsophisticated force maintained a measure of deterrence against larger, more sophisticated nuclear forces:

I must emphasize that “strategic balance” and “strategic parity” are two different concepts. [A] nuclear weapon is [a] kind of special weapon. Due to its gigantic destructive force, to achieve strategic balance among nuclear countries [China] does not need to possess the same amount of nuclear weapons. As far as the medium and small nuclear countries are concerned, after being hit by the first nuclear strike, as long as they still possess the capability of launching the second nuclear strike to inflict unbearable losses to the attacking side, they can still reach a certain kind of strategic balance with major nuclear countries which possess quantitative and qualitative superiority of nuclear weapons. [sic]24

Much as Bundy and McNamara, facing the prospect of nuclear war over Cuba, concluded that even small, unsophisticated nuclear arsenals achieved a large measure of deterrence, recent historical scholarship suggests Chinese leaders drew similar conclusions after facing nuclear threats during the Korean War. Historical scholarship is, of course, only suggestive. In the succeeding chapters, I will attempt to document the effect of this view of deterrence on various decisions related to Chinese force deployments and arms control policies. Here I note only two anecdotes.

In his study of the formation of Chinese attitudes about nuclear weapons during the Korean War, Mark Ryan concludes the first generation of Chinese Communist leaders formed highly accurate assessments about the physical limitations of nuclear weapons and the political constraints on the U.S. use of nuclear weapons.25 Despite caricatures of Chinese attitudes toward nuclear weapons during the Korean War as ignorant or facile, Ryan finds Chinese assessments from the period are consistent with those found in declassified U.S. documents from the same time. Ryan notes that one particular Western text translated for the

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24 Interview with Sha Zukang, director-general of the Department of Arms Control and Disarmament of Ministry of Foreign Affairs, in Tseng Shu-wan, “U.S. Nuclear Proliferation Threatens Global Security—Sha Zukang on Ways China Should Handle It, Stressing Needs to Ensure the Effectiveness of Retaliatory Capacity,” Wen Wei Po (June 11, 2000), FBIS-CPP-2000-0711-000024.

Chinese leadership—P.M.S. Blackett’s *Military and Political Consequences of Atomic Energy*—was particularly influential in the formation of Chinese attitudes toward U.S. nuclear threats. Interestingly, Blackett’s “optimism on the stability of the balance of terror” that influenced the Chinese is criticized by Albert Wohlstetter in *The Delicate Balance of Terror* on the grounds that a technological innovation—the introduction of ballistic missiles—threatened to undermine the stability of the deterrent balance. Whether Blackett or Wohlstetter better assessed the impact of the ballistic missiles and other technical developments of the period in question is less important than the direct way in which Chinese attitudes map to the model in the preceding section and provide a candidate rationale for arms limitations.

Ryan concludes that by the end of the Korean War, Chinese leaders had developed a “genuine self-confidence derived from the successful endurance of risk and from the experience gained in implementing defensive measures against nuclear attack during the war.” This confidence in the robust character of the deterrent balance continues to determine Chinese force deployments through the current period; the next chapter suggests that this confidence remains in evidence based on U.S. intelligence assessments.

The integrated realism suggested by Ryan is evident in a remarkable assessment produced by four senior Chinese military officials (including Marshal Nie Rongzhen) during the 1969 fighting between China and the Soviet Union over the Zhenbao (Damansky) Islands. Although Mao had told a visiting dignitary that China “in a sense, is still a non-nuclear power,” Nie and his colleagues expressed confidence in the deterrent quality of China’s small force:

> Will the U.S. imperialists and the Soviet revisionists launch a surprise nuclear attack on us? We must be fully prepared for this. However, it is not an easy matter to use a nuclear weapon. When a country uses nuclear weapons to threaten another country, it places itself under the threat of [the] other country’s

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27 “It is now widely known that intercontinental ballistic missiles will have hydrogen warheads, and this fact, a secret at the time, invalidates Mr. Blackett’s calculations and, I might say, much of his optimism on the stability of the balance of terror.” Wohlstetter, *The Delicate Balance of Terror*, np.

28 Ryan, p. 10.
nuclear weapons, and will thus inevitably face the strong opposition of its own people. Even the use of nuclear weapons cannot conquer an unbending people.\textsuperscript{29}

This statement is a remarkable expression of confidence in the deterrent effect of an extremely small arsenal—China had tested its first warhead deliverable by a missile less than two years before Mao’s statement and could not have produced more than a handful of warheads and gravity bombs.

Given Chinese confidence in the insensitivity of deterrence, one would expect the Chinese leadership to be sensitive to costs associated with larger, more capable forces. Chinese leaders probably also considered the maximization of political control over national nuclear forces to be a goal equal in importance to the minimization of economic burdens. This is evident in the complex relationship between the Chinese Communist Party and the People’s Liberation Army—captured in the oft-quoted Maoist aphorism: “Our principle is that the Party commands the gun, and the gun must never be allowed to command the Party.”\textsuperscript{30} To this day, Chinese leaders emphasize the need to maintain control over nuclear weapons.\textsuperscript{31}


\textsuperscript{31} During a March 2002 inspection of China’s strategic rocket forces—known as the Second Artillery (\textit{di er pao})—China’s paramount leader, Jiang Zemin, reportedly said the “special nature” of the Second Artillery’s mission “requires that the Second Artillery unit politically must be absolutely reliable” and added that the political reliability of the Second Artillery unit ought to exceed that of other units. See “Forging the Republic’s Shield of Peace,” People’s Daily, March 21, 2002, FBIS-CPP-2002-0321-000103. Zhang Wannian, vice chairman of
There is no evidence that China has ever placed its strategic forces on alert. The 1969 border clashes with the Soviet Union are widely regarded as the most serious foreign policy crisis during China’s period as a nuclear power.32 Although Soviet aircraft practiced bombing runs in preparation for a strike on Chinese nuclear facilities, the Chinese leadership did not order the Second Artillery to prepare for nuclear use. During a talk to senior Chinese leaders, Mao emphasized defensive preparations, stating that China’s “nuclear bases should be prepared, be prepared for the enemy’s air bombardment.”33 Mao made no corresponding comment about preparations for the use of nuclear weapons in retaliation.34 No preparations to use Chinese nuclear weapons were detected by U.S. intelligence, which noted only defensive preparations consistent with the “war preparations” campaign that was underway.35

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the Central Military Commission, suggested that the Second Artillery, relative to other military units, must “set higher standards, impose stricter requirements on itself and do a better job in this connection and strive to be an exemplary model in assigning importance to politics.” See “Chinese Military Leader Outlines Goals for Army Missile Unit,” Xinhua News Agency, June 7, 2002.


34 The Chinese Communist Party (CCP) Central Committee’s order for a nationwide mobilization in August 1969 also makes no mention of nuclear weapons. The order emphasizes ending the factional struggle that characterized the Cultural Revolution in order to unite against a common external threat. Presumably, the active deployment of nuclear weapons during factional infighting and tenuous political control would have given the Chinese leadership pause. The CCP Central Committee, “Order for General Mobilization in Border Provinces and Regions,” August 28, 1969, in Chen and Wilson, pp. 168–169.

Chinese emphasis on maintaining control, even at the expense of readiness, is in stark contrast to U.S. operational practices during much of the Cold War. For example, a U.S. team inspecting American nuclear weapons based overseas once discovered an extreme instance of the kind of bias toward readiness at the expense of operational control that marked early assessments of the relative risks of deliberate and inadvertent routes to nuclear war. The inspection team reportedly found a German quick-reaction alert airplane (QRA), loaded with fully operational nuclear weapons, sitting on a runway with a German pilot in the cockpit. “The only evidence of US control was a lonely 18-year-old sentry armed with a carbine and standing on the tarmac.” He was operating with conflicting advice about whether to shoot the pilot or the bomb in the event of an unauthorized take-off.36 This admittedly extreme example has no analogue in the Chinese case.

The PRC’s strategic forces lack capability even in comparison with the other “second tier” nuclear powers. Chinese officials themselves claim that “the nuclear policy of China is to a large extent different from that of the [United Kingdom] and France in terms of what nuclear weapons deter against, the amount of nuclear weapons required for a retaliatory strike that is sufficient to inflict unacceptable damage on the enemy, and other aspects.”37 The PRC relies on an operationally deployed force of about 80 land-based ballistic missiles, with the warheads stored separately and the missiles kept unfueled. In contrast, both Britain and France maintain fleets of nuclear ballistic missile submarines (SSBNs) that continue operational patrols, although Britain’s 1998 Strategic Defence Review announced reductions in the nuclear stockpile to 192 operationally available warheads available exclusively for use by Trident SSBNs “at several days ‘notice to fire.’”38 France continues to maintain 348 operationally deployed nuclear warheads, available for use by strategic submarines, carrier-based strike aircraft, and land-based bombers. Neither Britain nor France have indicated whether they have installed permissive action links, environmental sensing devices, or other positive control mechanisms on their nuclear weapons.
The evident problem with the rationale that underpins Chinese restraint is the evolving capability and declaratory doctrine of U.S. strategic forces. The United States has in recent years sought credible options for the preemptive use of strategic forces for what two analysts, writing during the Cold War, described as “coercive, yet politically defensive, purposes.” The condition that Sha Zukang describes as balance in his interview looks quite different to the authors of the 2001 Nuclear Posture Review. Keith Payne, for instance, noted the “obvious fact” that a U.S. intervention in a dispute over Taiwan might “risk escalation to a large-scale theater war and Chinese ICBM [intercontinental ballistic missile] threats against the U.S. homeland.” Payne explained:

Preserving the credibility of U.S. deterrence commitments in such circumstances would require Chinese leaders to believe that Washington would persevere despite their nuclear threats and possible regional nuclear use. Washington would have to deny Chinese leaders confidence that such threats could deter U.S. intervention, a hope to which they would likely cling. Consequently, U.S. deterrence policy in this case could require that the United States be able to limit its own prospective losses to a level compatible with the stakes involved.

The modernization outlined in the 2001 Nuclear Posture Review would transform fundamentally the way that the Chinese leaders view the efficacy of their own deterrent. Whereas Wohlstetter warned about a technological breakthrough that might disrupt the delicate balance of terror, the 2001 Nuclear Posture Review deliberately seeks such a breakthrough through conventional precision-strike systems to neutralize or undermine Chinese deterrent capabilities, missile defenses to reduce homeland vulnerability, and a responsive defense infrastructure to indefinitely maintain the advantage. In short, the modernization outlined in the 2001 Nuclear Posture Review...
Review is designed to enable coercion by demonstrating that the United States is no longer deterred by Chinese strategic forces. This modernization will substantially increase the apparent willingness of the United States to subject China to a disarming first strike and will presumably complicate the efforts of those seeking to sustain Chinese restraint.

There is no evidence, yet, of a fundamental revision in the traditional deployment pattern of Chinese strategic forces, or even in the underlying strategic logic. For the foreseeable future, a U.S. force with the capability outlined in the 2001 Nuclear Posture Review remains an aspiration. China will continue to preserve a modest level of capability sufficient for its minimalist conception of the role of nuclear weapons despite U.S. investments in missile defenses and in other aspects of strategic modernization. More importantly, the bureaucratic structure that sustains China’s unique view of deterrence appears to remain intact.

SCOPE AND PURPOSE

Although the inner deliberations of China’s leadership are only barely perceptible, additional evidence can be derived from patterns in Chinese defense investments, strategic force deployments, and arms control behavior. In particular, the recent history of Chinese engagement in multilateral arms control negotiations reflects the logic of restraint, which is evident both in Chinese statements and in strategic force deployments.

This book attempts a systematic examination of Chinese policy statements and diplomatic actions, examining the plausibility of alternative strategic rationales for China’s nuclear forces. In so doing, the book provides policy guidance for those interested in the U.S.-Chinese security relationship and in global security arrangements more generally.

Chapter two sketches current Chinese nuclear force deployments based on admittedly scant Chinese statements and on U.S. intelligence assessments that have appeared in open source literature. Detailed information about the status of Chinese nuclear testing program is contained in chapter four.

The book shows that the majority, if not all, of unclassified estimates of the Chinese nuclear arsenal were badly in need of revision. Most estimates derive from research done in the mid-1980s, before a flood of new information became publicly available. These estimates were necessarily based on informed speculation, but that speculation was often incorrect—particularly with regard to the first generation of solid-fueled ballistic missiles in China’s inventory. Overall, the new picture of the Chinese strategic force that emerges is one that is smaller, less diverse, and less ready to conduct actual operations than most analyses suggest. Overall, I estimate that the Chinese have around eighty operationally deployed nuclear warheads, which are stored separately from and assigned exclusively to ballistic missiles that are kept unfueled. The exclusive purpose of these weapons, along with any warheads or gravity bombs maintained in storage, is to retaliate in the event of a nuclear attack against the PRC.

Since the 1980s, two major developments have made a significant portion of U.S. intelligence community judgments available to open source analysts. First, the natural progress of declassification has released a large number of intelligence estimates from the 1960–1990 period, including a collection of seventy-one declassified National Intelligence Estimates (NIEs) related to China between 1948 and 1976. These documents reveal a tremendous amount about the development of the Chinese arsenal and its present configuration. Second, the partisan U.S. politics of the 1990s played out over a number of issues that created pressure to either declassify or provide unclassified summaries of intelligence judgments relating to alleged nuclear espionage, the need for continued nuclear testing, the ballistic missile threat to the United States, and the need for arms sales to Taiwan. In some cases, dissatisfied parties leaked entire classified documents to the public. In arguments over the ballistic missile threat and the pace of Chinese defense modernization, the intelligence community itself became a subject of debate, resulting in the disclosure of substantial information about the community’s methodology and diversity of opinions. These documents contain a wealth of information about the Chinese nuclear and ballistic missile programs. Although the decision to declassify, summarize in unclassified form, or leak was quite often partisan, the motives were no more subtle than the judgments of the intelligence community.

Though U.S. intelligence analyses are not perfect, they are the proper place to begin an analysis for three reasons. First, the U.S. intelligence
community has unparalleled access to national technical means of data collection. For example, the intelligence community uses a variety of means to monitor ballistic missile tests. Such monitoring, for example, revealed Chinese development of penetration aids and other measures to defeat ballistic missile defenses. There is no comparable unclassified source of such data, unless it is released by the government that conducted the test.

Second, secondary sources are often difficult to assess. Citing a *Jane’s* publication or the International Institute of Strategic Studies’ *Military Balance* tells very little about the provenance of the information, unless the secondary source cites an intelligence report itself. In that case, scholars should refer to the primary source directly.

Third, the intelligence community employs well-known methods that can be considered for gaps or bias. Although intelligence estimates are sometimes politicized or agenda driven, systematic bias is often evident and can be observed by comparing estimates over time. For example, the intelligence community has tended to exaggerate Chinese ballistic missile deployments, in part because Chinese industrial capacity has exceeded production. This is useful information when considering estimates of future Chinese deployments. After establishing the official estimates, scholars can, of course, debate the implications of the estimates or inquire about whether intelligence community estimates are consistent with other sources of information.

Chapter three reviews the history of Chinese nuclear deployments, with an effort to reconstruct the decision-making that has produced the visible features of China’s strategic posture. Based on this history, I conclude that the limited posture is substantially the result of deliberate choices by the Chinese leadership that reflect a belief that deterrence is relatively insensitive to changes in the size, configuration, and readiness of nuclear forces. I have attempted to use U.S. intelligence analyses to track Chinese deployments and budgetary allocations, but such information is difficult to obtain and often very speculative. Moreover, intelligence sources offer little information about the internal decision-making that determines Chinese force structure. A handful of Chinese sources exist but few are unquestionably official.

Chapter three draws on the ground-breaking work of John Wilson Lewis and his Chinese collaborators Xue Litai and Hua Di, as well as a number of Chinese documents translated into English, including *China*
Chapter four sketches a history of China’s participation in the Conference on Disarmament (CD) during the negotiations of two treaties: the Comprehensive Nuclear Test Ban Treaty (CTBT) and the Fissile Material Cut-off Treaty. The significance of the Chinese decision to negotiate and sign the CTBT has been overlooked, particularly in the deadlock that has afflicted the CD since 1996. The actual positions of the participants in the CD, particularly the United States and China, have been poorly understood and sometimes misrepresented. I have attempted to reconstruct the broad outline of a decade of negotiations from several sources, including documentary records of the CD; published accounts of the participants (including the U.S. Congressional testimony during the CTBT ratification debate); a small number of subsequently declassified documents; and a series of interviews and conversations in Washington, New York, Beijing, and Geneva with American and Chinese CD participants. The status of the Chinese nuclear testing program is an important


43 My own Chinese language skills were quite inadequate to make thorough use of this collection. I would like to thank Dr. Gregory Kulacki for generous assistance in finding and helping me use this collection of biographies.
piece of the story of CTBT negotiations. Therefore, I try to present a more detailed account of its status in chapter four than I do here, relying as much as possible on official judgments that have appeared as declassified documents, unclassified summaries, or leaked documents.

Chapter five compares two explanations of Chinese participation in these negotiations with the revised historical record presented in chapter four. Chapter five also examines the current academic literature that documents Chinese arms control behavior. The relevant literature includes the prevailing judgments that China signed the CTBT under duress and that future Chinese arms control concessions are unlikely. Comparing this literature to the principles of design suggested in the first three chapters and to the actual conduct of negotiations in the CD, I conclude that China’s support for the CTBT is a natural result of the view that deterrence is insensitive to changes in the size, configuration, and readiness of nuclear forces. As a result, the United States may be missing an opportunity for further arms control negotiations with China.

Chapter six and chapter seven examine current Chinese perspectives on the modernization of U.S. strategic forces. These chapters also explore possible arms control solutions that would manage the vulnerability of the Chinese arsenal created by both the future U.S. deployment of capable antiballistic missile systems and the expansion of military activities in outer space. This information is largely based on official Chinese government documents and papers, reports by Chinese officials and well-connected academics, and interviews and conversations conducted during several trips to Beijing and Geneva. Official statements and speeches are obvious, but often overlooked, sources of information about Chinese government policy. As John Lewis wrote forty years ago in *Major Doctrines of Communist China*, “Although many Communist statements are idealized versions of events and social conditions in China, it is in such statements that Party leaders regularly communicate the ideas and policies which obedient cadres—the Chinese leaders at all levels of Party, government, and social organizations—are expected to apply to a wide inventory of routine tasks.” Lewis concludes, “On most domestic and international questions, the Communists leave no doubt about their general positions … In the main, their statements and reports have been prepared for internal consumption.”44 This tendency is evident in other

countries, including the United States, and remains relevant for China today.  

An essential, but often implicit, source of context against which to interpret Chinese statements is the set of judgments derived from the historical account of the evolution of China’s nuclear forces and its arms control behavior. In combination, China’s past behavior and statements suggest a very different account of Chinese attitudes toward nuclear weapons and arms control than is commonly presented by U.S. analysts. On the whole, Chinese policies reflect a more skeptical view of the role of nuclear weapons and a greater interest in arms control than the U.S. foreign policy community has generally recognized.

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