

## The Strategic Logic of Nuclear Monopoly

The crux of the argument is that there are costs and benefits to any use of nuclear weapons. A state without nuclear weapons contemplating confronting a nuclear-armed opponent can take advantage of this situation. As long as the nonnuclear weapon state believes that it can maintain a situation in which the costs of nuclear use for its opponent outweigh the benefits, it is able to take action. The NNWS essentially sets its own “red lines” and gambles that those lines are below the red lines for nuclear use by the nuclear weapon state. In many situations the NNWS will actively seek to manipulate the red-line threshold by pursuing strategies it believes will further reduce the benefits and/or increase the costs of nuclear use. In other situations, the preferred strategy of the NNWS will already exist below the red line, and it will not need to alter its behavior. The exact mix of strategies varies across cases. All else equal, though, the more conventionally capable the NNWS is militarily relative to the NWS, the more constrained the behavior of the NNWS will be. As such, conflicts are likely to escalate to war only when the NWS possesses a large conventional military advantage.

The opponent’s nuclear arsenal is not the sole determinant of NNWS strategy or behavior. Similarly, my argument does not predict that a conventionally weak NNWS will rush into war. A state without nuclear weapons may avoid fighting because of the conventional military balance, the level of international support it enjoys, its domestic situation, cultural features, and even individual personalities. The argument is simply that the NNWS will act below the threshold it identifies, and that a conventionally powerful NNWS must behave more cautiously.

To construct this argument, I first identify the main benefits and costs of nuclear use. I initially focus solely on nuclear weapons, ignoring conventional capabilities and strategies. This provides a baseline treatment of the nuclear environment that both the NWS and the NNWS confront. Next, I use this baseline to outline NNWS strategies to reduce those benefits

and/or raise the costs of nuclear use. I pay attention to both deliberate and inadvertent pathways to nuclear escalation. As long as the NNWS believes that the costs outweigh the benefits of nuclear use, it has a space to act. The third section incorporates the role that the conventional military balance plays in influencing the costs and benefits of nuclear use. Having built the argument in three stages—abstract nuclear monopoly, NNWS strategies in nuclear monopoly, and the role of the conventional military balance—I then present its main predictions. In the following section I discuss how I assess the argument. I conclude by summarizing the core claims of this chapter.

## **Costs and Benefits of Nuclear Use**

Nuclear weapons promise nuclear-armed states various benefits in a dispute. I use the term “benefits” to refer to the military and political utility for the nuclear-armed state of a threatened or executed nuclear strike. The discussion on nuclear-weapon effects necessarily informs decision making prior to strikes because leaders can assess the likely consequences of nuclear use.<sup>1</sup> The relative efficacy of nuclear versus conventional strikes influences the scope of the benefits. At the same time, there are costs associated with nuclear use that go beyond the typical costs associated with using force. The rest of this section outlines both elements.

### **BENEFITS OF NUCLEAR USE IN MONOPOLY**

The core benefit of threatening or using nuclear weapons for a nuclear-armed state is to improve the likelihood of attaining a favorable settlement. The benefits of a nuclear strike depend on the conventional alternatives and the military and political situation. Failure to appreciate this point might lead one to conclude that nuclear weapons would always be used in the absence of a strong legal or normative prohibition. There is no specific benefit from a nuclear strike if the mission can be performed equally well by a conventional alternative. Any costs associated with nuclear use would then be sufficient to dissuade such a strike. Additionally, the higher the danger to the state and the worse the military situation, the greater a state benefits by using nuclear weapons to attain a favorable outcome. Inhibitions on the use of force decrease as the likelihood and consequences of defeat increase.

The NWS can threaten or execute several types of nuclear strikes. The two most basic are punishment and denial.<sup>2</sup> In brief, punishment seeks to harm or threaten the opposing population. Depending on the situation, that hardship will cause the adversary to not undertake some action, cede to political demands, or stop fighting. The victim government may see the

destruction visited on its society and accede to the desires of the NWS. Alternatively, the population may itself rise up to demand their government implement (or not implement, in the case of a deterrent threat) the policies the NWS seeks. Punishment was the primary logic behind the American decision to use nuclear weapons against Japan in 1945 in hopes of compelling Japan to surrender.<sup>3</sup> By contrast, denial strikes target the opponent's military capabilities to block the adversary's ability to successfully prosecute its campaign. Denial threats seek to deter any action or compel acquiescence by convincing the opponent its military strategy will not succeed. The two categories will sometimes blur, but they are important to keep analytically distinct. In addition, nuclear-armed states may contemplate using limited strikes to de-escalate a dispute or to catalyze third-party involvement. I discuss each option in turn.

Nuclear weapons offer an effective, if gruesome, tool for punishment strikes. Most basically, nuclear weapons are very destructive.<sup>4</sup> Accuracy is not particularly important when targeting a large urban area with a nuclear device. The overpressure generated by nuclear detonation is sufficient to destroy most civilian structures kilometers from the blast center. Individuals near the blast will also be exposed to lethal radiation. The heat from the blast, combined with high wind speeds and debris, create firestorms that cause even greater devastation. As Lynn Eden notes, depending on the conditions, the fire could "generate ground winds of hurricane force with average air temperatures well above the boiling point of water."<sup>5</sup> To be sure, a low-yield fission weapon would not completely destroy a large city. Hills and other geographic features can shield people otherwise near the blast. Yet even comparatively low nuclear yields can have devastating effects. The 15-kiloton blast at Hiroshima—current US intercontinental ballistic missiles have warhead yields of 300 to 335 kilotons—created a fire that "covered an area of roughly 4.4 square miles and burned with great intensity for more than six hours after the initial explosion. Between 70,000 and 130,000 people died immediately from the combined effects of the fire, blast, and nuclear radiation."<sup>6</sup> Faced with the prospect of such destruction, the pressure to cede to the adversary's political demands is intense.

Nuclear weapons are also useful at destroying vital civilian infrastructure. Dams, ports, large rail centers, and other critical components may withstand conventional attacks not powerful or accurate enough to do sufficient damage. For instance, Secretary of State Dean Rusk told President Lyndon Johnson in 1965 that Israeli officials believed that a nuclear weapon would provide Israel "a capability to bomb and release the waters behind the Aswan High Dam. Destruction of the Aswan Dam would require a nuclear warhead; bombing with high explosives could not be counted on to do the job."<sup>7</sup> An earlier State Department report in 1964 highlighted that "a single well-placed nuclear device would bring a sheet of water 400 feet

high cascading down the narrow Nile valley where the entire Egyptian population is concentrated”<sup>8</sup>

States can carry out punishment campaigns with conventional weapons, of course. Naval blockades and scorched-earth land campaigns can devastate civilian populations. The advent of air power in the early twentieth century provided a powerful new punishment tool. For instance, on March 9, 1945, the United States launched a massive firebombing attack on Tokyo. The raid burned 15.8 square miles and killed an estimated 84,000 to 100,000 Japanese.<sup>9</sup> Advances in precision-guided munitions can cripple infrastructure to impose suffering. During the 1991 Gulf War, precision bombing avoided directly targeting civilians but destroyed electrical and water facilities. Nina Tannenwald highlights that those strikes caused “vast numbers of civilian deaths due to infectious diseases, and lack of food, water, and medical care.”<sup>10</sup> Conventional punishment campaigns have occasionally been successful, though they often require major fighting to first degrade the adversary’s military capability and can take a long time to result in the desired effects.<sup>11</sup> Moreover, prior to hostilities target-state leaders frequently believe they can outlast limited air strikes.<sup>12</sup>

The key distinction with nuclear weapons is economy and speed. A single weapon is enough to do what can otherwise require a large number of strikes. A state need not outfit an aerial armada and command the skies to threaten or inflict severe punishment. Developing stealth and precision-guided technology and overcoming enemy air defenses is not necessary to impose widespread hardship.<sup>13</sup> In a conventional world, intercepting most of the adversary’s aircraft or missiles allows the population to escape destruction. In a nuclear world, intercepting most of the adversary’s aircraft or missiles still results in devastating destruction.<sup>14</sup> Moreover, nuclear strikes can occur in a matter of minutes and in many cases are on platforms that offer coverage of the entire enemy territory. As Christine Leah puts it, “It is the sheer destructive power, and the speed at which that power can be dealt, that make nuclear armed missiles unique.”<sup>15</sup> In a conventional situation, then, leaders may be willing to roll the dice and press ahead or not give in to demands. “Wars start more easily” in a conventional world, Kenneth Waltz argued, “because the uncertainties of their outcomes make it easier for the leaders of states to entertain illusions of victory at supportable cost.”<sup>16</sup> By contrast, faced with the prospect of immediate nuclear devastation on at least some part of their society, those same leaders and publics are more cautious.

Nuclear denial strikes possess many of the same advantages of speed and economy. They allow an outnumbered or outgunned actor to radically increase its units’ firepower. Nuclear weapons would be particularly useful against massed enemy formations. Nuclear strikes in an operational role can interdict the adversary’s ability to bring up reinforcements and supply frontline units. During World War II, various American leaders

were already speculating along these lines. In 1943 General Leslie Groves, head of the Manhattan Project, and his advisers discussed using a nuclear weapon against "a Japanese fleet concentration" in harbor.<sup>17</sup> Following initial uses at Hiroshima and Nagasaki, Lieutenant General John Hull noted nuclear weapons might be useful at "neutralizing a division or a communication center or something so that it would facilitate the movement ashore of troops."<sup>18</sup> More recently, Pakistan is widely believed to have adopted a nuclear posture that envisions battlefield use of nuclear weapons against Indian conventional forces to offset Pakistani military inferiority. As Vipin Narang argues, Pakistan's status as the "conventionally weaker power" led it to integrate nuclear weapons into its military doctrine and adopt "an asymmetric escalation posture that attempts to credibly deter conventional attack by threatening the first use of nuclear weapons against a large-scale Indian conventional thrust through Pakistan's vulnerable desert and plains corridor in Sindh and Punjab."<sup>19</sup> Though in the latter example both sides possess nuclear weapons, the essential logic applies in nuclear monopoly.

States can also use nuclear weapons in a strategic denial role, such as targeting the adversary's industrial production so that it cannot sustain its military forces. American planning against the Soviet Union in the early postwar period called for targeting industry to degrade the Soviet ability to wage war.<sup>20</sup> Another target set is the staging areas for the adversary's military forces. For example, conventional cratering of runways may not do sufficient damage over large enough areas to make the runways inoperable. Nuclear strikes, by contrast, are more likely to successfully destroy runways and can be used against hardened aircraft shelters.<sup>21</sup>

Nuclear weapons are especially valuable in destroying hardened and buried targets.<sup>22</sup> This is particularly true if weapon accuracy is limited. In those cases, larger yields compensate for reduced accuracy. Strategic studies tend to focus on targeting an adversary's hardened nuclear forces.<sup>23</sup> In nuclear monopoly, the NNWS possesses no nuclear assets to attack. Yet conventional missiles, aircraft shelters, artillery units, communications and command centers, and other military targets that the adversary may harden, bury, or dig into mountains still pose difficulties for conventional weapons.<sup>24</sup> For instance, experts debated whether even the most powerful US conventional weapons could destroy the deeply buried Iranian nuclear facility at Fordow.<sup>25</sup> Particularly when speed is critical, nuclear weapons may offer an attractive alternative against such targets.

The increased destructive power and speed of nuclear-armed missiles offer advantages against mobile targets relative to conventional alternatives. During the 1991 Gulf War, the United States tasked approximately one thousand "Scud-patrol" sorties alongside fifteen hundred strikes against Iraqi ballistic-missile capabilities. There were no confirmed

destructions of Iraqi Scud missiles.<sup>26</sup> As Charles L. Glaser and Steve Fetter note, though, "On many occasions U.S. forces located Scud launchers in Iraq, but without enough precision to allow a successful attack with the conventional weapons available. Nuclear weapons have a much larger radius of destruction against mobile missiles, which would make relatively unimportant any lack of precision."<sup>27</sup> Similarly, Austin Long and Brendan Green argue that "uncertainty about target location matters much less when using fast nuclear weapons rather than much slower fighter-bombers armed with conventional weapons."<sup>28</sup>

Limited nuclear use against a military target or isolated area may have little immediate effect but instead serve as a warning. In this sort of "escalate to de-escalate" scenario, the nuclear state derives benefit by signaling to the NNWS a willingness to use nuclear force. Such a signal conveys that now that the nuclear threshold has been breached, any additional action can result in more substantial denial or punishment strikes. As Caitlin Talmadge writes, "Nothing says 'you've crossed my red line' quite like a mushroom cloud."<sup>29</sup> Because this ultimately rests on the threat of additional denial or punishment strikes, it can be folded into the general denial and punishment discussion above.<sup>30</sup>

Nuclear-armed states might also believe that nuclear weapons can provide a catalytic benefit. In this scenario, the NWS threatens to or actually detonates a device, likely in a remote area, to spur third-party involvement.<sup>31</sup> The third party can support the NWS through direct engagement, furnishing of supplies, or pressuring the NNWS. There is some evidence that Israeli leaders performed various operational checks on their nuclear arsenal in the 1973 October War to spur greater US involvement.<sup>32</sup>

This is unlikely to be a major factor in NNWS decision making in nuclear monopoly, though. First, as Narang argues, since third-party intervention is only probabilistic, the NNWS may believe it can achieve limited objectives before any outside help occurs.<sup>33</sup> As I argue below, an NNWS is likely to pursue limited objectives in the case of nuclear monopoly; this would thus not harm its strategy. Second, a catalytic strike is unlikely to cause any immediate, direct harm to the NNWS, and therefore the NNWS will be less concerned by such a strike. Third, this strategy is an option only if the NWS has a capable third party willing to intervene on its behalf. When facing an NWS such as the United States, the Soviet Union/Russia, or today's China, any ally coming in on the side of the NWS will be unlikely to tip the scales, because any potential ally would be much weaker than the NWS. Finally, in some cases the NNWS will *prefer* third-party involvement, seeing it as likely to restrain any additional nuclear use by the NWS and allow the NNWS to continue to pursue its objectives at the conventional level. For instance, Egypt deliberately informed the United States of its planning during the October War both because it believed the United

States could exercise a restraining influence on Israel, and because Egyptian leaders understood US involvement was ultimately necessary to realize Egyptian goals.

#### COSTS OF NUCLEAR USE

There are real military and political costs to nuclear use. Not all costs discussed below are present in equal measure in every circumstance; some work at cross-purposes.<sup>34</sup> The key point is that some will always be present, and efforts to avoid one set of costs involve trade-offs that can lead to others.

First, the physical characteristics of nuclear weapons deployed by most states throughout history have made it difficult to limit collateral damage.<sup>35</sup> Nuclear strikes are likely to destroy or irradiate valuable territory, resources, and populations.<sup>36</sup> As Austin Long writes, "The vast power of all but the smallest nuclear weapons is likely to produce significant collateral damage if used against targets in any but the most remote and uninhabited locations."<sup>37</sup> As noted above, even yields in the low kilotons directed against urban centers can create devastating firestorms.<sup>38</sup> Ground bursts of nuclear weapons will cause radioactive material to mix with particulate matter, creating long-term health hazards. Inaccurate delivery platforms necessitate larger yields for nuclear devices to guarantee target destruction. Strikes against hardened military targets with such delivery platforms are therefore doubly destructive, requiring ground bursts and large yields. In cases of geographic proximity, the radiation may directly harm the NWS's own territory or that of its foreign bases and allies.<sup>39</sup> Battlefield use cannot avoid these complications. As John Mueller points out, "when one considers the impact of nuclear weapons in combat situations . . . of special concern would be the messy problems presented by fallout and radioactive contamination—particularly because many battlefield applications would require that the weapons be groundburst."<sup>40</sup> Terence Roehrig makes a similar point, noting that nuclear weapons, "including tactical nuclear weapons, contaminate the battlefield and greatly complicate the military's ability to conduct follow-on ground operations."<sup>41</sup>

Allies, adversaries, and neutral states not involved in the initial dispute that found themselves harmed or believed themselves likely to be harmed by nuclear use would oppose nuclear strikes.<sup>42</sup> This opposition can result exclusively from the material self-interest of these states. Depending on the nature of the nuclear strikes, terrain, and weather, nearby states could suffer the aftereffects of nuclear fallout. Nuclear strikes could also create large refugee flows that destabilize neighbors. As Matthew Fuhrmann notes, "The presence of refugees from neighboring states increases the likelihood that a country will experience political turmoil and armed conflict."<sup>43</sup> At the least, states forced to admit refugees are likely to blame the

nuclear state for creating what many will perceive as an additional burden. Nuclear use that expanded the scope of fighting could endanger states. For instance, in 1950 some of America's European allies worried that nuclear use in the Korean War could expand the conflict to involve the Soviet Union and then spill over into Europe at a time when NATO defenses were very weak.<sup>44</sup>

Opposition from third parties can range in intensity. On the low-intensity end, states opposed to nuclear use can seek to oppose or isolate the NWS diplomatically, frustrate NWS goals in international institutions, reduce cultural and educational ties, or expel NWS citizens from within their borders. Allies of the NWS can exert intra-alliance pressure on the NWS, move toward a neutral stance, or deny territorial access for NWS military forces.<sup>45</sup> Moving to mid-intensity, states can sanction the NWS economically by limiting trade, freezing NWS financial assets, or undermining the NWS currency. At higher levels of opposition states may begin to support the threatened or actual target of the nuclear strikes with economic and military aid. At the extreme, states may decide they must intervene militarily against the NWS. For example, the Soviet Union proposed intervention in the October War to save the trapped Egyptian Third Army. It is likely, then, that the Soviet Union would have intervened had Israel resorted to nuclear weapons.

The destructive nature of nuclear weapons also means that they will almost always expand the level of violence in the conflict.<sup>46</sup> If the NNWS is not defeated, this could encourage it to expand the geographic scope of the conflict. Nuclear use might also cause the NNWS to use chemical or biological weapons. Any expansion in the geographic space or weapons used represents a potential cost to the NWS. In addition, strategic or tactical nuclear use that expanded the level of violence would necessarily introduce uncertainty on the battlefield. Leaders generally seek to avoid such uncertainty, preferring to fight with known, conventional capabilities if possible.<sup>47</sup>

Thus, paradoxically, one of the benefits of nuclear weapons—their destructive ability—can become one of their chief costs. To be sure, the destructiveness causes more harm to the victim. But that destructiveness also greatly complicates operations for the NWS. If the goal is regime change or to liberate a people, it makes little sense to irradiate those people. If the political dispute involves territory or resources, destroying the territory or resources is counterproductive. If the purpose is to safeguard one's own homeland or an ally's, nuclear use on that territory against enemy military forces will hardly be appealing. Likewise, a nuclear strike that poses as much danger to one's own troops as the opponent's is not a particularly attractive option. To be sure, if the danger to the NWS is great enough, the NNWS may fear that the NWS would use the weapons even knowing there would be significant destruction. In that case the benefits of



eliminating a great danger would trump the costs. The point is that destructiveness can act as a brake on nuclear use in many situations; the NNWS can realize this and act accordingly.

These costs associated with destructiveness will not be present in every case, of course. Targeting military forces in isolated locations is less likely to harm civilians or neighbors. Recent advances in guidance and information processing allow states to substitute lower warhead yields without sacrificing effectiveness.<sup>48</sup> As I detail below, improvements in accuracy that allow conventional weapons to perform missions previously accomplishable only through nuclear-weapon use reduce the latter's benefits in the first place, allowing the other associated costs to loom larger. The key issue is that in most cases throughout history, and for most states today, nuclear use carries with it the prospect of destruction that can prove counterproductive to the interests of the NWS.

Limited strikes that minimize destructiveness may prove ineffective, diminishing benefits and allowing other costs to grow in import. For example, in 1990, Secretary of Defense Richard Cheney inquired about nuclear options against Iraqi military forces. A sizable number of tactical nuclear weapons—reportedly seventeen—was required to significantly damage an Iraqi military unit. As Colin Powell later noted, "If I had any doubts before about the practicality of nukes on the battlefield, this report clinched them."<sup>49</sup> One or two strikes against military targets, even when the NWS had a large technological advantage, were thought to be ineffective. If an adversary had few valuable military targets, or fought with guerrilla methods, then limited nuclear strikes might do nothing to impede its military effectiveness. Similarly, one or two very low yield weapons detonated against urban targets that did not destroy those targets could avoid some of the destructiveness costs but at the expense of failing to cause the adversary's collapse. The bottom line is that there are tradeoffs between various levels of destruction; a movement one way or the other can generate higher costs or lower benefits.

The second set of costs that NWS leaders must worry about concerns the long-term challenges nuclear weapon use may create. Nuclear weapon use might spur other states to develop nuclear capabilities. Those proliferating states may one day use their newfound nuclear capabilities to harm NWS interests. At the least, more nuclear actors reduce NWS freedom of action in global politics and increase the number of states that can inflict significant harm.<sup>50</sup> The United States, Great Britain, and the Soviet Union, among others, have all worked at times to constrain proliferation, particularly in areas where they could project conventional power.<sup>51</sup> "One effective non-proliferation strategy is to make the world think that nuclear weapons are utterly useless," writes Fuhrmann. Successful nuclear weapon use could "cultivate the opposite perception—that possessing the bomb allows one to get their way in international relations."<sup>52</sup> This would also undermine

international efforts, such as the Nuclear Nonproliferation Treaty, to prevent proliferation. Nuclear use that encouraged more states to get the bomb would therefore be a major cost. This mechanism is similar to, but distinct from, arguments that nuclear use would set a negative precedent by violating a shared expectation for nonuse.<sup>53</sup> The argument here is simply one of emulation. States in an anarchic system that witness nuclear use providing major benefits will be more likely to believe nuclear weapons will offer them utility—if only to deter nuclear use—and seek to acquire their own nuclear arsenal.<sup>54</sup> Emulation might also make it more likely that other states use nuclear weapons in future disputes.

Alternatively, NWS leaders may fear that nuclear use would be ineffective. Ineffective nuclear strikes would demonstrate the weakness of a state's ultimate deterrent and potentially encourage more challenges. For instance, historian John Lewis Gaddis notes that during the Korean War one major US concern cautioning against nuclear use was that "the enemy might keep coming, and so obvious a demonstration of the bomb's ineffectiveness could impair its credibility elsewhere."<sup>55</sup>

Finally, nuclear use would violate norms against harming noncombatants and against using nuclear weapons specifically.<sup>56</sup> Though the strength of noncombatant norms and the nuclear taboo are sometimes overstated, they are not nonexistent.<sup>57</sup> States unharmed materially by a nuclear strike might impose various sanctions to punish an NWS for violating these norms.<sup>58</sup> This opposition would take many of the same forms discussed above, such as diplomatic maneuvering, economic retribution, and even support for the nuclear victim. Domestic public opinion in the NWS itself might mobilize against the state's leaders for using nuclear weapons. And public opinion in third parties could pressure their own leaders to take some action against the NWS.

#### PRECISION GUIDANCE AND THE LIMITS OF THE BENEFITS-COSTS CALCULUS

Have improvements in weapon accuracy and information processing fundamentally transformed the costs and benefits of nuclear use?<sup>59</sup> Is the discussion of nuclear benefits and costs hopelessly outdated, without relevance for today's world? On close examination, these dynamics of nuclear monopoly remain valid for three reasons. First, it is important to note that not all nuclear-armed states have developed and exploited this technology to the same degree. One should be cautious in generalizing to all nuclear monopoly situations as a result. Additionally, an effective conventional military technology at one point in time may be offset by future adversary adaptation or technological innovation.

Second, even the most sophisticated conventional weapons cannot yet perform all missions as effectively as nuclear weapons. Nuclear weapons

can visit larger amounts of devastation in shorter periods of time. Precision strikes can disrupt water and power facilities, but if a state cannot maintain such strikes, then the target can repair those facilities or find substitutes to supply civilian needs. Civilians living near a precision strike's target will survive; those same civilians are likely to be killed if the target is destroyed with a nuclear weapon.

Nuclear strikes continue to offer benefits against hardened facilities or where intelligence limitations preclude precise knowledge of target locations. Conventional prompt global-strike missiles may be able to hit a target quickly but cause insufficient damage in a short enough period to lead to the desired outcome.<sup>60</sup> Moreover, such strikes require an intricate support network, including, Dennis Gormley writes, "highly accurate and swiftly gathered intelligence collection, analysis, and dissemination, rigorous mission planning, precise knowledge of the target's aim points (i.e., its vulnerabilities), post-attack damage assessment capabilities (to determine whether damage objectives have been achieved and whether additional strikes are necessary), and finally, an agile command-and-control system to manage these complex, interconnected tasks."<sup>61</sup> A breakdown in any one stage can leave the target intact. To be sure, nuclear weapons require support and can fail as well. The greater destructive power means that such failures are less likely to leave the target intact *relative* to conventional alternatives.

States that lack sufficient platforms to overcome enemy air or missile defenses will continue to see utility in a class of weapons that can inflict significant harm even if most such weapons are intercepted. Stealth is not a panacea, either, simply because stealth does not make aircraft invisible.<sup>62</sup> Against a capable adversary, even stealth platforms will suffer attrition. Faced with that prospect, nuclear strikes that increase the certainty of success despite losses remain attractive.

It is undeniable, though, that improvements in accuracy and information processing have increased the number of missions formerly reserved for nuclear forces that can now be accomplished by a conventional alternative. As former commander of the US Strategic Command General C. Robert Kehler notes, "While not practical as a large-scale replacement, the combat performance of conventional U.S. forces over the last two decades showed that precision strike capabilities could provide viable options in certain scenarios and against certain targets where nuclear weapons were once seen as the best (in some cases the only) choice for the president."<sup>63</sup> There remain some benefits of nuclear use, but those benefits have shrunk.

Third, to the extent the scope of nuclear benefits has declined, this has been offset by the reduction in costs of nuclear use. Increased accuracy and information-processing power allow states to reduce the nuclear warhead yield while still achieving the objective. This reduces the likelihood of collateral damage, removing a powerful cost that constrains nuclear use.

Indeed, many worry that increases in accuracy make nuclear use *more* likely as a result.<sup>64</sup> States can now contemplate “clean” nuclear strikes. The implications for the likelihood of nuclear use in monopoly are therefore mixed. To the extent that there exists a conventional platform that can promise the same mission performance, the benefits of nuclear strikes necessarily decrease. At the same time, technological advances reduce the potential costs associated with nuclear use. Since it is not clear which factor dominates—reduced benefits or reduced costs—the ultimate effects are indeterminate.

This is not to say the benefits and costs are fixed for all time. If technological advances allow conventional weapons to perform all missions as effectively as nuclear weapons, most of the benefits of nuclear weapons, at least in nuclear monopoly, drop out.<sup>65</sup> Similarly, if nuclear strikes could be conducted in a way that created no collateral damage, one of the most potent costs would no longer apply. Much of the analysis presented here, while still potentially an accurate description of the past, would be less useful. Yet as long as there remain benefits and costs with the use of nuclear weapons, nonnuclear states will be faced with assessing the likelihood that such weapons will indeed be used.

#### SUMMARY

There are benefits and costs to threatening or carrying out nuclear strikes. The benefits center on attaining a more favorable political settlement. The costs include destruction that frustrates the NWS’s own goals and generates greater opposition, encourages proliferation, or proves ineffective. The NWS will be willing to endure those costs provided that the benefits are large enough. If the benefits shrink—if nuclear use does not shift the political outcome sufficiently in favor of the NWS from what the NWS could accomplish with conventional weapons—then the same level of costs will be enough to dissuade nuclear use. For an NNWS facing a nuclear-armed opponent, then, the critical issue will be whether it believes that its opposition will create a situation where the benefits of nuclear use outweigh those costs. The conventional military balance and NNWS strategies play an important role in such an assessment. I therefore turn to those issues next.

### Nonnuclear Weapon State Strategies

The NNWS has a number of policy levers it can pull in an attempt to minimize the risks of a nuclear strike. The NNWS will not pursue each policy in every case. Indeed, if the NNWS has no capacity to harm the NWS—if it is very weak—it is unlikely to need to do anything to reduce

the likelihood of nuclear use (of course, the NNWS is also very unlikely to attain its objective in such a situation). While the precise mix of policies will therefore vary from case to case, the NNWS is likely to pursue some combination that raises the costs or lowers the benefits of nuclear use. Doing so manipulates the political and military situation facing the NWS. In the rest of this section I first outline NNWS policies that can reduce benefits. I then discuss ways the NNWS can attempt to raise the costs. Not every factor is subject to manipulation, but enough are to provide a wide menu to an NNWS.

#### NONNUCLEAR WEAPON STATE STRATEGIES TO REDUCE BENEFITS

An NNWS can reduce the benefits of nuclear use against it via two key mechanisms. First, it can reduce the danger that it poses to the NWS. Second, it can seek to reduce the damage of limited punishment or denial strikes. I outline each in turn.

The level of danger the NNWS creates for the NWS looms large in governing the benefits of nuclear strikes. The lower the threat the NNWS poses, the lower the incentive of its foe to use nuclear strikes to remove that threat. As the danger the NNWS creates for the NWS increases, other strategies to reduce the benefits or raise the costs of nuclear use may no longer be sufficient to offset the immediate benefit of nuclear strikes. The NWS is likely to prioritize the immediate benefits of nuclear use when facing a massive threat and worry less about additional costs that might occur later. In essence, the NWS will discount the future and focus on the short-term necessity of reaching the future.

The NNWS can directly influence the amount of danger to the NWS by limiting its aims and the means by which it confronts the nuclear-armed opponent. In many cases, this will not require the NNWS to alter its behavior; the NNWS is simply unable to do more. At other times, the NNWS will need to deliberately alter its strategy to minimize the danger to the NWS. The NNWS leadership gambles that it will not create a military necessity for the NWS to use nuclear weapons or create a use-it-or-lose-it scenario for the nuclear opponent.

To begin with, the NNWS can direct its challenge to isolated areas, signaling limited intentions. Such challenges provide a natural stopping point that does not create further dangers for the NWS. These “thresholds” or focal points, to borrow from Thomas Schelling, represent “finite steps in the enlargement of a war or a change in participation. . . . Any kind of restrained conflict needs a distinctive restraint that can be recognized by both sides, conspicuous stopping places, conventions and precedents to indicate what is within bounds and what is out of bounds.”<sup>66</sup> The NNWS can commit to pressure an area without automatically expanding demands. If the NWS

makes the desired concession in that isolated area, it will not result in a major defeat, an untenable security situation for the NWS, or necessarily invite additional challenges—the presence of any of which make nuclear use more appealing. For example, geography provided the Soviet Union an ability to threaten Berlin, isolated deep within the Soviet zone, in order to pressure the United States without needing to challenge US forces in western Germany. The Soviets could credibly signal they had limited intentions by focusing on an area completely inside their occupation zone. In 1982, Argentina attacked islands thousands of miles from the British homeland. There was no danger Argentina would keep going to threaten other British territory.

The NNWS can also limit its aims and means in any fighting. The precise scope of the limitations will vary because war “may be limited in a great many ways and degrees.”<sup>67</sup> There are nevertheless several specific actions the NNWS should be expected to avoid regardless of whether it behaves offensively or defensively. Most importantly, the NNWS will avoid threatening the very survival of the NWS, its ruling regime, or the destruction of the NWS’s conventional military ability to protect itself. This reduces the benefits for early nuclear escalation because the NWS does not need to stave off destruction. By contrast, facing destruction or being unable to contest the NNWS effectively at the conventional level increases the benefits of using nuclear weapons to avoid defeat. The NNWS can inflict costs on the NWS and is likely to attempt to destroy a portion of the NWS’s conventional forces to do so. Indeed, a key part of the strategies adopted by Egypt in 1969–1970 and 1973, China in 1950, and Iraq in 1990–1991 was to kill NWS soldiers. By imposing those costs, the NNWS hoped to cause the NWS to negotiate or quit the fight. The key for the NNWS, though, is to limit the destruction to fielded forces in a way that does not open the NWS homeland to conquest. This generates an interesting dynamic: the amount of damage the NNWS can inflict on the NWS increases as the danger it poses to the NWS’s homeland decreases. Thus, in 1950 China could envision destroying entire American divisions, in part because doing so would not provide China with the ability to threaten the survival of the American state or its ruling regime. Egyptian leaders in 1973 expressly conveyed to the Israeli leadership, through the Americans, that they had no intention of advancing deep into the Sinai, let alone threatening pre-1967 Israeli territory.

The NNWS will also avoid operations to destroy its opponent’s nuclear arsenal. The benefits of nuclear use increase if a state fears that it will be unable to rely on its nuclear arsenal in the future. In other words, if the NWS believes that it is in danger of losing its nuclear arsenal, it has an incentive to use the weapons now for fear that it will not be able to use them later. To be sure, the lack of a nuclear arsenal for the NNWS removes some of this dynamic for the NWS.<sup>68</sup> Conventional military campaigns that

endanger the nuclear arsenal, command and control, or conventional military forces supporting the NWS's arsenal can nevertheless pose a significant danger to the ability of the NWS to execute a nuclear strike.<sup>69</sup>

Even if the NNWS does not deliberately target the nuclear forces of the NWS, it can inadvertently threaten their survival through certain types of military operations. In the face of "large-scale conventional attacks on nuclear forces or their supporting structure," Barry R. Posen argues, "the salience of nuclear forces for the conflict is raised inadvertently, before the imminent loss of the stakes that precipitated the conflict raises the nuclear specter."<sup>70</sup> Though this type of inadvertent escalation logic has been discussed primarily in situations of joint nuclear possession, aspects are relevant for nuclear monopoly. Talmadge argues that a state that found its nuclear arsenal under duress might use nuclear weapons "to halt the components of the opposing conventional campaign that posed the greatest threat to the target's nuclear forces. Nuclear weapons could achieve these effects more rapidly than conventional forces." In addition, "a state might engage in limited nuclear escalation to try to generate coercive leverage, signaling its resolve to make the opponent pay significant costs until the counterforce campaign was either suspended or completed."<sup>71</sup> In nuclear monopoly, the concern would be NNWS conventional counterforce capabilities.

The claim that the NNWS will avoid efforts to destroy its opponent's nuclear arsenal may seem counterintuitive. After all, if the NNWS can eliminate the opponent's nuclear arsenal, doesn't this guarantee that the NNWS will not suffer a nuclear strike? The problem is that in most cases the NNWS is unlikely to be able to quickly and completely destroy the opponent's nuclear arsenal. For example, Keir Lieber and Daryl G. Press modeled a conventional attack against twenty fixed missile silos by US B-2 bombers using GPS-guided bombs. "If GPS signals were not jammed, an attack would destroy most of the silos and have about a 50–50 chance of destroying them all. . . . If an enemy can jam GPS signals near the target, the odds of destroying all 20 silos with current bombs are essentially nil."<sup>72</sup> Such a scenario represents a best case for an attacker that possesses advanced technology that most countries—including the United States in the past—lack, against a small number of fixed targets, with minimal efforts to interdict the air strikes. To be sure, mobile platforms are more vulnerable to conventional strikes because mobility comes at the cost of hardening. Yet mobility and other forms of concealment increase the intelligence demands on the attacker attempting to eliminate the nuclear forces.<sup>73</sup> Unless the NNWS is able to completely eliminate the NWS's arsenal and ability to deliver nuclear weapons before the NWS can respond, which at least historically and in the near term is very unlikely, then posing a large conventional danger to the nuclear arsenal is dangerous. True, the NNWS will attempt, if it is able, to intercept any incoming nuclear strikes. The key distinction is

that intercepting strikes means that the NWS has already acted, and the NNWS is attempting to minimize damage rather than launching a strike designed to destroy the adversary's nuclear arsenal.

Any fighting need not be limited for both sides. As Robert Osgood points out, "limited war is not only a matter of degree but also a matter of national perspective—a local war that is limited from the standpoint of external participants might be total from the standpoint of local belligerents, as in the Korean and Vietnam wars."<sup>74</sup> In nuclear monopoly, the critical distinction is the amount of stress placed on the NWS. The fighting may require significant effort for the NNWS.

The NNWS will frequently rely on defensive strategies. Ivan Arrequin-Toft identifies such a strategy as one that seeks "to damage an adversary's capability to attack by crippling its advancing or proximate armed forces."<sup>75</sup> The defensive strategy can rely on both mechanized and guerrilla operations.<sup>76</sup> Mechanized operations focus on using cohesive armed forces to degrade and destroy the enemy forces through a series of battles at a set line or through defense-in-depth. Guerrilla warfare centers on small units fighting over dispersed areas to undermine the adversary's control of the population; there is a lack of clearly defined battles and front lines.<sup>77</sup> In both cases, the NNWS limits its aims and reduces the danger to the NWS by not harming the nuclear opponent's nuclear arsenal, conventional reserves, or territory directly. With the NWS not facing major defeat, the benefits for nuclear use decrease. Guerrilla warfare also offers few military targets for the nuclear-armed state, further reducing the benefits of nuclear use.

The NNWS need not fight entirely defensively. It can also execute a limited offensive. In order to do so, the NNWS must manufacture a local superiority against the nuclear opponent, often relying on the element of surprise to offset the intrinsic advantages enjoyed by defenders.<sup>78</sup> The NNWS then launches an offensive with the purpose of taking some small objective and switching to a defensive posture. John Mearsheimer notes that once the original attacker switches to the defensive, the burden for starting a war "is transferred to the [original] defender. The assumption is that the [original] defender would not start such a war and that therefore the conflict will remain limited."<sup>79</sup> In essence, the NNWS hopes to present its nuclear-armed opponent with a *fait accompli*, signal limited aims, and thereby reduce the benefits of a nuclear strike. Thus, in 1973, Egypt planned to take only a few miles east of the Suez Canal and then seek negotiations with Israel. In 1982, Argentina quickly took the Falkland Islands and settled into a defensive posture while calling for new talks.

Limiting fighting reinforces a general tendency in international politics for inducing restraint by the opponent. Carl von Clausewitz recognized this propensity when he wrote that in real war, as opposed to war in the abstract where each side would quickly use all the force at its disposal, the



"smaller the penalty you demand from your opponent, the less you can expect him to try and deny it to you; the smaller the effort he makes, the less you need make yourself." Moreover, "anything omitted out of weakness by one side becomes a real, *objective* reason for the other to reduce its efforts, and the tendency toward extremes is once again reduced."<sup>80</sup>

The second mechanism to reduce the benefits of a nuclear strike centers on NNWS efforts to minimize the effects of limited nuclear strikes through civil defense measures, the hardening of valuable civilian and military targets, or the dispersal of military forces. For example, before the 1991 Gulf War, Iraqi leaders explored evacuation procedures in the event of an American nuclear strike on Baghdad and believed dispersing their military forces would minimize the danger of a nuclear strike. Similarly, leaders in the Soviet Union, China, and the United States have examined and implemented civil-defense measures when facing potential nuclear strikes.<sup>81</sup> In a general sense, these efforts serve as a hedge for the NNWS. In an anarchic international environment, it makes some sense to prepare for the worst possible outcome. Even if the NNWS believes that nuclear use is unlikely given the cost-benefit ratio, it may nevertheless see prudence as the highest virtue.

In addition, the NNWS can hope this reduces the likelihood of a nuclear strike. If nuclear use is unlikely to inflict sufficient costs on the NNWS given adequate preparations, then the benefits of executing the strike for the NWS decrease. That is, if a nuclear strike cannot significantly harm the NNWS population or military forces, such a strike is unlikely to deter or compel the NNWS, because a strike benefits the NWS little. To be sure, the NWS may then threaten escalation or carry out more widespread punishment or denial strikes. In those cases, though, the NWS is likely to incur additional costs associated with widespread destruction. The NNWS is gambling that the NWS would only be willing to incur such costs if it gained significant other benefits.

#### NONNUCLEAR WEAPON STATE STRATEGIES TO RAISE COSTS

Leaders in nonnuclear weapon states can seek to raise the costs of nuclear use for their nuclear-armed opponent by expanding the conflict in response to nuclear use. As Fred Iklé argues, governments exhibit a natural tendency "to refrain from escalating a war if they expect that the military gains of increased violence would be canceled out by the enemy's counter-escalation or by the intervention of other powers on the side of the enemy."<sup>82</sup>

The NNWS can manipulate the level of violence by threatening to use its own unconventional weapons. The most commonly recognized way to raise the costs of nuclear use is to threaten nuclear use in retaliation. This type of nuclear deterrence is, by definition, not available to a state that does

not possess nuclear weapons. However, NNWS may possess biological or chemical weapons, the so-called “poor man’s” atomic bombs.<sup>83</sup> This logic says that faced with the threat of weapons that can do damage beyond an initial explosion, the nuclear-armed opponent will be reluctant to use nuclear weapons.

This type of action obviously comes with a risk: by inflicting greater damage on the NWS or its allies, the NNWS increases the military benefits of nuclear use. The distinction between first use and retaliation resolves this tension. The NNWS is threatening the latter, not the former. Unconventional weapons will be viewed as a last resort; indeed, most nonnuclear weapon states are likely to identify this as a red line not to cross first. For example, Iraqi leaders in 1990 recognized that using chemical weapons might invite American nuclear retaliation. They simultaneously hoped that the threat of an Iraqi chemical response to nuclear use would constrain the United States. In addition, the destructive power of chemical and biological weapons is not similar to that of nuclear weapons. Such weapons are largely ineffective against prepared military forces and are useless for counterforce operations targeting nuclear weapons. Thus, the incentive of an NWS to eliminate the chemical or biological weapons of an NNWS is smaller than the incentive it would have to eliminate the nuclear arsenal of another, opposing NWS if it believed war inevitable.<sup>84</sup> Nor does the NWS leadership face a use-it-or-lose-it dynamic for fear that if the NNWS used unconventional weapons, the NWS would then be unable to fall back on its own nuclear arsenal.

The NNWS can also deliberately court external actors to constrain the NWS. The logic is that the NWS will be less likely to use nuclear weapons if it believes other actors will either directly intervene in the conflict or otherwise sanction the NWS. At times, these may be formal or informal allies. For instance, Chinese leaders sought greater certainty of Soviet air support prior to making their final decision to intervene in the Korean War in 1950. At other times, though, the NNWS will rely on allies of the nuclear-armed state itself to restrain the latter. Egyptian leaders believed that the United States exercised a great deal of influence over Israeli actions and pointed to that relationship as a constraint on Israeli nuclear use.

The NNWS can also seek to leverage nuclear nonuse norms by diplomatic and media means to constrain the NWS. In doing so, it hopes to shift public opinion in the NWS or other states that will raise the prospects of some type of sanction in the event of nuclear use. That sanction can take the form of diplomatic isolation, economic retaliation, or even the legitimization of the use of force against the NWS. The constraint is direct when influencing the NWS’s citizens. It is indirect when targeting other publics, hoping that they lobby their own leaders to pressure the NWS to exercise nuclear restraint. In other words, the NNWS is using normative factors instrumentally to impose additional costs on the NWS.

## SUMMARY

Leaders in states without nuclear weapons confronting nuclear-armed opponents can recognize that nuclear monopoly provides incentives and disincentives for nuclear strikes. This creates a space within which the NNWS can challenge and resist its nuclear opponent. It also provides opportunities for the NNWS to further reduce the likelihood of a nuclear strike by increasing the costs and/or reducing the benefits of nuclear use. The NNWS can pursue policies to challenge and resist the NWS that it believes fall below the threshold for nuclear use where benefits begin to outweigh costs. At times, this will require the NNWS to do very little; the costs will simply outweigh the benefits, given NNWS capabilities and behavior. At other times, the NNWS leadership will believe it must actively seek to raise costs or reduce benefits. It can reduce benefits by taking steps to lower the danger of any action to the NWS and minimize the effects of nuclear strikes. It can raise costs by threatening to expand the scope of the conflict to include additional unconventional weapons or third parties. The nuclear balance alone does not determine precisely what actions the NNWS will select. The point is simply that the NNWS will act in a manner in which its behavior falls below the nuclear-use threshold.

### The Conventional Military Balance

The conventional military balance looms larger in nuclear monopoly than it does when both sides have nuclear weapons. Analysts have argued that in situations of joint nuclear possession, which side has more conventional military forces does not matter because the nuclear shadow means that fighting simply invites mutual nuclear suicide.<sup>85</sup> In nuclear monopoly, though, the absence of a nuclear capability for the NNWS removes a major benefit of nuclear use: staving off a potential nuclear strike. There is no need for the NWS to use nuclear weapons early in any conflict in a counterforce strike to eliminate a nonexistent nuclear arsenal. By contrast, an NWS facing another NWS has incentives to strike early if it believes that escalation is inevitable, in order to eliminate the opponent's ability to strike with nuclear weapons. "Even if one cannot knock out all of the other side's weapons," Jeffrey Knopf argues, "the possibility of destroying some of them before launch might still look like the best option. Losing two or three cities is a terrible disaster, but it is not as bad as losing five or eight or ten cities."<sup>86</sup>

The NNWS's conventional strategy and military capabilities are therefore the main sources of danger to the NWS. I addressed the conventional aims and means in the previous section. Here I focus on the underlying military capabilities. All else equal, the greater the danger, the more likely

the NWS is to use nuclear weapons, because the benefits of eliminating a large danger are greater than the benefits of eliminating a small danger. The greater the conventional capabilities of the NNWS relative to its nuclear-armed opponent, then, the more it must restrict its behavior. That is, the more it must limit its aims and means. In practice, this means avoiding actual combat. Conversely, the weaker the conventional capabilities of the NNWS relative to the NWS, the further the NNWS can push its opponent. A weak NNWS can challenge or resist to the point that a dispute escalates to war. For instance, the Soviet Union had to exercise greater restraint when confronting the United States in 1948 than China did in 1950.

#### THE RELATIONSHIP TO RESTRAINT

A militarily powerful NNWS must exercise greater restraint than a weaker NNWS for four reasons. No one reason by itself is decisive; taken together, though, they create a powerful inhibition against escalation for the NNWS. First, a powerful NNWS will create more difficulties for the NWS to execute military missions with conventional forces and, at the extreme, can defeat the NWS militarily. The NNWS will be in a position to deny the NWS's conventional platforms military success. For instance, a weak NWS may be unable to overcome NNWS air defenses to conduct militarily meaningful conventional air strikes. Knowing this, the NWS is likely to eschew conventional options and rely instead on nuclear weapons. More ominously, a powerful NNWS can threaten to quickly overwhelm or seriously degrade the nuclear-armed state's conventional forces. This confronts the NWS with the very real prospect of major military defeat. In this situation defeat occurs because the NWS loses its conventional forces, not because the benefits of continuing the struggle are low. For example, the United States saw little possibility of using conventional weapons alone to defeat the Soviet Union in 1948. As such, US planning explicitly incorporated nuclear weapons. By contrast, US planners knew that conventional military forces could defeat Iraqi forces in 1991; the debate centered on how costly such a victory would be.<sup>87</sup> In one case the choice was framed as victory or defeat in a critical region of the world, in the other it was how much victory would cost. Beyond the US case, Narang shows that states facing powerful conventional adversaries are likely to directly incorporate nuclear use into their military planning.<sup>88</sup> In sum, when the NNWS is powerful, the tradeoff between nuclear and conventional military efficacy leans toward nuclear, raising the benefits of a nuclear strike.

Second, it is difficult for a powerful NNWS to signal limited intentions. A weak NNWS can manufacture a local advantage to achieve some limited gain but still credibly commit not to expand the scope of the conflict to threaten the nuclear state's survival or nuclear forces. The reason is simple: the weak NNWS lacks the physical ability to do so. True, a powerful NNWS

may be in a better position to execute a limited offensive than a weaker actor. The problem is that a powerful NNWS has an incentive to bluff, feigning limited intentions to avoid early nuclear retaliation before expanding the scope of the conflict to a point where nuclear strikes are ineffective or counterproductive.<sup>89</sup> Indeed, conventionally powerful states have incentives to make large demands.<sup>90</sup> Nuclear-armed states will therefore discount signals by a powerful NNWS to limit their aims and means. As a result, a powerful NNWS must engage in greater efforts at costly signaling than a weak NNWS.<sup>91</sup> One critical way to do this is for the NNWS to avoid military preparations that would put it in a position to seriously harm the nuclear-armed opponent. By not preparing for a major conflict, the NNWS reduces danger to the NWS and leaves itself vulnerable should the conflict escalate. A state planning to escalate would be unlikely to deliberately place itself at such a disadvantage. The nonpreparation thus serves as a credible signal.

Third, a powerful NNWS poses a significant danger to the NWS's arsenal. As noted above, threats to the NWS's nuclear arsenal increase incentives for nuclear use by creating a use-it-or-lose-it dynamic. NNWS conventional operations will tend to avoid the NWS's arsenal, support forces, and command and control as a result. Yet a powerful NNWS generates a danger simply by virtue of its superior military capabilities. Indeed, in many ways a powerful NNWS finds itself in the worst of all possible worlds. It is strong enough to pose a legitimate threat to the NWS's arsenal over a relatively short time. This creates a motive for the NWS to use nuclear weapons in the event of a war. At the same time, for reasons outlined in the previous section, the NNWS is unlikely to be able to completely eliminate its opponent's nuclear arsenal in a single or even series of rapid preemptive strikes before the NWS can retaliate in some manner. This provides an opportunity for the NWS to use nuclear weapons once fighting starts. The result is another nuclear brake on a strong NNWS's willingness to fight.

Fourth, a powerful NNWS is more likely to create situations that lead to unintentional or accidental nuclear use by an NWS opponent. This follows in part from the steps the NWS may take against a powerful NNWS as discussed above. For example, directly incorporating nuclear weapons into military planning or making them ready to use in the event of conventional hostilities requires several actions that make unauthorized and accidental nuclear use more likely. These include the peacetime or intra-crisis dispersal of nuclear weapons and the delegation of launch authority. This necessarily gives more individuals the ability to use nuclear weapons outside central direction.<sup>92</sup> To borrow from Harry Truman, "some dashing lieutenant colonel" may now be able to execute nuclear strikes.<sup>93</sup> A powerful NNWS is more likely to generate a false alarm that a nuclear arsenal is under attack. A weak NNWS is unlikely to possess the capability, given NWS military forces, to attack a nuclear arsenal even if it wanted to do so.

Reports of attacks on nuclear facilities would therefore be discounted or, even if believed, unlikely to generate concern that a counterforce attack capable of eliminating the nuclear arsenal was under way. The NWS is more likely to believe that a powerful NNWS is capable of executing such a strike and may be attempting to degrade the NWS's nuclear arsenal.

#### THE RELATIONSHIP TO ADDITIONAL STRATEGIES

The conventional balance has its most direct effect on limiting the NNWS's conventional aims and means for several reasons. To begin with, as noted earlier, an NWS that can perform a task equally well with a nuclear or conventional weapon will rely on the conventional weapon if there are any added costs with nuclear use. A weaker NNWS will pose fewer challenges for conventional tasks, reducing the benefits of nuclear strikes and allowing other costs to loom large. Additionally, as the immediate danger to the NWS increases, a particular level of costs may no longer be sufficient to offset the benefits. Limiting the scope of its actions is the most direct route to offset the danger created by an NNWS's conventional capabilities that can inflict major defeat, complicate signaling, and threaten the NWS's arsenal.

By contrast, the effect of the relationship between conventional capabilities and the other NNWS strategies to minimize the dangers of nuclear strikes is either smaller than the link to restraint or it reinforces the leverage of weak actors. This pushes the conventional balance's influence on the scope of NNWS aims and means to the fore. Dispersing forces and population is not very expensive, so neither strong nor weak states have much advantage. Iraq was able to devise a rudimentary command and control system for its mobile missiles during the Gulf War that frustrated the much more powerful United States. Even skilled non-state actors have been able (on a smaller scale) to make effective use of dispersion, cover, and concealment.<sup>94</sup> A powerful NNWS may be in a better position to harden targets, thereby reducing the benefits of nuclear strikes. At the same time, a weak NNWS is likely to have fewer targets that necessitate nuclear strikes, reducing the costs of securing those sites as well as the benefits to the NWS of nuclear use in the first place. Very poor and technologically deficient states are unlikely to develop unconventional weapons, but the barriers to such programs are modest. In a comprehensive analysis, Michael Horowitz and Neil Narang find only "weak evidence that GDP per capita and GDP per capita squared are positively associated with a greater risk of chemical weapons pursuit." According to their data, states such as Egypt, India, Syria, Yugoslavia, and Zimbabwe all acquired chemical weapons during periods when they were weak.<sup>95</sup>

A stronger NNWS has advantages and disadvantages in leveraging outside support to act as a restraint on nuclear use. A third party (or parties)

has its own incentives to counterbalance powerful nonnuclear weapon states more than weak ones because the former are greater potential threats. External actors that may otherwise want to prevent nuclear use might delay intervention on behalf of a powerful NNWS, willing to allow a conflict to evolve if it weakens a powerful NNWS. That in turn reduces the threat to the third party itself or promises greater influence in the future. By contrast, a weak NNWS presents a much more limited threat to third parties. Precisely because the danger is smaller, a third party interested in arresting nuclear use is more likely to threaten intervention early in a conflict. In addition, a weak NNWS is better positioned to confront an opponent with the prospect that outside intervention will change the nature of the war. A powerful NWS has an incentive to avoid widening the conflict and creating a perilous situation. A weak NWS already faces a perilous situation; the threat of third-party involvement is a less effective tool for a powerful NNWS as a result.

Finally, a nuclear strike against a weak NNWS is likely to be seen as a more egregious violation of nuclear nonuse norms than such a strike against a powerful adversary. It would invite greater international and domestic sanctions. George Quester speculates that the international "shock" over nuclear use "would be much less" following a very destructive conventional war.<sup>96</sup> A powerful NNWS would be in a better position to fight such a conflict. Scott Sagan and Benjamin Valentino find that American public support for nuclear strikes increases rapidly with the danger to US forces in a hypothetical conflict.<sup>97</sup> To be sure, many other factors would influence the reaction to nuclear strikes against a nonnuclear opponent. And a weak NNWS that inflicted large losses against a nuclear opponent would have to fear nuclear strikes (which returns to the importance of managing aims and means). All else equal, though, states that cannot decisively defeat a nuclear-armed opponent can rely more on normative inhibitions.

#### THE PERILS OF WEAKNESS

While a weak NNWS can leverage a number of strategies to minimize the risks of nuclear strikes, this does not mean that it will rush headlong into war against a nuclear opponent. To begin with, if there is no underlying political conflict, then it does not matter if the NNWS is conventionally weak and able to devise brilliant plans to minimize the risks of nuclear use. There is simply no reason to fight. Similarly, if the NNWS is satisfied with the diplomatic trajectory during the dispute, then it is unlikely to rush to war. For example, Egypt secured American involvement in negotiations with Israel following the October 1973 War. As such, Sadat preferred to avoid fighting as diplomacy led to a series of agreements, in fits and starts, that culminated in the 1979 peace treaty.

A weak NNWS may wish to avoid fighting and concede early in any dispute if it believes that it lacks a conventional strategy or sufficient domestic or international support to attain its political objectives. An NNWS that lacks any plausible chance for success is unlikely to act even if it were confident that nuclear weapons would not be used. As noted, the NNWS will tend to pursue only limited offensives or defensive strategies. This requires that the NNWS be able to manufacture local superiority at the point of attack or face the NWS on or near its territory. If neither condition holds, then war is unlikely. Even with these limitations, my argument highlights that there are more opportunities for a weak NNWS to stand firm in a dispute than for a powerful NNWS. A powerful NNWS, even if it believes it could succeed in a conventional conflict with an NWS, must curtail its aims and means because they pose a greater danger to the NWS, thus raising the benefits of nuclear use.

#### SUMMARY

A conventionally powerful NNWS is more likely to be able to block NWS conventional operations, more likely to inflict major defeat on the NWS, less likely to be able to signal limited intentions, more likely to deliberately or inadvertently threaten the NWS arsenal, and more likely to generate dynamics that lead to accidental or unauthorized nuclear launch. As such, a powerful NNWS must fear nuclear strikes and is more likely than a weak NNWS to significantly limit its aims and means during any dispute with a nuclear opponent.

#### Predictions

My argument makes four main predictions. First, wars should be rare when the NNWS is militarily powerful relative to the NWS. A powerful NNWS can still confront a nuclear-armed opponent, but it will face strong pressure to restrain its behavior and avoid actual fighting. Most wars involving a powerful NNWS relative to an NWS opponent will be “selected out” of the system as the powerful NNWS seeks an alternative solution.<sup>98</sup> Second, those wars that do occur in nuclear monopoly should not pose a danger to the survival of the NWS or its nuclear forces, or involve major combat operations on its homeland.

Third, during confrontations, NNWS leaders should discount nuclear use because they believe the costs to the NWS of using nuclear weapons outweigh the benefits. The NNWS cannot know the precise threshold for nuclear use, and aspects unique to each situation matter. As a result, not every case will feature the same discussions as the NNWS probes the limits of the nuclear shadow. But there should be evidence that the NNWS



assessed strategic factors that influence the costs and benefits of nuclear use. In terms of benefits, discussions are likely to focus on the dangers that the NNWS actions pose for the nuclear opponent. If the NNWS is very weak and fighting entirely defensively, there may be little discussion at all. Yet this is not solely the product of capabilities; even a weak NNWS must worry if its forces begin inflicting serious harm on the nuclear opponent, because this raises the benefits of a nuclear strike. Additionally, if costs of nuclear use are very low, then even modest benefits might be sufficient to create incentives for nuclear strikes. In terms of costs, the NNWS can focus on how nuclear use would be counterproductive for the nuclear state. Some costs are intrinsic to the situation. For example, Iraqi leaders believed that US nuclear strikes that damaged oil wells would harm US interests. States not blessed by geography cannot rely on such a constraint. Other costs are subject to NNWS manipulation. Importantly, if the NNWS fears that the benefits of nuclear strikes will outweigh the costs, its leadership should identify additional strategies to pursue to reduce benefits or raise costs. In some cases, the NNWS will have to do very little. In other cases, it will struggle to bring benefits below costs and have to constrain its behavior accordingly.

Finally, NNWS behavior should coincide with this planning. That is, the NNWS will act within the red lines that its leadership identifies. The NNWS need not pursue every means to raise the costs or decrease the benefits of nuclear use. But there should be evidence that it takes the nuclear balance into consideration and behaves in a manner it believes will not invite a nuclear strike.

## Assessing the Argument

I rely on cross-case and within-case analysis to assess my argument. Specifically, I examine whether there is general congruence between power asymmetries and war in nuclear monopoly. I also examine process evidence to determine if NNWS leaders factored nuclear weapons into their decision making, the rationale they identified as to why nuclear use was unlikely, and if their behavior matched that planning.<sup>99</sup> By themselves, the case studies and cross-case comparisons have a number of limitations. By including both I am able to assess more observable implications, increasing the confidence in the overall findings. In the rest of this section I discuss each approach.

### WITHIN-CASE ANALYSIS

The case studies combine congruence methods with historical process tracing. In terms of congruence, I determine if the wars observed were fought when the NWS possessed a large conventional military advantage.

I focus on military power at the outset, because the core logic of the argument centers on whether the NNWS poses a large military danger in the short term that requires nuclear weapons to offset. Even if the NWS has more latent power, such as a larger overall economy or greater energy, iron, and steel production, that advantage may not have time to manifest itself before the NNWS is able to defeat the NWS's conventional forces.

I use quantitative and qualitative measures for military power. I rely on military spending and levels of economic development as the main quantitative indicators.<sup>100</sup> For qualitative indicators, I examine how participants at the time, and how historical assessments, characterized the military balance. In cases where multiple conflicts occurred I include performance from past confrontations to inform this assessment. Thus, Egyptian performance in the 1967 Six Day War cannot be used to code the military balance for that war but can be used to inform the assessments of the balance prior to the 1969 and 1973 wars. Where possible, I also assess the ability of the NWS and the NNWS to perform complex operations and tactics.<sup>101</sup>

The case studies also employ historical process tracing. Historical analysis is used to inform the coding of military capabilities and provide general background for the cases. Process tracing then also examines the steps to see if the key actors behave and talk in a manner consistent with the argument's underlying logic. This also allows examination of possible confounding factors that may be influencing decision making or factors that can mask the influence of nuclear weapons in the conflict.<sup>102</sup> I rely on internal meetings, military orders, and actual behavior during each conflict. Importantly, the planning *and* conduct must be consistent. For instance, if the NNWS leaders plan for a major offensive that threatens the survival of the nuclear-armed opponent but are only able to execute a limited offensive, this challenges my argument. Nor is my argument supported if the NNWS leadership plans for a limited offensive but expands the scope of operations as opportunities emerge, without taking other measures to minimize the risks of nuclear use.

Process evidence is particularly important in establishing the causal import of my argument. All explanations for conflict in nuclear monopoly explicitly or implicitly rest on the NNWS discounting the likelihood of nuclear use. The key issue is why states would discount the likelihood of nuclear use. For instance, Narang claims that nuclear weapon states with catalytic or assured retaliation force postures are less likely to deter conventional assaults because adversaries will not fear force postures aimed primarily at drawing in third parties or deterring nuclear strikes.<sup>103</sup> Most normative arguments only investigate the role that nuclear nonuse norms play in causing an NNWS to believe nuclear weapons will not be used.<sup>104</sup> My argument does not claim these explanations are incorrect; I directly incorporate several of their insights. Process evidence can establish that these alternative explanations are insufficient by themselves, however.

## CASE SELECTION

I examine four disputes in detail: the Soviet Union versus the United States (1945–1949), the People’s Republic of China versus the United States (1949–1964), Iraq versus the United States (1979–2003), and Egypt versus Israel (1967–1979). These cases provide several sources of leverage for my argument. First, three of the cases involve an NNWS confronting a nuclear-armed opponent with a small number of nuclear weapons. One might expect state leaders to take large nuclear arsenals more seriously. If NNWS leaders still take nuclear weapons into consideration even when the NWS possesses limited destructive power, it is reasonable to conclude they would do so when the nuclear opponent could draw on a larger number of weapons as well.

Second, the nuclear weapon states in these four cases are both democracies. Theory and intuition suggest that nuclear nonuse norms are more likely to constrain democracies than autocracies. This is not to argue that autocracies do not adopt or recognize various norms, merely that they are less likely to do so than their democratic counterparts. Selecting democracies therefore biases the cases in favor of finding evidence that norms alone influenced NNWS decision making.

Third, the cases are diverse. This allows me to determine if the argument’s key features were present in each case while other factors change. If different leaders in different time periods facing arsenals of varying size, sophistication, and force postures all identified strategic factors that inhibited nuclear use, this suggests the importance of those dynamics. This approach has several drawbacks, but these can be compensated for by other parts of the analysis.<sup>105</sup>

Fourth, the Egyptian-Israeli case appears as a major outlier for my argument. After all, Egypt consistently had at least as large a military as Israel and a much larger overall population. Egypt could also rely on the support, albeit tepid at times, of Arab allies and the Soviet Union. A careful inspection of this case is therefore imperative. As I show in chapter 3, though, Israeli conventional capabilities consistently outstripped those of its Egyptian rival. The case is in fact consistent with my argument.

Finally, in each case the NNWS could avoid a major conflict. That is, these are not cases where the NWS simply attacked its nonnuclear-armed opponent. A direct assault against a weaker opponent fought on NNWS territory that led the NNWS to fight would be consistent with my argument. The NNWS would be fighting defensively, pose little danger to the NWS, and the location of the operation would create challenges to nuclear use. But those are easy cases and not particularly surprising. More interesting are cases where the NNWS confronted the nuclear-armed opponent or had the opportunity to give in to demands without risking its regime or territory.

## CROSS-CASE ANALYSIS

The cross-case analysis seeks to supplement the within-case analysis by examining the generalizability of two key predictions. It cannot confirm or refute the basic argument on its own, but shows it can plausibly account for additional cases. First, I compare the conventional balance in wars in nuclear monopoly to the conventional balance in wars without nuclear-armed states. I show that wars in nuclear monopoly are fought when conventional capabilities are more unbalanced than they are in wars between two or more nonnuclear-armed states.

Second, the cross-case analysis demonstrates that wars in nuclear monopoly pose limited danger to the NWS. My argument predicts that in nuclear monopoly, the NNWS will not pose certain dangers to the nuclear-armed state. There is not an obvious comparison in wars with only conventional states—it is not clear which side should limit its behavior—but we know that in some wars involving only conventionally armed states, one or both sides have faced major threats to their territory and regime.<sup>106</sup> This provides an implicit background comparison: if we never or very rarely observe nuclear-armed states facing this type of danger, then one can infer, albeit with limited confidence, that nuclear weapons play a role in that outcome.<sup>107</sup>

This chapter developed a framework to account for conflict in nuclear monopoly. It began by outlining the benefits and costs of nuclear use in nuclear monopoly for the NWS. This established the strategic environment that the NNWS confronts. NNWS leadership can act so long as it believes that the costs of nuclear use for its nuclear-armed opponent outweigh the benefits of nuclear use relative to conventional military alternatives. The more militarily capable the NNWS is relative to the NWS, the more the former must limit its behavior. As a result, wars in nuclear monopoly will tend to occur when the NWS has a large conventional military advantage. In all confrontations, the NNWS will highlight strategic factors that inhibit nuclear use and, when necessary, seek to reduce the benefits and raise the costs of nuclear use for the NWS.