

1 The Logic of Latent Nuclear Deterrence

On March 11, 1977, General Ivan Kukoč, a senior military commander in the former Yugoslavia, sent a message to other countries. “Yugoslavia has succeeded in developing a powerful industrial–technological research capacity that can basically meet the requirements of Yugoslavia’s armed forces,” General Kukoč said.¹ Yugoslavia had indeed been developing dual-use technology that provided the foundation for a nuclear weapons program. By 1966, it had nuclear reactors and a small plutonium reprocessing facility operating at its nuclear research institute in Vinca, a suburb of Belgrade.² These capabilities provided the potential to produce fissile material: the most essential ingredient for making a bomb.

If anyone launched an armed attack against his country, General Kukoč warned, Yugoslavia would arm with nuclear weapons and World War III would ensue. He made it clear, however, that other countries could prevent Yugoslavia from arming with nuclear weapons by maintaining peace. As the general put it, “Whether Yugoslavia will be forced . . . to start production of an atomic bomb depends least of all on Yugoslavia.”³

This was a clear attempt to gain international influence by raising the prospect of nuclear weapons proliferation. Yugoslavia is hardly alone in following this blueprint. Over the past 75 years, many nonnuclear countries – Argentina, Iran, Germany, Spain, Taiwan, and others – have used their bomb-making potential to deter military threats and enhance political leverage internationally. I refer to this strategy as “latent nuclear deterrence” or “weaponless deterrence.” Does it work?

To find out, we must first develop the logical foundations of latent nuclear deterrence. This chapter does just that. It starts by returning to the fundamentals of deterrence in world politics, explaining how it works and what it takes to succeed. I then explain why nuclear weapons

¹ Browne (1977).

² Potter et al. (2000).

³ Browne (1977).

are an effective deterrent. However, having assembled nuclear weapons is not the only way to gain political leverage from a nuclear program. This chapter explains how countries can gain political benefits from their nuclear programs despite being unarmed. There are three mechanisms through which latent nuclear deterrence can work: proliferation, delayed attack, and doubt.

Many scholars are skeptical that these means of influence offer a path to greater security. Others see latent nuclear forces as an effective substitute for having assembled weapons. The reality is somewhere in the middle.

Nuclear latency offers a path to greater security, but one that is rife with obstacles. I develop latent nuclear deterrence theory in two parts. First, I describe three major challenges that make latent nuclear deterrence difficult. Second, I articulate three solutions that help countries overcome these challenges, increasing the likelihood of success. The end result is a theory that helps us understand when nuclear latency enhances international influence, and when it incites instability. The chapter closes by describing the predictions about international relations that follow from the theory. It tells us something about a diverse array of topics in international relations: technology diffusion, military conflict, foreign policy preferences, preventive war, nuclear armament, and arms races.

The Logic of Deterrence

This book is about international influence. At the broadest level, it examines one country's ability to alter another's behavior. I focus here on a narrower concept: deterrence. Scholars and policymakers sometimes use this term colloquially as a proxy for influence, but it has a specific meaning.

Deterrence is an exercise in political power. As the political scientist Glenn Snyder put it more than 60 years ago, deterrence is broadly "a process of influencing the enemy's *intentions*."⁴ In deterrence, one actor (the defender) attempts to dissuade another (the challenger) from taking an unwanted action. The defender's goal is to preserve the status quo by altering how the challenger views the costs and benefits of its choices. The theory developed in this chapter has implications for a broad array of foreign policy outcomes, including some that may be intended to change – not preserve – the status quo.⁵

⁴ Snyder (1961, 11).

⁵ Attempts to change the status quo – for example, by annexing territory from a neighboring state – is usually called "compellence." Some of the outcomes studied in the book – especially foreign policy alignment and US troop deployments – straddle

Regular people experience deterrence on a daily basis. Homeowners can deter break-ins by installing security systems on their property. A spouse might help their partner maintain a difficult-to-keep diet by eliminating all foods from the refrigerator that are off limits to the dieter. Companies include requirements in their job ads in part to limit applications from those who are clearly unqualified. Parents might proactively seek to avoid embarrassing public outbursts by telling their toddlers that temper tantrums will result in the loss of their postdinner dessert. Police forces hope to deter people from driving too fast by issuing fines to speeders. Employees tend to show up to work on time, even when they would prefer to sleep in, since their bosses might fire them for repeated tardiness.

Deterrence is an essential feature of international relations, too. World leaders routinely seek to prevent their counterparts from taking threatening actions. Although deterrence operates in the nonmilitary sphere of world politics, in international-relations scholarship, it usually involves military force.⁶ Leaders issue threats of military retaliation in order to deter another country from employing force in a threatening way.⁷ Leaders may practice deterrence by issuing explicit verbal threats. They may tell their rivals, “if you take that action, which I find undesirable, I will respond in the following way.” Yet leaders often communicate their intentions implicitly through military maneuvers, like troop deployments.

Consider a few examples. In the 1930s, France built defensive fortifications along its border, known as the *Maginot Line*, to stymie a potential German invasion.⁸ The United States installed metal detectors in airports beginning in 1973, partially to dissuade terrorists from bringing weapons on planes. Since 2011, Israel has deployed a missile defense system called *Iron Dome* to intercept rockets fired from Hamas-controlled Gaza and elsewhere. After an Iraqi troop buildup along the border with Kuwait in October 1994, four years after Saddam Hussein’s first invasion of the country, US Secretary of State Warren Christopher asserted that Iraq would pay a “horrendous price” if it attempted a second land grab.⁹ During a crisis between Afghanistan and Iran in September 1998, a spokesman for the Taliban issued a deterrent threat:

the line between deterrence and compellence. On compellence, see Schelling (1960), Sechser (2011), Sechser and Fuhrmann (2017), and Volpe (2023).

⁶ See Snyder (1961, 11) and Huth (1999, 26).

⁷ For examples of scholarship that conceives of deterrence in this way, see Zagare and Kilgour (2000), Danilovic (2002), Leeds (2003), Sartori (2005), and Narang (2014).

⁸ The *Maginot Line* was named after André Maginot, the French war minister.

⁹ Gordon (1994).

“Iran must know that if the soil of Afghanistan is attacked, we will target Iranian cities and the entire responsibility will rest with Iranian authorities.”¹⁰ In August 2012, Barack Obama threatened to intervene in Syria’s civil war if Bashar al Assad used chemical weapons: “That’s a red line for us . . . there would be enormous consequences if we start seeing movement on the chemical weapons front or the use of chemical weapons.”¹¹

The preceding examples reveal two distinct strategies of deterrence. First, defenders can manipulate the likelihood that challengers will obtain the benefits they seek. This strategy, which is commonly called deterrence by denial, is designed to threaten adversaries with failure.¹² The first three aforementioned examples from everyday life follow this logic. So do the *Maginot Line* and *Iron Dome*. A second strategy, deterrence by punishment, is to make it more costly for the challenger to change the status quo. Rather than making it physically more difficult for an actor to carry out a certain action, as in the denial case, this approach relies on inflicting pain on those who make undesirable decisions. The latter three examples from everyday life fall into this category, along with the threats from Secretary Christopher, the Taliban spokesman, and President Obama.

Successful deterrence – whether by denial or punishment – depends on three main requirements. First, a defender must have the capability to deny benefits or impose costs on challengers.¹³ Second, there must be a nonzero probability that the defender would carry out its threat.¹⁴ The third requirement is implicit in deterrence theory but is often not made explicit in scholarship.¹⁵ A challenger must believe that it will not pay the costs associated with an attack if it maintains the status quo. Behind every threat is a promise. As economist Thomas Schelling put it, “To say, ‘One more step and I shoot,’ can be a deterrent threat only if accompanied by the implicit assurance, ‘And if you stop I won’t.’”¹⁶

¹⁰ Muir (1998).

¹¹ Obama (2012).

¹² See Snyder (1961), Mearsheimer (1983), and Pape (1996).

¹³ Zagare and Kilgour (2000, 290) call this the only condition that is “absolutely necessary” for deterrence success.

¹⁴ The first two requirements work in tandem to shape deterrence outcomes. Whether the defender’s threat is sufficient to dissuade an attack depends on the costs of attacking discounted by the probability that those costs will be imposed. Thus, low-likelihood threats may deter if the potential costs are high.

¹⁵ Kydd and McManus (2017) is one relevant exception. See also Pauly (2019).

¹⁶ Schelling (1966, 74).

Deterrence with Nuclear Weapons

Countries frequently invoke nuclear weapons to influence the behavior of their adversaries. During the Cold War, the United States depended on its nuclear arsenal to deter aggression by its enemies. As President Ronald Reagan explained to the American people in a televised address on March 23, 1983, “Since the dawn of the atomic age, we’ve sought to reduce the risk of war by maintaining a strong [nuclear] deterrent.”¹⁷ Nuclear weapons figured prominently in many Cold War episodes. Early in the Cold War period, Washington deployed tactical nuclear weapons to several European allies – Belgium, the Netherlands, West Germany, and others – to dissuade the Soviets from invading Western Europe.¹⁸ During two crises with China in the Taiwan Strait during the 1950s, US officials threatened to use nuclear weapons if China invaded Taiwan. In 1955, after the United States conducted a series of tactical nuclear tests designed to intimidate China, Dwight D. Eisenhower warned Beijing not to invade, saying that you can use nuclear weapons “as you would use a bullet or anything else.”¹⁹ During the 1971 Indo-Pakistani War, Richard Nixon deployed the USS *Enterprise*, an aircraft carrier that contained nuclear weapons, to the Bay of Bengal. Nixon clarified the aim of this implicit nuclear threat in his memoirs: It was “a display of old-fashioned gunboat diplomacy aimed at India and Russia” warning them “not to attack West Pakistan.”²⁰

The Soviet Union similarly relied on nuclear weapons to restrain its adversaries and prevent undesirable changes to the status quo. After the Americans carried out nuclear attacks against Hiroshima and Nagasaki in August 1945, Soviet dictator Josef Stalin reportedly told those in charge of Moscow’s atom bomb project, “The equilibrium has been destroyed. Provide the bomb – it will remove a great danger from us.”²¹ The Soviet Union obtained nuclear weapons four years later, thereby reducing its perceived vulnerability to American aggression. In addition to protecting its homeland and the territorial integrity of its Warsaw Pact allies, Moscow used its nuclear arsenal as a means of influence in Cold War crises. Soviet leader Nikita Khrushchev placed nuclear forces in Cuba in 1962, for example, in part to deter a US invasion of the island, an action that precipitated the Cuban missile crisis. The Soviet Union also relied on its arsenal to limit military escalation in the 1969 border

¹⁷ Reagan (1983).

¹⁸ See Fuhrmann and Sechser (2014).

¹⁹ Quoted in Betts (1987, 59). See also Sechser and Fuhrmann (2017, 190).

²⁰ Quoted in Black (2010, 21).

²¹ Quoted in Holloway (1981, 183).

crisis with China. A Soviet official conveyed an ominous warning to his American counterpart: “[we] would not hesitate to use nuclear weapons against the Chinese if they attacked with major forces.”²² In addition, the Soviets increased the combat readiness of their nuclear rocket forces during the 1968 invasion of Czechoslovakia, the 1973 Yom Kippur War, and in moments of tension with the United States from 1982 to 1984.²³

Nuclear deterrence remains a key feature of world politics thirty-plus years after the collapse of the Soviet Union. Since their reciprocal nuclear tests in May 1998, India and Pakistan have each issued nuclear threats in order to deter military aggression. A Pakistani official told the *Financial Times* in January 2017, for instance, “If ever our national security is threatened by advancing foreign forces, Pakistan will use all of its weapons – and I mean all of our weapons – to defend our country.”²⁴ Russian President Vladimir Putin was prepared to put nuclear forces on alert in order to deter Western intervention following his annexation of Crimea – territory that had previously belonged to Ukraine – in March 2014.²⁵ Putin went further with his nuclear threat-making after Russia’s full-scale invasion of Ukraine in February 2022. If anyone “stands in our way,” he said, “they must know that Russia will respond immediately, and the consequences will be such as you have never seen in your entire history.”²⁶ Donald Trump and Kim Jong Un exchanged nuclear threats prior to their June 2018 summit meeting in Singapore. In August 2017, Trump threatened to inflict “fire and fury like the world has never seen” on North Korea if it threatened the United States. Four months later, Kim warned Trump not to invade his country: “It’s not a mere threat but a reality that I have a nuclear button on the desk in my office,” adding, “All of the mainland United States is within the range of our nuclear strike.”²⁷

Why Nuclear Deterrence Is Effective

Nuclear weapons are widely viewed as effective deterrents. Many scholars have argued that nuclear weapons prevented major power war after 1945.²⁸ This view is pervasive among world leaders as well. Khrushchev

²² US Department of State (2001). For a more complete discussion of Soviet nuclear signaling during this crisis, see Sechser and Fuhrmann (2017, 210–218).

²³ Blair (1993, 25–26).

²⁴ Stacey and Bokhari (2017).

²⁵ MacFarquhar (2015).

²⁶ Quoted in Cirincione (2023).

²⁷ Quoted in Sang-Hun (2017).

²⁸ See especially Gaddis (1986) and Jervis (1989).

believed that the Soviet Union's nuclear arsenal made a US-backed attack virtually impossible: "our enemies probably feared us as much as we feared them," he wrote in his memoirs, "they had to respect our borders and our rights, and . . . they couldn't get what they wanted by force or by blackmail."²⁹ Western leaders similarly believed that nuclear weapons prevented the Cold War from turning hot. This is exemplified by Winston Churchill's famous proclamation, in his last major speech before parliament in 1955, that we "have reached a stage in this story where safety will be the sturdy child of terror, and survival the twin brother of annihilation."³⁰ Belief in the deterrent value of nuclear weapons is hardly anachronistic. Obama, who called for the eventual elimination of nuclear weapons, also acknowledged the potential for nuclear weapons to bring peace and stability. His administration's *Nuclear Posture Review* stated that US nuclear weapons "will continue to play an essential role in deterring potential adversaries" as long as they exist.³¹

This military technology bolsters deterrence because it greatly enhances a state's capability to deny benefits or impose costs on aggressors. Nuclear weapons, particularly small tactical weapons, are potentially useful for military denial: They can blunt invasions by swiftly killing many advancing forces and rendering land impenetrable due to radioactive contamination.³² The biggest feature of nuclear weapons from a deterrence standpoint, however, is their unique ability to inflict pain. With nuclear weapons, entire cities could be eviscerated in a matter of minutes. An airburst of a nuclear weapon the size of the *Little Boy* bomb the United States dropped on Hiroshima (15 kilotons) above Houston – the fourth largest US city – would kill an estimated 83,800 people and leave another 69,130 injured. The *Little Boy* bomb is small by today's standards. If we increase the yield to 1.2 megatons – the size of the B-83, the largest bomb currently in the US arsenal – the estimated number of people killed in Houston spikes dramatically to 355,890.³³ To put these figures in perspective, about 3,000 Americans died in the al

²⁹ Quoted in Holloway (1994, 343).

³⁰ Churchill (1955).

³¹ US Department of Defense (2010).

³² The United States deployed tactical nuclear weapons to Europe in large part for this reason. Weapon systems such as the *Davy Crockett*, which had a maximum firing range of about two-and-a-half miles and weighed less than 100 pounds, could be fired on advancing Soviet or Warsaw Pact troops if they attempted an invasion, while limiting the damage to civilians due to their relatively small explosive yield. The yield was 20 tons TNT, less powerful by a factor of 750 than the Hiroshima bomb.

³³ These calculations are based on the NUKEMAP simulator developed by the historian Alex Wellerstein, which is available at <https://nuclearsecrecy.com/nukemap/>.

Qaeda-orchestrated 9/11 attacks. Human casualties aside, large portions of the city would be destroyed and littered with radioactive fallout.

The ability of nuclear weapons swiftly to wipe cities off the map is unparalleled, giving them unique value for deterrence by punishment. The prospect of catastrophic retaliatory action forces potential aggressors to think twice before attacking nuclear powers. However, countries armed with nuclear arsenals are hardly invulnerable. In 1968, North Korea seized the USS *Pueblo* and its crew. Egyptian and Syrian forces mounted an attack against Israel in 1973, leading to the Yom Kippur War. Argentina attempted to wrest the Falkland Islands from the United Kingdom in 1982. And Pakistan instigated the 1999 Kargil War with India. How could nuclear deterrence fail, given the destructive power of atomic bombs?

The answer has to do with credibility. It is difficult for countries to make nuclear threats believable because carrying out a nuclear strike would be costly for the defender, in addition to the country that it attacks. If the challenger is also a nuclear power, launching a nuclear attack in response to conventional aggression could be suicidal. Using nuclear weapons would also invite substantial political blowback, lead to international isolation, set a dangerous precedent, and shatter the longstanding taboo against nuclear use.³⁴ Nuclear use, therefore, would be costly even against a nonnuclear state. As Newt Gingrich, the conservative Congressman from Georgia who would later become House speaker, put it in 1991 during a debate about the possible use of nuclear weapons against Iraq during the Persian Gulf War: If the United States were to “establish a pattern out there that it is legitimate to use those kinds of weapons, our children and grandchildren are going to rue the day.”³⁵

In light of these costs, countries will most likely resort to nuclear use only in dire circumstances. As President Kennedy put it when thinking about the dispute with the Soviet Union over the status of Berlin in 1961, “If I’m going to threaten Russia with a nuclear war, it will have to be for much bigger and more important reasons than that [access to Berlin]. Before I back Khrushchev against the wall and put him to a final test, the freedom of all Western Europe will have to be at stake.”³⁶ Threats to carry out nuclear strikes in retaliation for the occupation of disputed islands located thousands of miles from the homeland or the seizure of a

³⁴ For an in depth discussion of the nuclear taboo, see Tannenwald (2007). Sechser and Fuhrmann (2017) provide a broad discussion about the costs of using nuclear weapons in pursuit of coercive goals.

³⁵ Quoted in Bundy (1991, 86).

³⁶ Quoted in Beschloss (1991).

small amount of land that the defender could live without, by contrast, would be easier to dismiss.

Defenders can manipulate how challengers view the credibility of their nuclear threats. A central question for deterrence theorists during the Cold War was how the United States or the Soviet Union could use their arsenals for political leverage in a world of mutually assured destruction (MAD), particularly when it came to defending peripheral interests.³⁷ This problem gave rise to brinkmanship theory – the idea that states can make seemingly incredible threats believable by taking dangerous actions that raise the risk of mutual disaster.³⁸ In brinkmanship, a leader's goal is to convince the adversary that nuclear weapons might be used even if the leader seemingly lacks the resolve (or the ability) to order an attack. A leader can do this by reducing their control over nuclear launch decisions. A nuclear alert, for instance, may give launch authority to pilots or local military commanders, increasing the odds of a launch due to an accident or miscalculation. The United States alerted its nuclear forces during the Cuban missile crisis, ultimately going to DEFCON 2 for the first and only time in its history. This contributed to a sense among both Kennedy and Khrushchev that they were losing control of events, which increased the believability of the US nuclear threat.³⁹

In many deterrence contexts, successful reassurance can be difficult. This is not so when it comes to deterrence with nuclear weapons. It is unlikely that a country would suffer an unprovoked nuclear attack. A country may turn to nuclear use in extreme contingencies, especially if it has been invaded. Yet a nuclear strike is unlikely in peacetime. Russia might say to the United States “we will use nuclear weapons if you seize Kaliningrad” (a noncontiguous part of Russia that borders Poland and Lithuania). The United States is unlikely to fear that it will suffer a nuclear attack if it does not invade. Russia's hypothetical threat may still fail, but this probably would not be because Washington felt that it was going to incur the threatened punishment anyway. Accidental or unauthorized nuclear use may occur, raising the possibility of vulnerability to a peacetime strike. To be sure, as I will discuss momentarily, countries worry about this kind of thing. In traditional nuclear deterrence, though, the third requirement poses less of a challenge than the first two.

³⁷ See, for example, Powell (1990).

³⁸ Schelling (1966).

³⁹ History shows, however, that countries struggle to make nuclear threats credible when they pursue ambitious foreign policy goals beyond deterring major attacks – even when they engage in brinkmanship. See Sechser and Fuhrmann (2017).

How Latent Nuclear Deterrence Works: Unpacking the Mechanisms

The vast scholarship on nuclear deterrence typically leaves one with the impression that assembled warheads are necessary to reap political benefits. This may not be the case. There are three ways in which countries could use nonweaponized nuclear programs to reap political benefits. I call these means of influence deterrence by proliferation, deterrence by delayed attack, and deterrence by doubt. Although these mechanisms are analytically distinct, it can be difficult to separate them in practice. As we will see throughout this book, countries sometimes employ more than one of these strategies at the same time in order to advance their interests.

All three forms of influence involve nonnuclear countries using the possibility of future weaponization to gain international leverage. They are distinct from traditional nuclear deterrence because the defender is not already nuclear-armed. As shown in Table 1.1, these mechanisms vary along two dimensions: the means of inflicting pain and whether there is a delay in the imposition of punishment.

When it comes to punishment, defenders threaten to carry out retaliatory nuclear attacks in deterrence by delayed attack and doubt. In these two means of influence, then, the threatened punishment is the same as in traditional nuclear deterrence. The threat is a less severe one in deterrence by proliferation: to possess nuclear weapons without actually using them in an armed attack.

Delayed punishment is a certainty in deterrence by proliferation and delayed attack, meaning that countries will not be unable to inflict pain immediately after a challenge to the status quo. In deterrence by doubt, by contrast, potential challengers have uncertainty about whether there would be a delay. This is because defenders attempt to create the impression that they *might* have nuclear weapons even though they are, in fact, nonnuclear.⁴⁰

Given these differences, the three means of influence vary in their capacity to meet the basic requirements for deterrence success. In deterrence by proliferation the threat is easier to make credible but carries less bite because the punishment costs are smaller. On top of this, reassurance can pose a major challenge. The punishment costs are greater in the other two means of influence but the threats are more difficult to make believable, and reassurance is a less thorny problem.

⁴⁰ Countries can also generate doubt about their capabilities when they have assembled one or more nuclear bombs, as Israel has done since 1967. As described shortly, however, I do not treat these cases as latent nuclear deterrence.

Table 1.1 *Comparing the mechanisms of latent nuclear deterrence.*

Mechanism	Punishment delay?	Means of punishment
Proliferation	Yes	Weapons possession
Delayed attack	Yes	Nuclear attack
Doubt	Maybe	Nuclear attack

However, all three mechanisms potentially offer countries a path to greater international influence.

Deterrence by Proliferation

In deterrence by proliferation, countries threaten to build nuclear weapons if another state challenges the status quo. This is a nontraditional form of punishment because it does not involve physical destruction. Yet policymakers and analysts think about the mere possession of nuclear weapons as a means of retaliation in international relations. For example, in January 2020, after the United States killed Iranian General Qasem Soleimani in a drone strike, some observers worried that Iran would punish the United States by marching toward a nuclear weapon. As US Senator Lindsey Graham said, Iran would probably retaliate by making “a dramatic escalation in their enrichment program.” He added, “a race for a bomb is the most likely thing they will do,” to punish Washington.⁴¹

Arming with nuclear weapons, or taking steps in that direction, can be a viable form of punishment because many countries find the international spread of nuclear weapons undesirable. For starters, one state’s development of nuclear weapons can harm others’ foreign policy interests. Nuclear weapons proliferation limits a state’s freedom of action militarily.⁴² For example, the United States might find it desirable to depose North Korean leader Kim Jong Un at some point in the future but the country’s possession of a nuclear arsenal would make implementing this policy exceedingly risky. By contrast, when an adversary does not possess nuclear weapons, the United States has more flexibility when considering invasions, foreign imposed regime changes, or other offensive military operations, as the cases of Iraq (2003) and Libya (2011) illustrate. In addition, nuclear powers might

⁴¹ Quoted in Rogin (2020).

⁴² Kroenig (2010, 2014a).

be emboldened to take greater foreign policy risks after they obtain an arsenal, thereby making other states more susceptible to military conflict.⁴³

Nuclear weapons proliferation also forces other countries to live in a state of vulnerability. The spread of nuclear weapons increases the possibility that they could be used as a result of accidents, unauthorized launches, or false alarms.⁴⁴ In addition, leaders may pay a domestic political price for an adversary's obtainment of nuclear weapons. Armament by a rival could cause the public to view their leader as inept in foreign policy, especially if he or she is responsible for stoking the adversary's nuclear program. At the very least, nuclear weapons proliferation is likely to generate criticism from domestic political opponents. For example, during the 2008 presidential campaign, then-candidate Barack Obama blamed the Bush administration for fueling North Korea's nuclear program. After highlighting Bush's aggressive actions toward Pyongyang, Obama said, "And you know what happened? They went – they quadrupled their nuclear capacity. They tested a nuke. They tested missiles. They pulled out of the nonproliferation agreement [the NPT]."⁴⁵

Given these costs, it is not surprising that many world leaders have voiced strong opposition to other countries getting nuclear weapons.⁴⁶ For example, John F. Kennedy thought that China's acquisition of nuclear weapons was likely to be, as one of his advisers put it, "the most significant and worst event of the 1960s."⁴⁷ More recently, Donald Trump understood that Iranian weaponization would be politically costly for him. He went out of his way to assert that this would not happen: "As long as I am President of the United States," he said as his

⁴³ See Bell (2015) for a detailed discussion of emboldenment in the context of nuclear proliferation. If nuclear weapons increase a country's coercive bargaining power, states might be forced to make costly concessions following an adversary's acquisition of nuclear forces. Whether nuclear weapons are useful for coercion – as opposed to deterrence – is still debated in scholarship. See, for example, Beardsley and Asal (2009b), Sechser and Fuhrmann (2017), and Kroenig (2013). Regardless of the reality, policymakers worry about nuclear blackmail.

⁴⁴ Sagan (1993) provides a classic discussion of this issue.

⁴⁵ Obama's remarks, which were made during his first presidential debate with John McCain on September 26 (2008).

⁴⁶ The United States and the Soviet Union cooperated during the Cold War to create a nonproliferation regime backed by the 1970 nuclear Nonproliferation Treaty (NPT). See Coe and Vaynman (2015).

⁴⁷ The quotation is from Walt Rostow and is quoted in Burr and Richelson (2000/2001, 61).

opening remarks in an address to the nation on January 8, 2020, “Iran will never be allowed to have a nuclear weapon.”⁴⁸

The defender in deterrence by proliferation exploits international opposition to nuclear armament in hope of gaining international leverage. This strategy is commonplace in international relations. In 1974, for example, Mohammad Reza Pahlavi, the Shah of Iran, reportedly boasted that his country will have nuclear weapons “without any doubt, and sooner than one might think.” This statement did not necessarily reveal the Shah’s determination to build nuclear weapons as quickly as possible, although some Western press reports interpreted it in this way. Instead, his remarks were a threat aimed at other potential proliferators. As the Shah put it, if “each country attempts to arm itself with with [*sic*] atomic [*sic*] weapons, maybe the interest of each requires that it arm itself.”⁴⁹ Richard Helms, then US ambassador to Iran, understood the Shah’s strategy: “the Shah wished to signal his concern about further proliferation,” Helms wrote in a then-confidential cable, “and indicate that Iran could not stand idly by if other nations like Israel or [*sic*] Egypt should go nuclear.”⁵⁰

Egypt’s Gamal Abdel Nasser pursued a similar strategy. In 1961, he declared, “we will secure atomic weapons at any costs” if Israel builds nuclear weapons.⁵¹ Nasser, like the Shah, hoped to keep a rival nonnuclear by threatening to follow suit if the rival armed. There was an implicit promise behind each of these threats: “if you don’t build nuclear weapons, neither will I.”

In the preceding examples, the defenders made verbal threats. Yet deterrence by proliferation can operate in the absence of explicit rhetoric. Leaders may prefer to be subtle when making proliferation threats, since raising the specter of nuclear proliferation can be politically and diplomatically costly. Deeds can convey deterrent threats without words, as noted earlier. Mobilizing troops or deploying naval assets can communicate a willingness to fight even if a leader never says anything like “if you threaten me, I will attack you.” Similarly, developing certain nuclear technologies can be sufficient to convey a proliferation threat, as I will discuss in more detail later in the chapter.

⁴⁸ The full text of Trump’s address is available at www.whitehouse.gov/briefings-statements/remarks-president-trump-iran/.

⁴⁹ The Shah is quoted in a telegram written by Helms (1974a).

⁵⁰ Helms (1974b).

⁵¹ Quoted in Solingen (2007, 239).

Deterrence by Delayed Attack

In the first means of influence, deterrence by proliferation, countries attempt to gain leverage over their adversaries by threatening to obtain nuclear weapons if they experience threats. Deterrence by delayed attack takes things one step further: A defender threatens to quickly assemble at least one nuclear bomb and then use it in a counterattack against the challenger. This type of latent nuclear deterrence works like traditional deterrence, except there is a delay between the challenger's action and the defender's response. The defender must convert its nonweaponized nuclear program into at least one deliverable bomb. Once it has a bomb, the defender can use it in a military attack against the challenger to deny benefits or inflict pain. The ultimate response – a nuclear retaliatory attack – could come days, months, or even a few years after the initial act of aggression.

Nuclear weapons are generally seen as a weapon of last resort. They are most likely to enter the picture if a nuclear power becomes embroiled in a long slog and realizes that its conventional capabilities alone are insufficient to prevent a crushing defeat. In this kind of situation, there is a time gap between the opening salvo of a conflict and the moment in which countries seriously consider nuclear use.⁵² The first real US attempt to invoke nuclear weapons during the Vietnam War – President Nixon's October 1969 nuclear alert – occurred about four years after the first American combat forces entered the fray. A time gap such as this creates an opportunity for a nonnuclear defender to weaponize its previously latent nuclear capabilities.

According to the logic of deterrence by delayed attack, potential challengers anticipate this possibility and may exercise restraint as a result. As far as the challenger is concerned, nuclear retaliation does not have to be immediate in order to be effective. As long as it believes that it will – or *could* – suffer a nuclear attack in response to its aggression, it may think twice about provoking war. Given the severity of the consequences, potential attackers are likely to find little solace in the nonimmediacy of the nuclear response. Like in deterrence by proliferation, explicit threats are not necessary to threaten delayed nuclear retaliation.⁵³ Having the underlying technological capacity to make a bomb sends an implicit warning to potential aggressors. Explicit threats do occur, as the following discussion will make clear, but they are rare since raising the possibility of a nuclear attack could invite blowback for the threat-maker.

⁵² Paul (2000, 59) makes a similar argument.

⁵³ Hagerty (1995, 90) makes a similar argument.

The case of Japan provides a fitting illustration of deterrence by delayed attack in action. Japan has ratified the nuclear Nonproliferation Treaty (NPT) and subjects its nuclear facilities to inspections by the International Atomic Energy Agency (IAEA). No credible analyst believes that Japan currently possesses (or might possess) nuclear weapons. Everyone understands, though, that Tokyo could obtain at least a crude nuclear explosive device quickly – within one year, according to a 1999 assessment by the US Defense Intelligence Agency.⁵⁴ If Japan experienced a serious crisis with a country such as China or North Korea, Tokyo could weaponize its nuclear program in relatively short order. Once it is in possession of a bomb, assuming that the conflict escalates, Japan could deliver a nuclear blow. The risk of inviting a nuclear retaliatory strike, albeit a delayed one, might induce caution among Japan's rivals. It may be prudent, therefore, for China and North Korea to treat Japan as if it were a nuclear-armed country, even though Tokyo's program is currently nonweaponized.

Deterrence by Doubt

The perception that a country might already have a crude nuclear arsenal – not just the means to obtain one quickly – may also bolster deterrence. Obtaining a complete picture of another country's nuclear activities is difficult because states often shroud their nuclear programs in secrecy. The dual-use nature of nuclear technology also makes it hard to decipher a country's intentions, since the same plants could be used to produce energy or make bombs. As a result, when a nonnuclear country gets close to a bomb (but does not actually build one), others might fear that it could be nuclear-armed. This fear could induce restraint, as a military challenge could prompt near-immediate nuclear retaliation. Economists Sandeep Baliga and Tomas Sjöström call this strategy “deterrence by doubt.”⁵⁵

The distinguishing feature of deterrence by doubt is that potential challengers have uncertainty about the country's existing nuclear capabilities. When it comes to deterrence by delayed attack, challengers know that a country is nonnuclear but could arm itself at some point in the

⁵⁴ Quoted in Fitzpatrick (2016). Some analysts think that two years might be a more reasonable estimate. Others suggest that the time frame is less than six months.

⁵⁵ Baliga and Sjöström (2018, 1024, 1035). The phrase “deterrence by doubt” originally appeared in Gordon and Trainor (2006, 65). Their game theoretic model shows that unarmed countries have incentives to maintain ambiguity about their capabilities in order to deter attacks. Armed states also have incentives to maintain ambiguity, according to their model.

future. In traditional nuclear deterrence, everyone knows that a country is already equipped with nuclear weapons. Potential challengers could perceive either outcome in deterrence by doubt; they could conceivably think that their counterpart is nuclear-armed *or* nonnuclear.

The Persian Gulf War illustrates how deterrence by doubt may work in practice. On August 2, 1990, Iraq invaded Kuwait. Within one week, Saddam Hussein fully controlled his oil-rich neighbor. Not long after, President George H. W. Bush made it clear that Iraq must reverse its land grab or face war with the United States: "The message is steady, strong, and certain," he said in a speech on September 18, "Iraq's act of aggression will not stand."⁵⁶ Despite Bush's warning, the Iraqi dictator refused to back down. As a result, on January 17, 1991, the United States, backed by a broad international coalition, began airstrikes against Iraq. After pummeling Iraqi targets from the air for five weeks, the US-backed coalition prepared to launch a ground war to expel Iraqi forces from Kuwait.

As the ground campaign approached, Iraq's nuclear program weighed on the mind of US officials. General Norman Schwarzkopf, the head of US Central Command who was then leading all coalition forces, feared that Baghdad might be in possession of a nuclear bomb. Schwarzkopf wondered: Might Iraq be planning to use a nuclear device against his forces as they marched across the desert?⁵⁷ Colin Powell, then Chairman of the Joint Chiefs of Staff, also pondered Iraq's nuclear potential during the crisis. He later wrote that "Saddam's feverish drive for nuclear capability" was "hanging like a specter over the desert" as the United States prepared for war.⁵⁸

These concerns were justified. Saddam launched a crash program in August 1990, immediately after invading Kuwait, to obtain a crude nuclear device as quickly as possible. Baghdad hoped to have its first weapon by April 1991.⁵⁹ This was an ambitious timeline but not an inconceivable one given that Iraq had spent much of the previous decade building up its nuclear infrastructure. The possibility of Iraqi nuclear use, then, was not necessarily off the table even though Baghdad was nonnuclear at the start of the Persian Gulf crisis. The crash program ultimately failed. The American-backed coalition launched a ground war on February 24 and Bush declared Kuwait fully liberated four days

⁵⁶ Bush (1991, 1253).

⁵⁷ Gordon and Trainor (1995, 337).

⁵⁸ Powell (1995, 480).

⁵⁹ Crossette (1995).

later.⁶⁰ Nevertheless, Iraq was able to insert its nuclear capabilities into world politics despite never possessing a bomb.

Countries can also generate doubt about their capabilities after they have assembled one or more nuclear weapons. The most prominent example is Israel; the country has maintained a policy of “opacity,” meaning that it refuses to confirm that it has a bomb but does not deny this possibility either.⁶¹ Virtually everyone knows, however, that Israel is a nuclear power and countries have treated it as such for decades. Israel therefore more closely resembles a traditional nuclear weapons state after 1967, when it was widely believed to have assembled its first bomb, than it does a latent nuclear power. When I refer to deterrence by doubt, then, my focus is exclusively on countries that have not assembled a bomb.⁶²

Existing Views

Does deterrence by proliferation, delayed attack, or doubt work? Most scholarship on nuclear deterrence does not seriously consider the possibility that nonweaponized programs could provide countries with strategic benefits.⁶³ However, some scholars, policymakers, and journalists have previously commented on the efficacy of latent nuclear deterrence. I divide existing perspectives into two camps: One suggests that a breakout nuclear capability can deter aggression, while the other is much more skeptical.

Virtual Nuclear Arsenals

In his 1984 book *The Abolition*, the disarmament advocate Jonathan Schell made a forceful argument in favor of weaponless deterrence.⁶⁴ Schell was a strong critic of nuclear weapons: “[they] are truly an evil obsession,” he wrote, “They degrade us. They soil us.”⁶⁵ He sought a world in which atomic arsenals were a less salient feature of world politics. His idea for achieving this vision – weaponless deterrence –

⁶⁰ Iraq was therefore defeated several weeks prior to its target date for a bomb. Even if the war had persisted for several more months, though, it is unclear whether Iraq would have obtained a nuclear weapon.

⁶¹ Cohen (1998).

⁶² In addition to being more theoretically appropriate, this offers an empirical advantage as well by providing a more accurate estimate of the political effects of latent nuclear forces. Treating a case like Israel after 1967 as “latent” would probably make it easier to find evidence in favor of weaponless deterrence.

⁶³ See, for example, Jervis (1989), Powell (1990), Glaser (1990), and Narang (2014).

⁶⁴ Schell (1984).

⁶⁵ Schell (1984, 163).

was an arms control proposal: Nuclear powers would dismantle their warheads but retain the capacity to reconstitute their arsenals. In the event of war, countries such as the United States could quickly rearm, putting themselves in a position to retaliate with nuclear strikes. This was an early articulation of what I call deterrence by delayed attack.

For Schell, weaponless deterrence was akin to having your cake and eating it too: The risk of nuclear war due to miscalculation or an accident would decline, since no state would possess operational warheads, but countries could still reap the benefits of nuclear deterrence by rearming quickly in the event of aggression. Indeed, he believed that weaponless deterrence could effectively substitute for traditional nuclear deterrence:

The difference between our present world and a nuclear-weapon-free world would be only that people had all learned to see a few steps farther ahead than they do now – as though the chess players, having gained in experience, were to call off their game four moves before checkmate rather than two. Every statesman would see, just as he does today, that aggression leads inevitably to annihilation, and would feel no need to test the proposition in action.⁶⁶

Subsequent writing characterized this form of deterrence as a system of virtual nuclear arsenals (VNAs).⁶⁷ The idea of VNAs gained traction after the collapse of the Soviet Union, when people began to rethink the role of nuclear weapons in world politics. In a 1997 book that built on Schell's initial concept, Michael Mazarr concluded that a system of VNAs "offers enormous potential" in part because it provides "a promising means of dramatically reducing the danger to humanity posed by nuclear weapons."⁶⁸

The Weaponless Instability School

Many scholars who have taken up the notion of latent nuclear deterrence are skeptical that it is effective. Kenneth Waltz, one of the leading international relations theorists of his generation, was a prominent critic of weaponless deterrence.⁶⁹ He did not believe that countries could deter security threats with mere latent nuclear capabilities, and he argued that breakout capacity alone would simply invite instability. The strategist Colin Gray echoes this view, calling the idea of a latent deterrent "appallingly poor." "The idea of virtual nuclear arsenals,"

⁶⁶ Schell (1984, 124–125).

⁶⁷ Mazarr (1995a, 1997b), Holdren (1997), Perkovich and Acton (2008), and Drell and Goodby (2009).

⁶⁸ Mazarr (1997b, 390).

⁶⁹ Waltz (1997).

he wrote, “is such a bad one that even many among the Western opinion leaders who routinely will endorse propositions for policy that staple together disarmament, anti-nuclear action, and clever-sounding theory are unlikely to be seduced.”⁷⁰ The political scientists Rupal Mehta and Rachel Whitlark, who have conducted some of the most recent analyses on latent nuclear deterrence, reached broadly similar conclusions. “[Nuclear] latency does not broadly function as a substitute for the deterrent effects of an operational nuclear arsenal,” they wrote, adding that “latency by itself provides few security benefits.”⁷¹

Skeptical views such as these represent a line of thinking that I call the weaponless instability school. Scholars in this camp often argue that latent nuclear capabilities pale in comparison to full-blown nuclear arsenals when it comes to deterrence.⁷² The lion’s share of commentary on latent nuclear deterrence in scholarship has occurred in the context of the debate over VNAs. Weaponless deterrence, therefore, has become intimately associated with nuclear disarmament. Pushback against latent nuclear deterrence often comes from people who oppose the elimination of nuclear weapons. In their view, nuclear weapons have brought substantial stability to the international system and latent nuclear capabilities cannot serve as effective substitutes for ready-to-launch missiles. Christopher Ford, who served as US Assistant Secretary of State for International Security and Non-Proliferation, aptly characterized this perspective in a 2010 essay: “When it comes to nuclear sabre-rattling, after all, weapons-in-being surely must be considered to trump merely potential weapons.”⁷³

What's Missing?

On the question of whether latent nuclear deterrence works, the jury is still out. Fortunately, our understanding of how nuclear energy programs influence armed conflict and international bargaining is growing.⁷⁴ Yet three factors have stymied our ability to fully assess the virtues and limitations of latent nuclear deterrence.

⁷⁰ Gray (1999, 117).

⁷¹ Mehta and Whitlark (2017a, 526).

⁷² The weaponless instability school also suggests that latent nuclear forces can encourage military conflict and catalyze arms races. To be sure, the potential to incite instability is one of the fundamental problems of latent nuclear deterrence, which I will address in detail later in this chapter.

⁷³ Ford (2011, 19).

⁷⁴ See Horowitz (2013), Fuhrmann and Tkach (2015), and Mehta and Whitlark (2017a), and Volpe (2017).

First, as noted previously, few scholars have taken the notion of latent nuclear deterrence seriously. Scholars and policymakers have obsessed about the requirements of nuclear deterrence for more than seventy years. Yet most people have ignored the possibility that states could engage in nuclear deterrence without possessing intact weapons. As Brad Roberts, who served as the Obama administration's Policy Director for its Nuclear Posture Review, put it, "The existence of a tier of states technically capable of making weapons offering them significant military options in war and political leverage in peace is hardly noticed by political scientists or policymakers."⁷⁵

We therefore lack a clear sense of what it takes to gain influence from nuclear latency.⁷⁶ Mazarr, a leading proponent of VNAs, acknowledged this point in a 1997 essay: "the concept [of a VNA] remains at such a rudimentary stage of analytical development," he argued, "that no final case for it can yet be made."⁷⁷ Although this statement was written more than twenty-five years ago, it still rings true today.

Two of the most recent attempts to spell out the logic of latent nuclear deterrence each devote fewer than 500 words to explaining how and why weaponless deterrence might work.⁷⁸ These studies, along with others assessing whether latent nuclear deterrence works, assume that the answer is yes or no. In fact, however, the answer is more complicated: Sometimes latent nuclear deterrence works while it clearly fails on other occasions. There is undoubtedly some truth to the claims made by the weaponless instability school. It is also likely that countries benefit in some ways from having a nonweaponized nuclear program. We are missing a comprehensive account of the conditions under which latent nuclear deterrence is successful.

Second, much of the thinking about this subject addresses one specific context: where all countries have disassembled their nuclear weapons but could rebuild warheads quickly. Latent nuclear deterrence has therefore become closely associated with nuclear disarmament. Few scholars have seriously considered the possibility that nuclear latency could provide deterrence benefits when nuclear weapons are operationally deployed by some countries. The framing of the debate up to this point has allowed critics to dismiss VNAs on the grounds that latent nuclear deterrence does not work as well as deterrence with bombs. Even if this claim

⁷⁵ Roberts (1997, 264).

⁷⁶ The literature discusses several key challenges of weaponless deterrence, including verification and the survivability of latent nuclear forces (Mazarr, 1997c). But a complete theory is missing.

⁷⁷ Mazarr (1997b, 369).

⁷⁸ Fuhrmann and Tkach (2015) and Mehta and Whitlark (2017a).

is true, it does not mean that nuclear latency carries no deterrence benefits at all. In the world today – where nine countries possess nuclear arms – countries such as Iran and Japan seem to believe that their nuclear programs confer deterrence benefits, even though they have not assembled bombs. We know very little about whether these beliefs have merit.

Third, the debate about latent nuclear deterrence is largely devoid of evidence. Weaponless deterrence, as it is discussed by Schell and others, is fundamentally about a hypothetical world in which nuclear weapons are not assembled or deployed. It is therefore impossible – or, at the very least, exceedingly difficult – to design an empirical study to assess which view is correct. We must rely heavily on logic – not evidence – to adjudicate this debate. It is possible to empirically assess whether nuclear latency provides deterrence benefits in a world with nuclear weapons by using historical data, as some studies have done.⁷⁹ However, these studies do not identify the conditions under which nuclear latency deters military conflict. They therefore may not provide a fair test of latent nuclear deterrence theory. It is also not clear that we can reasonably infer a causal relationship from existing studies. At this point, we lack sufficient evidence to assess the viability of latent nuclear deterrence.

This book addresses these limitations. Recognizing that nuclear latency and nuclear arsenals can coexist, it assesses whether latent nuclear powers have derived any deterrence benefits since 1945. The book develops a complete theory of latent nuclear deterrence. Instead of arguing that latent nuclear deterrence “works” or “does not work,” it identifies the conditions that have to be present for countries to derive deterrence benefits from latent nuclear capacity. The book presents and analyzes a large body of new quantitative and qualitative evidence. Drawing on a comprehensive database of global latent nuclear capabilities, it will evaluate whether countries have historically been able to gain international influence with latent nuclear capabilities. Taking a design-based approach to causal inference, I bring us closer to identifying the true relationship between nuclear latency and various foreign policy outcomes.⁸⁰ I also carry out twenty case studies to show what world leaders think about latent nuclear deterrence.⁸¹

⁷⁹ Fuhrmann and Tkach (2015) and Mehta and Whitlark (2017a).

⁸⁰ I describe this approach in Chapter 5.

⁸¹ These are spread out over Chapters 2, 6, and 7.

Latent Nuclear Deterrence Theory

Recall that successful deterrence requires a minimum of three things: the capacity to inflict punishment on the challenger, the belief that the defender will use that capacity if its interests are threatened, and credible promises of restraint if the status quo persists. The first step in developing a complete theory of latent nuclear deterrence is to identify the problems that make it difficult for countries to meet these basic requirements. Next, I will consider if (and how) these problems could be overcome. This process will allow me to identify the conditions under which latent nuclear deterrence might succeed, as well as when it is doomed to fail or incite instability.

Challenges in Weaponless Deterrence

When it comes to latent nuclear deterrence, three major challenges may prevent countries from meeting the requirements for success: (1) delayed punishment, (2) high breakout costs, and (3) the potential to incite instability.⁸² These challenges exist for all three mechanisms of weaponless deterrence, but they can vary in their severity. The first challenge is particularly thorny in deterrence by proliferation and delayed attack, while the third problem is more acute in deterrence by doubt. If left unaddressed, all three challenges can complicate a country's efforts to use their nuclear programs to gain leverage, and in some cases can render such attempts wholly ineffective.

Challenge #1: Delayed Punishment

A time-gap between a transgression and the imposition of punishment makes latent nuclear deterrence unique. In traditional deterrence, a country can retaliate immediately after suffering a military attack. By contrast, it takes time – days, weeks, or even a couple of years – to inflict pain in weaponless deterrence. This delay in punishment can have serious consequences for countries hoping to gain leverage from their nonweaponized nuclear programs. Three particular problems stem from a delay in the implementation of punishment.

Keen Foresight

Deterrence requires leaders to think strategically. Before making a policy decision, government officials must anticipate how an adversary would respond to possible actions they might take. A leader's expectations

⁸² These challenges are sometimes anticipated by the weaponless instability school.

about the consequences of their behavior ultimately shape the choices they make. They imagine how the game will end before deciding whether to play. All else equal, policy options will be less attractive when officials expect that they will trigger damaging responses by other countries.

Latent nuclear deterrence requires particularly keen foresight. It is straightforward to anticipate that bombing a nuclear power's capital city might trigger a nuclear response. Any American official knows that attacking North Korea, for example, could lead to nuclear war.⁸³ Anticipating costly responses in weaponless deterrence requires greater analytic depth.

Shortsightedness is a potential problem in deterrence by proliferation. For some officials, the possibility of inducing armament after a crisis or armed conflict ends may not be an obvious form of punishment. The aggressor might instead focus initially on the defender's kinetic military responses. A natural question any responsible state would ask itself is, "if I take this action, will it lead to a big war?" But the aggressor must go beyond thinking about just traditional military retaliation in order for defenders to have any hope of deterring by proliferation. It must take a longer view and consider the downstream consequences of its actions. If they do not, potential aggressors would totally miss the possibility that their actions could trigger nuclear armament, and deterrence by proliferation would fail.

The challenger must also work through an extra step in the causal chain when the threatened punishment is delayed nuclear retaliation. It must realize that once fighting or a serious crisis starts, the defender could obtain a capability that it currently lacks and ultimately use it to carry out a devastating retaliatory strike. However, a leader may fail to incorporate this additional step into his or her thought process. They may think of threshold states as strictly "nonnuclear," so the possibility of nuclear retaliation during a conflict with such a state may never occur to them. At least one member of the weaponless instability school points to this as a reason to question the viability of deterrence by delayed attack. Sir Michael Quinlan, a strategist and former official in the British Ministry of Defence, wrote in 2007, "[I]t is sometimes suggested that the very fact of this reconstitution risk would serve as a deterrent to war – weaponless deterrence, it has been called, a sort of deterrence at one remove. But this implies a world-wide and long-sighted wisdom on which it would surely be imprudent to count."⁸⁴

⁸³ This assumes, of course, that the United States could not wipe out North Korea's nuclear capabilities in a disarming first strike.

⁸⁴ Quinlan (2007–08, 12). Quoted in Sagan (2009, 166).

Deterrence by doubt requires less foresight than the other two mechanisms of weaponless influence. If a challenger believes that a defender might already be in possession of an assembled warhead – even when it is unarmed – it does not take too much imagination to anticipate that an armed attack could prompt nuclear retaliation, just like in traditional deterrence. Because this approach hinges on ambiguity, however, challengers may still perceive defenders as nonnuclear. In that case, the depth of strategic anticipation required for maintaining the status quo increases. When it comes to the level of foresight required for success, deterrence by doubt would resemble deterrence by delayed attack.

Escaping Retaliation

Awareness that punishment is possible hardly guarantees success in deterrence. A bank robber knows that, in theory, his actions could lead to a lengthy prison sentence. Yet he may have confidence that he can elude law enforcement, in which case the prospect of incarceration may not deter him. Similarly, the prospect of weaponization or a nuclear attack will not deter the challenger if it believes that the defender will be unable to inflict the threatened punishment.

Latent nuclear deterrence requires a defender to obtain something that it does not presently have: at least one nuclear weapon. A time delay between the infraction and the punishment delay could allow the challenger to stop the defender from obtaining weapons, thereby escaping retaliation.⁸⁵ The longer the time to armament, the more opportunities the aggressor has to stop its adversary from getting a bomb.

Nonproliferators such as the United States have a variety of foreign policy tools that could prevent nuclear proliferation. Economic sanctions can discourage a state from building nuclear weapons.⁸⁶ So can positive inducements such as economic aid, military assistance, or security assurances.⁸⁷ For example, economic pressure paired with sanctions relief may have (temporarily) motivated Tehran to curtail its nuclear ambitions and agree to the Joint Comprehensive Plan of Action (JCPOA) in 2015. If peaceful solutions fail, a potential aggressor might be able to erode the latent nuclear power's ability to retaliate by destroying its nuclear infrastructure. Even if the aggressor takes actions that initially harden the latent nuclear power's resolve to weaponize, it may believe that some combination of carrots and sticks will ultimately stop proliferation.

⁸⁵ I thank Vipin Narang for this insight.

⁸⁶ Miller (2018).

⁸⁷ Bleek and Lorber (2014), Reiter (2014), and Mehta (2020).

Delayed punishment becomes especially problematic for defenders when challengers are bent on territorial conquest or regime change. A country could suffer a devastating defeat before it has an opportunity to arm. In 1939, Nazi Germany and the Soviet Union annexed Poland in a little more than one month. Quick conquests pose an especially difficult problem for states hoping to engage in weaponless deterrence.⁸⁸ Defenders would need to assemble a bomb in a matter of days to have any hope of deterring challengers – something that is probably impossible for any nonnuclear country in the world today.

Yet military operations do not have to be historically quick to pose a problem for defenders. When a challenger's objective is occupation or leader decapitation, latent nuclear deterrence depends on the capacity to build nuclear weapons before the operation is complete.⁸⁹ If the defender is five years away from a bomb, for instance, the challenger would have ample opportunity to achieve victory before facing the prospect of nuclear punishment. In this hypothetical scenario, even a fairly lengthy timetable for success – say four years – would take weaponless deterrence off the table, enabling challengers to attack without risking delayed nuclear punishment.

As with the problem of keen foresight, creating the impression that it might already be nuclear-armed could cause challengers to question whether they could escape punishment. Even in deterrence by doubt, however, countries may believe that they could achieve victory before incurring nuclear punishment, possibly by eliminating nuclear infrastructure in a disarming first strike.

Discounted Costs

A potential aggressor may believe that it will ultimately pay a price for its actions. Even in that case, though, the time delay generates bad news for latent nuclear powers: Delayed consequences are likely to be discounted, even if they are certain to materialize.

According to standard economic theory, people calculate future costs based on a discount rate. The discount rate is usually less than one, meaning that individuals perceive the same penalty as less costly in the future compared to the present. When given a choice between paying \$100 today or \$100 in one week, for instance, people usually prefer the latter. By waiting, a person can use the money for investments or other purchases during the ensuing week, whereas they lose this

⁸⁸ This is partially why some members of the weaponless instability school believe that latent nuclear deterrence does not work. See Waltz (1997).

⁸⁹ A similar point is made in Mount (2014).

option by expending it immediately. In economic parlance, spending the money right away generates opportunity costs. Discount rates help explain human behavior outside the realm of money, such as why some people smoke cigarettes even when they know that doing so is bad for their health in the long run.⁹⁰ In the area of international relations, some of my earlier research shows that countries are often willing to share nuclear technology and know-how – even in cases where doing so ultimately facilitated unwanted nuclear weapons proliferation – because the benefits of nuclear assistance are immediate and the costs are longer term.⁹¹ The United States, for instance, was enthusiastic about assisting Iran’s nuclear program from the 1950s until the Islamic Revolution in 1979 even though officials in Washington recognized the possible long-term security risks of doing so. The propensity of people to discount future costs carries implications for deterrence, too.

Criminologists have long recognized that celerity – the immediacy of punishment – affects deterrence.⁹² The eighteenth-century Italian philosopher Cesare Beccaria, who is known as the father of criminal justice, wrote in the 1764 book *On Crimes and Punishment*, “The more immediately after the commission of a crime a punishment is inflicted, the more just and useful it will be.”⁹³ Consistent with this view, modern research has found that punishment is less likely to deter crime when there is a long delay in the imposition of a sanction.⁹⁴ Imagine that the hypothetical bank robber mentioned earlier knows for certain that he will be caught, but he will not begin a prison sentence until five years after he committed the crime. This punishment, while still consequential, has less deterrent value than a prison sentence of the same duration that would begin immediately. The bank robber discounts future costs to some degree because he can live a consequence-free happy life for five years, during which time he can enjoy whatever benefits resulted from his crime. He would surely prefer to escape punishment entirely, but the five-year delay is preferable to an immediate prison sentence.

Celerity matters for latent nuclear deterrence as well, especially when the threatened punishment is proliferation rather than delayed attack. Inducing an adversary to obtain nuclear weapons becomes less costly for the aggressor as the amount of time since its hostile act increases.

⁹⁰ Torgerson and Raftery (1999)

⁹¹ Fuhrmann (2012a).

⁹² See, for example, Nagin and Pogarsky (2001). I thank Phillip Bleek and Jeffrey Knopf for bringing the literature on celerity to my attention.

⁹³ Beccaria (2009, 54).

⁹⁴ For an alternative view that celerity is irrelevant for general deterrence, see Gibbs (1975).

A long time delay allows the leader in the attacking country to advance his or her domestic and international agenda and score political points, which may bolster his or her domestic political future, before having to deal with any fallout from their actions toward the latent nuclear power. In some situations, the leader that induced proliferation may no longer be in office once the costs of his or her actions fully materialize. Moreover, delayed punishment weakens the causal connection between the aggressor's actions and armament by the latent nuclear power. This may allow a leader to deflect some of the blame for the adversary's armament, thereby reducing the costs of their aggression.

In deterrence by proliferation, a reduction in the expected punishment costs can be quite significant. The costs for the aggressor are modest to begin with, compared to provoking a military attack that leads to the immediate loss of life and infrastructure. Reducing these costs generates additional situations where the benefits of aggression exceeded the costs.

The situation is different in deterrence by delayed attack or doubt. The costs of a nuclear attack are extreme, even with a time delay. A country that experiences a nuclear strike today would suffer terrible consequences. Those costs would still be horrific if the attack happened in six months, one year, or eighteen months. Even if they are discounted to some degree, the costs imposed after a time delay may still be sufficient to deter military aggression – unless the stakes for the aggressor were exceedingly high. In this case, any cost-discounting stemming from the delay in punishment provides little solace to a leader who may be contemplating aggression.

Challenge #2: High Breakout Costs

States thinking about challenging the status quo consider the likelihood of costs being imposed, not just their magnitude. Even threats that would be extremely costly if implemented can fail to deter if the aggressor sees them as unbelievable. One key factor that influences threat credibility is the costs of implementation for the defender.⁹⁵ When those costs are high, challengers are more likely to dismiss the threat.

In latent nuclear deterrence, carrying out a threat can be costly for the threshold state, not just the potential aggressor, causing challengers to dismiss threats as unbelievable. Attempting to build nuclear weapons can be consequential, even if a bomb is never detonated in combat. The financial costs of obtaining a nuclear arsenal are substantial. According to an analysis by the Brookings Institution, the United States spent

⁹⁵ Sechser and Fuhrmann (2017) make this argument in the context of nuclear coercion.

\$5.5 trillion on its nuclear forces from 1940 to 1996.⁹⁶ This kind of price tag requires states to make tradeoffs, often sacrificing programs that are necessary for social welfare or economic development in order to build bombs. On top of this, there is a longstanding international norm against pursuing nuclear weapons that is backed by treaties, international organizations, and powerful countries such as the United States. Violating this norm can result in economic or political sanctions, as well as strained relationships with countries that may be important for the state's security.⁹⁷

Nuclear breakout can be a powerful card for a country to hold, but it can be played only once.⁹⁸ A country that obtains nuclear weapons is unlikely to give them up; only one country, South Africa, has fully dismantled indigenously built nuclear bombs.⁹⁹ Once a country implements a threat in latent nuclear deterrence, then, it has crossed the proverbial Rubicon. The gravity of such a move for the defender further increases the costs of nuclear breakout.

Implementing the threat in deterrence by delayed attack or doubt requires an actual nuclear strike, not just assembling bombs. It is well understood that the use of nuclear weapons in war would be a cataclysmic event – something that has not happened since 1945. As discussed earlier, a nuclear attack could invite considerable political, military, and economic blowback for the user.

Challenge #3: Inciting Instability

Merely attempting to engage in latent nuclear deterrence can be dangerous for defenders of the status quo. Raising the prospect of future nuclear proliferation or use may inadvertently invite military threats rather than prevent them. Recall that this is a central claim made by the weaponless instability school. The potential for instability is particularly worrisome in deterrence by doubt. This approach requires countries to raise the possibility that they might already be in possession of a bomb, which is especially likely to prompt political or military blowback. Engaging in weaponless deterrence can induce international volatility in two main ways.

⁹⁶ Schwartz (1998).

⁹⁷ A mad dash toward the bomb could also prompt the destabilizing events described later that form the basis of challenge #3.

⁹⁸ I credit a participant in a research seminar at Stanford University on November 17, 2016, whose name I regrettably cannot recall, for sharing this idea with me.

⁹⁹ Belarus, Kazakhstan, and Ukraine returned nuclear weapons to Moscow in the 1990s that were left on their soil when the Soviet Union collapsed.

First, it may generate incentives for preventive war. One state's development of dual-use nuclear technology, the argument goes, causes a rival to fear that the developer intends to build bombs, leading the rival to take military action before it is too late. Schelling voiced this concern long ago: "Even without possessing complex weapons, a nation might consider initiating war with whatever resources it had, on grounds that delay would allow an enemy to strike or mobilize first. If a nation believed its opponent might rush to rearm to achieve military preponderance, it might consider 'preventive war' to forestall its opponent's dominance."¹⁰⁰ In the decades that followed, scholars continued to draw a connection between nonweaponized nuclear programs and preventive war.¹⁰¹

There is some historical basis for the fear that latent nuclear capabilities may incite violent conflict. According to a database I compiled with political scientist Sarah Kreps, countries seriously considered launching preventive attacks that targeted an adversary's nuclear plants in eighteen cases from 1942 to 2000.¹⁰² In more recent years, the nuclear programs of Iran, Iraq, North Korea, and Syria brought nonproliferation-based preventive wars to the forefront of public attention.

Concerns about nuclear proliferation can also catalyze disputes that are seemingly unrelated to the target state's nuclear program. Nuclear proliferation has the potential to result in large shifts in the balance of power. Countries may worry that their bargaining power will weaken once an adversary obtains nuclear weapons. If states have unresolved disputes with latent nuclear powers, then, they may use military force to resolve those conflicts on favorable terms before the expected increase in the opponents' military capabilities.¹⁰³

Second, nonweaponized nuclear programs could lead to destabilizing arms races. Imagine that two rivals have latent nuclear capabilities but lack atomic warheads. Each will fear that the other might arm first, potentially providing it with a decisive military advantage. The fear of being vulnerable to nuclear blackmail or a devastating attack if it fails to act, based on this reasoning, will compel the latent nuclear powers

¹⁰⁰ Schelling (1962, 393).

¹⁰¹ See, for example, Fuhrmann and Kreps (2010), Debs and Monteiro (2014), and Whitlark (2017).

¹⁰² Fuhrmann and Kreps (2010).

¹⁰³ An attacker would not perceive that it is causing nuclear proliferation in this case, since it expects that the adversary will build nuclear bombs anyway. The use of force could, however, accelerate the rival's nuclear weapons program. Instigating military conflict could produce a negative outcome sooner than it would happen in the absence of an attack. Despite this risk, states might jump at an opportunity to settle disputes in their favor when they expect that their counterpart will ultimately build bombs.

to build weapons before its too late. Herman Kahn, a leading nuclear strategist of his generation, referred to this as a “mobilization war.” “The side that mobilizes most effectively within a relatively brief period of time,” he wrote, “can achieve a militarily dominant position, enabling it to inhibit the diplomatic or military initiatives of its opponent.”¹⁰⁴ Waltz similarly worried about latent nuclear powers exploiting windows of opportunity: “States would hasten to equip themselves with nuclear weapons, lest a newly rearmed state somehow gain an advantage from its moment of superiority.”¹⁰⁵

Strategists sometimes draw a connection between these two forms of instability. In a world with latent nuclear powers only, they argue, one actor would quickly build nuclear bombs and then launch preventive wars against its adversaries – or at least dangle the threat of war – to ensure that they could not match its capabilities.¹⁰⁶ In this way, one state can dominate its rivals by making the first move. Indeed, the notion that latent nuclear programs generate first-mover advantages is central to the weaponless instability school.¹⁰⁷

Addressing the Challenges

The challenges in latent nuclear deterrence can be daunting for a state hoping to gain leverage from its nonweaponized nuclear program. The weaponless instability school suggests that these problems render weaponless nuclear deterrence entirely ineffective. There is some truth to this claim, since these challenges can make success difficult, even impossible. But the weaponless instability school is too pessimistic about the viability of latent nuclear deterrence. Instead of totally writing off this form of influence, I consider whether and how the previously described problems can be mitigated.

There are three solutions to the challenges in weaponless deterrence: (1) possessing known sensitive nuclear capabilities, (2) high stakes, and (3) nuclear restraint. The first two solutions are necessary for success in all three forms of weaponless deterrence. The third is essential in deterrence by proliferation only, but can also mitigate risks for states relying on deterrence by delayed attack or doubt.

Figure 1.1 summarizes how these three factors combine to influence whether latent nuclear deterrence is successful. Implementing these solutions does not guarantee that latent nuclear deterrence will work, but doing so increases the odds of success. After describing these solutions, I will describe the theory’s predictions for international relations.

¹⁰⁴ Kahn (1985, 156). This statement is quoted in Ford (2011, 17).

¹⁰⁵ Waltz (1997, 157).

¹⁰⁶ See Schelling (1962, 393–394).

¹⁰⁷ Waltz (1997).

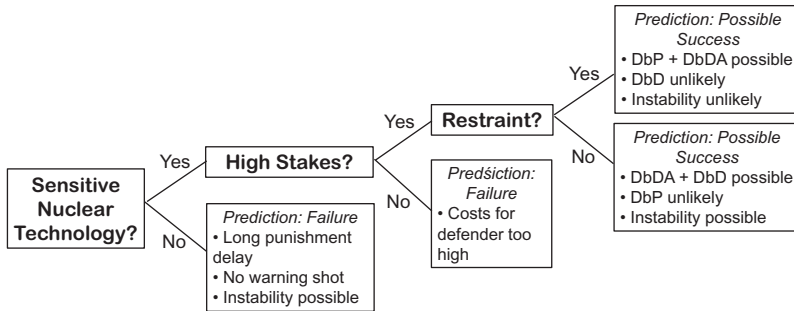


Figure 1.1 Pathways to success in latent nuclear deterrence theory. Notes: DbP = deterrence by proliferation; DbDA = deterrence by delayed attack; DbD = deterrence by doubt.

Solution #1: Sensitive Nuclear Technology

A state’s nuclear capabilities play a critical role in shaping the efficacy of latent nuclear deterrence. One kind of technology reigns supreme: uranium enrichment or plutonium reprocessing (ENR) plants. Possessing ENR capabilities reduces all three of the problems stemming from delayed punishment in weaponless deterrence (challenge #1). It does so by shortening the time to a bomb and signaling resolve. In addition, having sensitive nuclear technology can make preventive military action less attractive for potential challengers.

In order to reap these benefits, however, a country’s nuclear capabilities must be known to potential challengers. Otherwise, the defender’s nuclear program cannot influence the challenger’s decision-making. There are two ways that countries can learn about others’ nuclear capabilities. First, a state could publicly reveal that it is in possession of sensitive nuclear technology. The IAEA requires countries to notify the agency when they build new nuclear facilities. Government officials can also announce technological breakthroughs outside of IAEA channels by holding press conferences or leaking information to journalists. For example, on November 18, 1983, Carlos Castro Madero, the Chairman of Argentina’s National Atomic Energy Commission, announced to the world that Argentina had successfully enriched uranium on a pilot scale at a plant located in Pilcaniyeu.¹⁰⁸ Second, foreign intelligence services can discover covert nuclear sites. The United States and other countries with modern intelligence capabilities can monitor their adversaries using satellites or drones, or recruit human sources to provide information.

¹⁰⁸ Benjamin (1983).

Washington knew about Iran's enrichment plant in Qom, for instance, three years before publicly revealing its existence in September 2009.¹⁰⁹

Shortening the Time to a Bomb

Possession of ENR technology provides countries with the technological foundation for making nuclear weapons. There are three main requirements for building a nuclear bomb: (1) obtaining fissile material, (2) weaponizing this material, and (3) mating the weapon to a delivery system. The first step is by far the most difficult. Once states have sufficient quantities of fissile material, they can make at least a rudimentary bomb similar to the one the United States dropped on Hiroshima with relative ease. As Matthew Bunn and Anthony Weir of the Harvard Kennedy School's project on *Managing the Atom* put it, "while it is not easy to make a nuclear bomb, it is not as difficult as many believe, once those essential ingredients [fissile materials] are in hand."¹¹⁰

Countries have used two fissile materials for bomb-making: plutonium and weapons-grade highly enriched uranium (HEU). It is theoretically possible for a state to purchase or steal enough HEU or plutonium for a bomb. In practice, though, nuclear powers generally produce it indigenously using reprocessing plants (to separate plutonium from fuel that is "burned" in a nuclear reactor) or enrichment facilities (to "enrich" uranium by increasing the composition of the the isotope U-235).

There is widespread recognition among policymakers and scholars that successful ENR programs allow countries to build nuclear weapons relatively quickly. As the International Panel on Fissile Materials (IPFM) put it, "If countries are allowed to separate plutonium from spent power-reactor fuel . . . they could use this plutonium to make nuclear weapons within weeks. Countries with large national enrichment plants could similarly quickly begin to make large quantities of HEU for weapons."¹¹¹ These ENR facilities have special significance due to the capacity they provide. The United States has worked hard to restrict the spread of ENR technology, even while allowing – and often encouraging – the international development of nuclear reactors for research or electricity production.¹¹² Dan Brouillette, the US Deputy Secretary of Energy, aptly characterized the sentiment about ENR plants in 2019 remarks: "this technology has a dual use and in the wrong hands it becomes a dangerous, dangerous world."¹¹³

¹⁰⁹ Ghosh (2009) and Sanger and Broad (2009).

¹¹⁰ Bunn and Wier (2006, 134).

¹¹¹ Quoted in Pifer and O'Hanlon (2012, 171).

¹¹² On the distinction between exports of ENR technology and nuclear reactors, see Fuhrmann (2012a) and Kroenig (2010).

¹¹³ Quoted in Reid (2019).

Countries have taken an average of about six years to demonstrate the feasibility of ENR technologies and ten years to produce significant quantities of HEU or plutonium.¹¹⁴ A popular path to fissile-material production in recent years, especially among states suspected of harboring bomb-related ambitions, is uranium enrichment using centrifuge technology. Eighteen countries have pursued this technology, and only seven of them (39 percent) successfully developed it.¹¹⁵ Among those that were successful, the average time to the first demonstration facility was ten years. These same countries took an average of fifteen years to produce a large-scale enrichment plant.¹¹⁶ Iran took twenty-one years to get to this stage. Thus, a state with a successful ENR program would have a substantial head start – possibly more than two decades – over a counterpart that was attempting to build a bomb from scratch.

The shorter proliferation timeline that results from having sensitive nuclear technology mitigates two of the three problems related to delayed punishment. First, a challenger has fewer opportunities to stop a state in possession of sensitive nuclear technology from obtaining nuclear weapons. It may still be able to prevent proliferation, but the odds of doing so decline precipitously as the amount of time it has decreases. Second, challengers will discount the costs of aggression less than they would when facing a state without ENR technology, making the expected punishment more meaningful.

Having ENR technology is not always required to produce a bomb quickly. At the time of the attack on Pearl Harbor, the United States had made little progress on enrichment or reprocessing. By July 1945 – less than four years later – it had a deliverable nuclear weapon. Today, a highly industrialized state without an ENR program might be able to build a nuclear weapon even quicker, perhaps in less than a year, if it made the bomb program *the* top national priority. But this brings me to the next reason sensitive nuclear technology helps states address the problem of delayed punishment.

Signaling Resolve

Launching an ENR program conveys information to a country's adversaries. Obtaining the means to produce fissile material implicitly tells others something like, "we have the ability to build a bomb – if you give us a reason to need one." In sending this warning shot, a country inserts its nuclear capabilities into international relations, forcing its

¹¹⁴ Zentner et al. (2005, 102).

¹¹⁵ Zentner et al. (2005, 20).

¹¹⁶ These figures are based on Zentner et al. (2005, 20) with my own updates for Iran.

adversaries to think about the prospect of nuclear proliferation. Without this message, a potential aggressor may never think about armament or a nuclear attack as potential forms of punishment. But by producing fissile material, a state forces its adversaries to consider the downstream nuclear-related consequences of aggression.

Hence, ENR programs are a focal point for governments evaluating a foreign country's bomb-making capacity. Reports on nuclear proliferation prepared by the US intelligence community put a country's ENR capabilities front and center. For example, a June 1958 CIA assessment concluded that only three nonnuclear countries could obtain the bomb within five years: France, Canada, and Sweden.¹¹⁷ The reason, according to the formerly secret document, is that all three had, or could quickly obtain, sufficient fissile material – not the broader industrial capacity that they possessed.¹¹⁸

The signaling value of ENR capabilities comes from having an *active* fissile material production program, not just previously demonstrating this capacity. Consider the comparison between Argentina and Belgium in the early 1980s. If both states began a sprint to build a bomb at that time, the race would have been close and Belgium could have plausibly finished first. Despite having similar proliferation timelines, however, there was a key difference: Argentina had an active ENR program in the early 1980s and Belgium did not. This difference affected the viability of latent nuclear deterrence by shaping the degree to which foreign counterparts thought about delayed nuclear responses as forms of punishment. Argentina's work on fissile material production caused other states to worry about nuclear proliferation.¹¹⁹ By contrast, there is no indication that the prospect of a Belgian bomb loomed in the background of its interstate interactions during the early 1980s.

Yet this was not always the case. In the late 1950s, Belgium announced that it would host a pilot-scale reprocessing facility. After carrying out laboratory-scale activities for several years, the reprocessing plant operated from 1966 to 1974. During the years in which Belgium had active ENR ambitions and activities, foreign governments considered the possibility of nuclear proliferation. A 1958 CIA assessment, for instance, concluded that there would be “strong pressures in Belgium” to build nuclear weapons if France and West Germany went nuclear.¹²⁰ Foreign leaders at that time would have been more likely to consider

¹¹⁷ US Central Intelligence Agency (1961b).

¹¹⁸ US Central Intelligence Agency (1961b, 3).

¹¹⁹ I provide evidence for this in Chapters 2 and 6.

¹²⁰ US Central Intelligence Agency (1958, 14).

the possibility of inducing proliferation if they behaved too aggressively toward Belgium.

Developing sensitive technology is not the only way a state could force its adversaries to consider the downstream consequences of aggression. A country could make a public declaration that they will build (and perhaps eventually use) nuclear weapons if they are threatened. Leaders have certainly said things along these lines, and I provided examples earlier in this chapter. However, developing sensitive nuclear technology is a more effective way to communicate a credible threat to potential aggressors.

Signals are most effective in communicating resolve when they are costly for the sender.¹²¹ Taking a costly action allows a country to distinguish itself from a less resolved type. When signals are costless to convey, by contrast, they may be dismissed as “cheap talk.” Consider the case of military alliances.¹²² One might reasonably question whether the United States would go to war to defend another country in a faraway land. Washington can signal that it would, in fact, fight on this state’s behalf by establishing a formal defense treaty, like NATO. Creating and maintaining such a treaty is costly for the United States. The president would have to spend political capital to negotiate the agreement and get Congressional approval. The United States might then establish an overseas base on the ally’s territory with forward-deployed troops and equipment, which can be pricey. Forging the treaty also risks reputation damage if a promise of military support goes unfulfilled. All of these costs make a US defense commitment more believable since a less resolved country would not incur them.

A similar logic applies to sensitive nuclear technology. Developing ENR plants is costly, in part, because it requires considerable financial investment. Also, ENR development could invite international wrath. During the 1970s, for instance, South Korea sought assistance from France in building a plutonium reprocessing plant. This plant was intended strictly for civilian use, but it would have made it easier for Seoul to build a bomb if it so desired. The United States strongly opposed the transfer and applied substantial political pressure. Richard Sneider, the American ambassador to South Korea, wrote in a cable, “I believe we must make it indelibly clear that far more than our nuclear support is at stake here, that if ROKG proceeds as they have indicated to date [by completing a deal on reprocessing with France] [the] whole range of security and political relationships between US and ROK will be

¹²¹ Fearon (1997).

¹²² Leeds (2003) and Fuhrmann and Sechser (2014) make this argument in greater detail.

affected, including potential for adverse congressional action on security assistance for Korea.”¹²³ A state is unlikely to take on the economic and political costs of developing ENR technology unless it is serious about keeping its nuclear options open. Others know this, causing them to take proliferation threats more seriously when the state is ENR-capable.

Verbal threats to proliferate are hardly costless and they can contribute to latent nuclear deterrence in some situations. Yet investments in ENR technology convey more meaningful information to other countries because they are more costly. Moreover, a public threat in the absence of a successful ENR program would not necessarily shorten a state’s proliferation timeline, rendering this approach ineffective.

Making Preventive Strikes Less Attractive: Survivability and Radioactive Contamination

The possibility of preventive military action presents a major challenge to defenders in latent nuclear deterrence (challenge #3).¹²⁴ A non-weaponized nuclear program may not bolster deterrence if the challenger believes that it can eliminate, or at least erode, the defender’s capacity in a preventive strike. Countries that possess ENR technology typically have more survivable nuclear programs, meaning that their capabilities are less vulnerable to destruction by an adversary. Since countries are unlikely to launch preventive attacks if they expect failure, the possession of sensitive nuclear technology can reduce a country’s vulnerability to such action.

One way to enhance the survivability of a nuclear program is to disperse key infrastructure. When nuclear programs are relatively under-developed, an attacker might be able to eliminate a state’s bomb-making capacity by destroying a single plant, as in the Osiraq case. But this is not true for states that possess sensitive nuclear technology. By the time a program has evolved to the point where a country is operating one or more ENR plants, it is likely to have a large number of facilities that are geographically spread out. Brazil, for example, currently has nine sensitive nuclear fuel cycle facilities in operation, in addition to six reactors – two for generating electricity and four for research.¹²⁵ These facilities are located in four different states: Bahia, Minas Gerais, Rio de Janeiro, and Sao Paulo. To be successful, a preventive strike would need to eliminate or erode *all* of a country’s critical infrastructure; taking

¹²³ US Department of State (1975b). Part of this telegram is quoted in Hong (2011, 500–501).

¹²⁴ This section draws on some of the ideas in Fuhrmann (2018).

¹²⁵ This is according to databases produced by the IAEA.

out three facilities, for instance, does little good if a country possesses a fourth plant that could provide material for a bomb. It may still be possible for a country with a robust military, like the United States, to locate and destroy multiple dispersed facilities. However, the probability of success declines as the number of targets that would need to be destroyed increases.

Uncertainty about the full scope of a state's program may also increase as it masters sensitive nuclear technology. In particular, once a country demonstrates the ability to develop ENR technology indigenously, it becomes harder for others to rule out the possibility of secret facilities. Iran has at least five publicly known facilities that an adversary may wish to destroy in a preventive attack: the Fordow and Natanz enrichment sites, a uranium conversion facility in Isfahan, a heavy water production plant at Arak, and the Bushehr nuclear power plant. On top of these sites, however, Iran may have other facilities about which the public or foreign governments do not know. It is impossible to know for sure, but leaders might reasonably worry about this possibility given the advanced state of Iran's nuclear program; Tehran possesses the technological wherewithal and has had sufficient time to conceivably build facilities at other sites. By contrast, because Syria's nuclear program was relatively underdeveloped in the lead up to the 2007 al Kibar raid, Israeli officials were confident that a single site represented the entirety of Syria's bomb-relevant capabilities.

The ability to make nuclear programs mobile further increases the survivability of latent nuclear forces. Technology or materials – particularly things like centrifuges, which are used to enrich uranium – can be moved on relatively short notice. For example, Libya initially installed centrifuges for enriching uranium in Al Hashan but quickly moved them to another site two years later, in 2002, due to concerns about a preventive strike.¹²⁶ Iraq did something similar on the eve of the Persian Gulf War. On orders from Qusay Hussein (Saddam's son) and Hussein Kamel (Saddam's son-in-law), Iraqi scientist Mahdi Obeidi buried components related to a gas centrifuge enrichment system under a rose bush in his garden.¹²⁷ Obeidi later wrote a book about his experiences working on Iraq's nuclear program fittingly titled *The Bomb in My Garden*.¹²⁸

¹²⁶ Braut-Heggehammer (2016, 202, 207) and Fuhrmann (2018, 118).

¹²⁷ CNN (2003b).

¹²⁸ It is much more difficult to move a nuclear reactor, whether it is meant for research or electricity production. The benefits stemming from mobility, then, do not necessarily extend to countries that lack enrichment technology – including those that pursue the plutonium path to bomb-making.

On top of this, nuclear-related knowledge is inherently survivable. Short of rounding up hundreds if not thousands of scientists and assassinating them – an obviously reprehensible policy that no reasonable leader would pursue – expertise in nuclear matters cannot be eliminated. Targets can therefore reconstitute their nuclear programs following a successful attack. Once a country possesses the indigenous knowledge required to develop nuclear technology, they can rebuild nuclear sites in a few years. A one-off attack, therefore, may be insufficient to lower the likelihood of proliferation in the medium term, even if it delays progress in the short term.

There may be cases in which a potential attacker knows about all of a state's nuclear facilities and believes it can successfully destroy them. But once nuclear sites, especially reactors, are operational bombing them could disperse radioactive materials, leading to large-scale environmental contamination. A military attack could replicate the consequences of the nuclear disasters in Chernobyl (1986) and Fukushima (2011).¹²⁹ Concerns about radiation make countries think twice about bombing operational nuclear plants. It is not coincidental that preventive attacks, when they occur, tend to happen before nuclear sites become "hot." By the time that a state has operational ENR plants, it may be too late to target nuclear facilities at a cost that is acceptable to the attacker. Latent nuclear powers can use this to their advantage, further increasing the odds that their infrastructure will not be destroyed.

Countries can "harden" sites that house nuclear technology by locating them underground or surrounding them in protective shielding. Nuclear reactors are typically enclosed by 1.5-meter-thick concrete walls lined with steel.¹³⁰ These walls might be able to withstand impact from flying projectiles, including rockets or civilian airliners. Iran's nuclear enrichment plant at Fordo is located 300 feet below a mountain. These protective measures reduce but do not eliminate the possibility that bombing operational nuclear plants could lead to an environmental disaster. This is partially why the targeting of active nuclear facilities is prohibited under international law. Article 56 of Protocol I Additional to the Geneva Conventions (1977) states, "works or installations containing dangerous forces, [including] nuclear electrical generating stations, shall not be made the object of attack, even where these objects are military objectives, if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population."¹³¹

¹²⁹ Ramberg (2017).

¹³⁰ Wald (2002).

¹³¹ Quoted in Goldblat (2002, 164–165).

Solution #2: High Stakes

Carrying out threats is costly for the defender in latent nuclear deterrence, but this does not automatically make them unbelievable. Challengers judge credibility by considering the costs of threat implementation relative to the benefits. When the defender's gains from developing or using nuclear weapons exceed the costs, challengers will take this possibility more seriously.

Major security threats can provide defenders with a justification for possessing and perhaps using nuclear weapons, changing how challengers perceive the likelihood of nuclear proliferation as a form of punishment. Indeed, history shows that states often launch nuclear weapons programs shortly after experiencing major international threats. Chinese leader Mao Zedong made a strong push to build nuclear forces after being pushed around by the United States during the 1954–55 crisis in the Taiwan Strait. Indian Prime Minister Lal Bahadur Shastri acquiesced, albeit reluctantly, to a nuclear explosives project following the 1962 border war with China and Beijing's first nuclear test two years later. South Korea's nuclear weapons program followed numerous military provocations from North Korea, including an assassination attempt against President Park Chung Hee. And Iran's campaign to militarize its nuclear program began during the Iran–Iraq War (1980–88).

Policymakers recognize the connection between the instigation of serious military conflict and nuclear proliferation. During the crisis over the Falkland Islands, for instance, US officials concluded that a humiliating British defeat of Argentina could produce an Argentine bomb. As a May 28, 1982, memorandum from the National Security Council Staff to Robert McFarlane, who was then President Ronald Reagan's deputy national security adviser, put it: "A nuclear weapons capability would be virtually guaranteed, as both Brazil and Argentina would seek ultimate security in nuclear arsenals."¹³²

Serious military threats can harden a defender's resolve to get nuclear weapons in at least three ways. First, military challenges may compel a state to take actions that lower the risk of suffering a similar fate in the future, even if seeking new capabilities is costly. A person living in an apparently safe neighborhood may refrain from purchasing an expensive home security system – until they experience an armed break-in. So it is with nuclear weapons. Second, external aggression may provoke nationalistic fervor among the public, potentially lowering domestic barriers to proliferation. Third, a latent nuclear power might withdraw

¹³² US Department of State (1982).

from international nonproliferation commitments in retaliation for an attack, weakening external oversight over its nuclear program.¹³³

However, the costs of threat implementation will probably be unacceptably high when the issues at stake are minor for the defender. In January 2006, for instance, Russian military planes briefly violated Japanese airspace. This troubled Japan to some degree – it scrambled its own fighters in response – but it would be hard to argue that this event produced a threat sufficient to raise the probability of Japanese proliferation.¹³⁴ The (implicit) threat to go nuclear lacks credibility in this episode and others like it, so there is little reason to expect that proliferation threats would deter this kind of military encounter.

Deterrence by delayed attack likewise depends on high stakes for the state seeking to preserve the status quo, as discussed in the preceding discussion of traditional nuclear deterrence. Actually using nuclear weapons in an attack would be even costlier than building them. For a nuclear use threat to be credible – whether an attack would be carried out immediately or with a delay – a defender must believe that vital national interests are at stake.¹³⁵

Solution #3: Nuclear Restraint

Obtaining sensitive nuclear technology naturally generates concerns about a country's intentions, since the same plants could be used for generating electricity or bomb-making. A country may wish to quell fears about its nuclear program by convincing others that nuclear proliferation is not inevitable. States pursuing this path want their adversaries to know that they could build nuclear weapons if they so desired, but will not do so in the absence of a military challenge. Countries following this playbook have what I call a restrained nuclear program.¹³⁶

Pursuing this solution has the flavor of a nuclear hedging strategy. Nuclear hedging occurs when a state develops nuclear technology to shorten the time needed to build nuclear bombs, recognizing that the security environment might quickly deteriorate in the future.¹³⁷ Countries such as Brazil, Germany, Japan, and Spain have embraced this strategy. Hedgers have not made a final decision to arm with nuclear weapons. But they seek the technological capability to do so. And, when they get it, they usually want their adversaries to know.

¹³³ Broad (2012) highlights these points in the context of Iran.

¹³⁴ This is case number 4,475 in the Correlates of War's Militarized Interstate Dispute (MID) dataset. See Palmer et al. (2015).

¹³⁵ This is also a point made in Sechser and Fuhrmann (2017).

¹³⁶ I provide an operational definition of this concept in Chapter 5.

¹³⁷ Studies on nuclear hedging include Levite (2002) and Narang (2017).

Countries following this path may explicitly try to reassure other countries that they are not racing to a bomb. This is not always an easy task, especially for states in possession of sensitive nuclear technology. Political scientist Tristan Volpe has argued that countries struggle to use nuclear programs for coercive leverage once they “can produce and weaponize fissile material,” because others see armament as inevitable at that stage.¹³⁸ However, states have tools at their disposal to signal benign intentions – and these instruments can be effective. For example, they could ratify and comply with international nonproliferation commitments, like the NPT.¹³⁹ They can also refrain from doing single-use work on explosives, preparing a nuclear test site, or making other overt moves toward weaponization.

Showing nuclear restraint provides two main benefits. The first is that it can mitigate the problem of instability (challenge #3) to some degree. Political and military blowback are more likely when others think that a country will inevitably build nuclear weapons. This belief increases incentives for preventive strikes, as military force may become necessary to stop an imminent national security threat. For example, Israeli Prime Minister Menachem Begin seemingly believed that Iraq would have obtained nuclear forces imminently if his government had not destroyed Iraq’s nuclear reactor in 1981: “we would have had to sit by passively from afar,” he argued, “knowing that the Iraqis were creating atomic bombs of the type dropped on Hiroshima in the Second World War, and three, four or five such atomic bombs in the hands of such an evil person as Saddam Hussein.”¹⁴⁰ Perceptions of proliferation inevitability could also compel the challenger to seek its own nuclear arsenal as a means to protect itself against a loss in future bargaining power, thereby fueling an arms race. Pakistan became more determined to arm, for example, once it perceived that India had introduced nuclear weapons into South Asia.

Nuclear restraint lowers the threat posed by a country’s nuclear program and reduces the need for preventive military attacks and reactive nuclear proliferation. The argument for attacking Iran to erode its nuclear capabilities weakens considerably if Tehran is not planning to obtain a bomb in the absence of a strike. At the same time, the pressures for Egypt, Turkey, and Saudi Arabia to arm themselves with nuclear

¹³⁸ Volpe (2017, 529).

¹³⁹ Volpe (2017, 526) acknowledges that nonproliferation deals could signal restraint but contends that the costs of sending a credible signal are too great once a state has produced fissile material. Nonproliferation agreements are an imperfect indicator of a state’s intentions. See Fuhrmann and Berejikian (2012).

¹⁴⁰ Quoted in Shipler (1981).

weapons decline if officials in those countries believe that Iran is content to remain nonnuclear.

The second advantage of restraint is that it preserves the viability of deterrence by proliferation. Proliferation threats have deterrence value only if challengers believe that the defender is content to remain nonnuclear in the absence of a change to the status quo.¹⁴¹ There is little reason for a challenger to hold back if it believes that it is going to suffer a threatened punishment anyways. Credibly signaling restraint, then, is essential to keep deterrence by proliferation on the table.

This is especially critical for states hoping to deter arms-racing with their latent nuclear forces. Dissuading a rival's armament depends on deterrence by proliferation. Deterrence by delayed attack or doubt are ineffective in this context because threats to punish an opponent for arming by launching a nuclear attack lack credibility. Effectively communicating peaceful intentions, then, is crucial for a country hoping to stave off an arms race. Eliminating deterrence by proliferation is less problematic in the context of military conflict because the other two mechanisms can operate effectively.

Pursuing a strategy of restraint comes with a downside: It weakens deterrence by doubt. When a defender sends a credible message that its intentions are peaceful, its adversaries are less likely to suspect that the defender may already be in possession of a nuclear bomb. Challengers who know for certain that their adversary is not in possession of a bomb may see a window of opportunity to attack due to the delay in punishment (challenge #1). Developing sensitive nuclear technology shortens the time delay but does not eliminate it.

Reassurance also has a limitation when it comes to stopping an arms race. Effective reassurance by the defender may not dampen the challenger's resolve to seek an arsenal if the challenger faces a third-party nuclear threat. In that case, the challenger's motivation to arm could remain high even if it knows that the defender will remain nonnuclear. Consider the role of deterrence by proliferation on the Korean Peninsula. North Korea likely anticipated that testing a nuclear weapon for the first time in 2006 would increase South Korea's resolve to obtain the same capability – and that refraining from testing would dampen these ambitions in Seoul. Effective reassurance by South Korea was largely irrelevant for officials in Pyongyang, however, because they were more worried about perceived nuclear threats from the United States. Proliferation threats may fail when the challenger already has a third-party rival that possesses, or will soon obtain, nuclear forces.

¹⁴¹ Volpe (2017) raises this point in the context of using nuclear latency for coercive diplomacy. See also Volpe (2015).

Unrestrained Programs: Racing to a Bomb

An alternative approach is to push hard to weaponize a latent nuclear capability. Instead of attempting to reassure others that its intentions are peaceful, a country could make a dash to a bomb. States that follow this path have what I call unrestrained nuclear programs. They have little interest in nuclear latency, seeing it merely as a necessary step along the way to something bigger. In this situation, leaders have made firm political decisions to arm. The US Manhattan Project fits this model, as does Iraq's nuclear program under Saddam Hussein in the 1980s.

Despite its clear military aims, this approach may yield political benefits during the period of latency. It could strengthen deterrence by doubt by creating uncertainty about whether a state is already nuclear-armed. Seeing that the "latent" nuclear power has taken steps toward assembling bombs, not just producing the requisite fissile material, others may think that it could possess a bomb. This pathway therefore has the potential to eliminate the punishment-related time delay (challenge #1) in the eyes of potential challengers.

An unrestrained nuclear program comes with two clear downsides, which can be avoided by adopting a restrained program. First, cultivating ambiguity is more likely to incite instability (challenge #3). Second, it virtually eliminates the viability of deterrence by proliferation. These problems carry significant implications for military conflict and arms-racing. When it comes to conflict, unrestrained programs are high-risk, high-reward propositions: They create a window of opportunity for preventive strikes (if the challenger is confident that the defender is nonnuclear) but can also bolster deterrence (if the challenger thinks the defender might be in possession of at least one bomb). Unrestrained programs offer countries a double whammy for arms-racing: They give adversaries incentives to arm while simultaneously stripping countries of deterrence value they could otherwise derive from their latent capacity.

Predictions about International Peace and Stability

Latent nuclear deterrence theory generates six main predictions about international relations. These are the things we would expect to see in the real world if the theory is correct.

- *Prediction #1: World leaders believe in latent nuclear deterrence.* Officials from around the globe should express the view that nuclear latency confers political influence. What goes on inside their heads should match how the theory expects leaders to think.
- *Prediction #2: Countries obtain nuclear latency for greater international influence.* Although the book's focus is on the political effects of nuclear

latency, the theory also carries implications for the causes of ENR technology adoption. Countries should covet nuclear latency, in part, because they believe that it provides political benefits – even if they do not go all the way to a full-blown nuclear arsenal.

- *Prediction #3: For countries with restrained nuclear programs, obtaining ENR technology increases international influence in high-stakes situations.* Becoming ENR-capable shortens a country's time to a bomb, putting it on the technological cusp of building nuclear bombs. This increases the expected punishment costs for challengers. When the stakes are small, however, ENR-capable defenders face a credibility problem: The costs of carrying out a threat will probably exceed what they stand to gain. Threats become more believable if a challenger's action would pose a major national security threat for the defender. Embracing nuclear restraint makes ENR possession less threatening to others, resulting in fewer countermeasures. And going this route preserves deterrence by proliferation, although deterrence by doubt becomes less viable.
- *Prediction #4: Being closer to a bomb confers more influence.* Latent nuclear deterrence theory holds that having ENR technology is crucial for gaining international influence. Yet ENR programs vary in their scale. I distinguish between two stages of latency based on a state's capabilities: partial and full. Partially latent states conduct small-scale fissile material production in a laboratory but do not come close to making enough plutonium or HEU for a single bomb. Fully latent states, by contrast, have pilot- or commercial-scale plants that give them the ability to produce fissile material for one or more nuclear weapons. The theory expects that, in general, full nuclear latency will be more consequential for international peace and stability than partial latency. By shortening their proliferation timelines, fully latent states should be able to mitigate the three problems in latent deterrence more effectively.
- *Prediction #5: The political benefits from nuclear latency may be small and inconsistently obtained.* Even under ideal circumstances, latent nuclear deterrence may fail: ENR capabilities, high stakes for the defender, and nuclear restraint alleviate – but do not eliminate – the major challenges in weaponless deterrence. The anticipated delay in punishment could stymie success even when the defender substantially shortens its time to a bomb by producing fissile material, especially if the challenger is impulsive or risk-acceptant. Misperceiving the defender's capabilities or intentions also opens the door to failed deterrence. Moreover, the theory focuses on the costs the challenger might incur from taking a particular foreign policy action, but the benefits matter as well.

If the challenger is highly revisionist, the expected benefits of changing the status quo may exceed the costs. This is especially true in deterrence by proliferation, where the punishment costs are significant but not necessarily devastating. Many scholars and policymakers believe that nuclear weapons revolutionized international relations.¹⁴² Latent nuclear forces, at least the kind that countries have typically wielded over the past seventy-five years, influence world politics in discernible ways but are probably less transformative.

- *Prediction #6: In the presence of an unrestrained nuclear program, getting an ENR capability does not reliably increase a country's international influence, and may invite instability.* Launching an unrestrained weapons program puts countries on a riskier and more uncertain path. It makes others more threatened by a country's nuclear ambitions, potentially triggering destabilizing countermeasures. Moreover, initiating an unrestrained weapons program takes deterrence by proliferation off the table, forcing countries to rely on deterrence by delayed attack and doubt to gain influence. On the plus side, pursuing this path increases the expected punishment costs by making sudden or slightly delayed nuclear retaliation more conceivable.

The book will evaluate the first two predictions by determining what world leaders think about the viability of weaponless deterrence (Chapter 2) and evaluating why they covet latent nuclear forces (Chapter 4). It will explore predictions 3–6 in several foreign policy contexts, providing a comprehensive test of the theory. I will determine how nuclear latency affects the onset of international crises and serious military disputes, foreign policy preferences among adversaries, and leverage within military alliances (Chapter 5). Then, I will take a close look at how nuclear latency influences the consideration and use preventive military force (Chapter 6) and nuclear armament (Chapter 7).

Conclusion

This chapter developed the logical foundations of latent nuclear deterrence theory. It began by describing the nuts and bolts of deterrence and explaining why many policymakers and scholars see nuclear weapons as an effective deterrent. The chapter argued, however, that having assembled warheads is not the only way to gain influence from a nuclear program. It introduced three mechanisms by which latent nuclear

¹⁴² Jervis (1989) exemplifies this view.

powers can conceivably gain political leverage: threatening to build nuclear weapons (deterrence by proliferation), quickly assembling and using a bomb upon the onset of hostilities (deterrence by delayed attack), or cultivating the impression that they might already possess a bomb (deterrence by doubt).

Three challenges make it difficult to succeed when using these three means of influence in world politics. First, there is a time delay between a challenge to the status quo and the imposition of punishment. Second, nuclear breakout and use is costly for the defender, not just the challenger. Third, attempting to use latent nuclear forces to gain leverage can incite instability. Latent nuclear deterrence theory suggests three solutions to alleviate these problems: ENR technology, high stakes for the defender, and nuclear restraint. According to the theory, states that are not bent on building nuclear weapons can deter serious national security threats by obtaining the ability to produce fissile material. However, an ENR capability brings fewer political benefits when states have unrestrained nuclear weapons programs. The potential for instability in that situation is high too, as consideration of preventive military strikes and reactive nuclear armament are more likely.

Ultimately, the theory offers a mixed bag for states hoping to gain leverage from latent nuclear forces. On one hand, countries do not need assembled bombs for their nuclear programs to deter undesirable outcomes. On the other, meeting the requirements for success is difficult and there is potential to incite instability. Countries that are able to do so may succeed, while those that cannot will fail and possibly destabilize world politics.

Logic alone can only take us so far. To determine if latent nuclear deterrence theory is correct, we need to examine the evidence. The following chapters evaluate the theory's predictions based on a comprehensive assessment of seventy years' worth of history.