



# HOW TO THINK ABOUT NUCLEAR CRISES

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How dangerous are nuclear crises? What dynamics underpin how they unfold? Recent tensions between North Korea and the United States have exposed disagreement among scholars and analysts regarding these questions. We reconcile these apparently contradictory views by showing the circumstances in which different models of nuclear crises should be expected to hold. Nuclear crises should be expected to have different dynamics depending on two variables: the incentives to use nuclear weapons first in a crisis and the extent to which escalation is controllable by the leaders involved. Variation across these two dimensions generates four types of nuclear crises: "staircase," "stability-instability," "brinkmanship," and "firestorm" crises. These models correspond to well-established ways of thinking about nuclear crises, but no one model is "correct." Different models should be expected to apply in different cases, and nuclear crises should therefore be interpreted differently according to which model is most appropriate. We demonstrate the utility of our framework using the cases of the 1962 Cuban Missile Crisis, 1999 Kargil War, 2017 Doklam Crisis, and ongoing U.S.-North Korean tensions.

**H**ow dangerous are nuclear crises? What determines who wins and who loses? And what dynamics underpin how they unfold? Recent tensions between North Korea and the United States have exposed disagreement regarding these questions. While some analysts view escalations in rhetoric and hints of war between the United States and North Korea as "disastrous" and "so dangerous," others suggest there is little to worry about and that the "threat of war with North Korea may sound scarier than it is."<sup>2</sup> This disagreement about how to understand nuclear crises is also reflected

in academic debates. Different scholars offer interpretations of nuclear crises that appear to be at odds with each other. For some, the threat of nuclear use is generally so remote that nuclear-armed states can enter a crisis with little fear of it crossing the nuclear threshold. For others, nuclear escalation is highly plausible and the presence of nuclear weapons profoundly affects the way crises play out. Policymakers seeking to pursue their political goals within a nuclear crisis or reduce the risk of nuclear escalation will thus find little guidance in the existing scholarship.

We argue that different interpretations of

1 Ankit Panda and Vipin Narang, "Why Trump's Threat of 'Fire and Fury' Against North Korea Is So Dangerous," *The Diplomat*, Aug. 11, 2017, <http://thediplomat.com/2017/08/why-trumps-threat-of-fire-and-fury-against-north-korea-is-so-dangerous/>.

2 Max Fisher, "Trump's Threat of War with North Korea May Sound Scarier than It Is," *New York Times*, Aug. 9, 2017, <https://www.nytimes.com/2017/08/09/world/asia/trump-north-korea-nuclear-war.html>.

nuclear crises are not — as they initially appear — mutually exclusive. Rather, nuclear crises have different dynamics depending on two variables: the incentives to use nuclear weapons first in a crisis and the extent to which escalation is controllable by the leaders involved. Identifying these variables is not new: First-use incentives and crisis controllability are widely understood to be factors that affect how nuclear crises play out. However, they have not previously been incorporated into a single framework that can shed light on the heterogeneity of nuclear crises. Variation across these two dimensions generates four models of nuclear escalation, which correspond to established ways of thinking about nuclear crises. We label these models the “staircase” model, the “stability-instability” model, the “brinkmanship” model, and the “firestorm” model. In contrast to recent literature, we argue that no one model of nuclear crisis is “correct” — different models simply apply in different circumstances. In specifying the various types of nuclear crisis more clearly and the dimensions that underpin them, we offer a way to unite divergent interpretations of nuclear crises within a broader framework. In doing so, our framework helps make sense of inconclusive empirical findings in the international relations literature. For example, different studies have found nuclear weapons to have either no, limited, or substantial effects on the outcomes of crises.<sup>3</sup> Because different nuclear crises operate according to different logics, it is unsurprising that existing findings are sensitive to differences in methodological approach, case selection, modeling strategies, or coding choices. Finally, the framework provides analysts and policymakers with a tool to assess the relative dangers of potential future nuclear crises, the feasibility of signaling political interests or resolve within a crisis, and the advantages of nuclear superiority.

We first review the research on nuclear crises,

highlighting tensions between existing studies. We then develop our framework, describing the two variables and four models of nuclear crisis and discussing the implications of each for the dynamics of this type of crisis. We demonstrate the utility of this framework by showing how it sheds light on the Kargil War between India and Pakistan, the Cuban Missile Crisis, the Doklam crisis between India and China, and current tensions between the United States and North Korea. We conclude with implications for current and future research.

## Our Understanding Of Nuclear Crises

In this study, we employ the definition of crisis used by the multi-decade International Crisis Behavior project: A nuclear crisis is an interaction between two nuclear-armed states in which there is a “change in type and/or an increase in intensity” of disruptive or hostile behaviors with a “heightened probability of military hostilities” that “destabilizes their relationship” and begins with a “disruptive act or event.”<sup>4</sup> Studying nuclear crises is fraught with the same methodological challenges as studies of other crises short of war, including deciding which cases to examine, grappling with selection effects, and identifying appropriate counterfactuals.<sup>5</sup> Despite these challenges, the significance of nuclear crises to contemporary international politics is widely understood. Matthew Kroenig, for example, writes that “the nuclear crisis [is] the primary arena in which nuclear-armed states settle important international disputes.”<sup>6</sup> Indeed, for many, the replacement of great power wars with nuclear crises is one of the defining features of the post-1945 international system.<sup>7</sup>

Despite a shared recognition of the importance of nuclear crises, there is little agreement on the dynamics that underpin them. Scholars tend to view “nuclear crises” as a group of events that

3 See for example, Marc Trachtenberg, “The Influence of Nuclear Weapons in the Cuban Missile Crisis,” *International Security* 10, no. 1 (Summer 1985): 137–63, doi.org/10.2307/2538793; Richard K. Betts, *Nuclear Blackmail and Nuclear Balance* (Washington, DC: Brookings Institution, 1987); Rosemary J. Foot, “Nuclear Coercion and the Ending of the Korean Conflict,” *International Security* 13, no. 3 (1988/1989): 92–112, doi.org/10.2307/2538737; John Mueller, “The Essential Irrelevance of Nuclear Weapons: Stability in the Postwar World,” *International Security* 13, no. 2 (1988): 55–79, doi.org/10.2307/2538971; Kyle Beardsley and Victor Asal, “Winning with the Bomb,” *Journal of Conflict Resolution* 53, no. 2 (2009): 278–301, doi.org/10.1177/0022002708330386; Matthew Kroenig, “Nuclear Superiority and the Balance of Resolve: Explaining Nuclear Crisis Outcomes,” *International Organization* 67, no. 1 (2013): 141–71, doi.org/10.1017/S0020818312000367; Matthew Kroenig, *The Logic of American Nuclear Strategy: Why Strategic Superiority Matters* (New York: Oxford University Press, 2018); Todd S. Sechser and Matthew Fuhrmann, “Crisis Bargaining and Nuclear Blackmail,” *International Organization* 67, no. 1 (2013): 173–95, doi.org/10.1017/S0020818312000392; *Nuclear Weapons and Coercive Diplomacy* (New York: Cambridge University Press, 2017).

4 Michael Brecher and Jonathan Wilkenfeld, *A Study of Crisis* (Ann Arbor: University of Michigan Press, 1997), 4–5. We focus on crises between pairs of nuclear-armed states, although whether the framework we propose also applies to crises between nuclear and non-nuclear states would be an interesting avenue for future research.

5 See, for example, James Fearon, “Selection Effects and Deterrence,” *International Interactions* 28, no. 1 (2002): 5–29, doi.org/10.1080/03050620210390.

6 Kroenig, “Nuclear Superiority and the Balance of Resolve,” 142.

7 See, for example, Stanley Hoffman, *The State of War: Essays on the Theory and Practice of International Politics* (New York: Praeger, 1965), 236; John Lewis Gaddis, *The Long Peace: Inquiries Into the History of the Cold War* (New York: Oxford University Press, 1987).

share an underlying logic, but disagree about what that logic is.<sup>8</sup> For example, according to advocates of the theory of the “nuclear revolution,” nuclear weapons suppress the temptation to escalate crises at all levels. The destructive capacity of nuclear weapons casts a long shadow over all interstate crises, restricting the range of behaviors that states can reasonably engage in.<sup>9</sup> As John Mearsheimer notes, “Nuclear weapons, because of the horror associated with their use, really are the ultimate deterrent” and make “states more cautious about using military force of *any kind* against each other.”<sup>10</sup> For scholars of the nuclear taboo or advocates of the “stability-instability paradox,” however, the difficulty of credibly threatening to use nuclear weapons, and the bright line distinguishing nuclear use from non-nuclear use, ought to reduce the influence that nuclear weapons have within a crisis.<sup>11</sup> Recent empirical scholarship also suggests that crises operate according to a certain logic, while disagreeing as to what that logic is. For example, Kroenig argues that a state with nuclear superiority is more likely to achieve its goals in a nuclear crisis, while Todd Sechser and Matthew Fuhrmann conclude that nuclear weapons do not help states compel others to do what they want during crises.<sup>12</sup>

This disagreement is concerning for several

reasons. First, policymakers (or anyone, for that matter) seeking to understand how nuclear crises unfold, how dangerous they might be, and how one might pursue a state’s political interests within such a crisis, will struggle to gain insights from a literature that offers contradictory findings and implications. Second, by seeking a single logic that explains nuclear crises, existing work downplays the variety among them.<sup>13</sup> A simple historical reading, for example, suggests profound differences between the dynamics underpinning the 1995 Taiwan Straits crisis, the various Berlin crises, the war in Angola, and the 1970 Cienfuegos submarine base crisis, all of which are typically identified as “nuclear crises.”<sup>14</sup> Indeed, common understandings of the different dangers involved in different crises — that the Cuban Missile Crisis, for example, was the “most dangerous” Cold War crisis — reflect a heterogeneity that existing theories do not account for.

## Models Of Nuclear Crises

In this section, we describe two variables that affect the ways in which nuclear crises unfold: the strength of incentives to use nuclear weapons first in a crisis, and the degree to which the actors involved are able to control escalation of

8 See, for example, Barry Nalebuff, “Brinkmanship and Nuclear Deterrence: The Neutrality of Escalation,” *Conflict Management and Peace Science* 9, no. 2 (1986): 19–30, doi.org/10.1177/073889428600900202; Betts, *Nuclear Blackmail and Nuclear Balance*; Robert Powell, “Nuclear Brinkmanship with Two-Sided Incomplete Information,” *American Political Science Review* 82, no. 1 (March 1988): 156–178, doi.org/10.2307/1958063; Robert Powell, “Nuclear Brinkmanship, Limited War, and Military Power,” *International Organization* 69, no. 3 (2015): 589–626, doi.org/10.1017/S0020818315000028; Richard Ned Lebow, *Nuclear Crisis Management: A Dangerous Illusion* (Ithaca, NY: Cornell University Press, 1987); Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton, NJ: Princeton University Press, 1993); Beardsley and Asal, “Winning with the Bomb,” Kroenig, “Nuclear Superiority and the Balance of Resolve,” Sechser and Fuhrmann, “Crisis Bargaining and Nuclear Blackmail”; Todd S. Sechser and Matthew Fuhrmann, *Nuclear Weapons and Coercive Diplomacy* (New York: Cambridge University Press, 2017); Benoît Pelopidas, “The Unbearable Lightness of Luck: Three Sources of Overconfidence in the Manageability of Nuclear Crises,” *European Journal of International Security* 2, no. 2 (2017): 240–62, doi.org/10.1017/eis.2017.6.

9 See, for example, Bernard Brodie, ed., *The Absolute Weapon: Atomic Power and World Order* (New York: Harcourt Brace, 1946); Robert Jervis, “Why Nuclear Superiority Doesn’t Matter,” *Political Science Quarterly* 94, no. 4 (1979): 617–33, doi.org/10.2307/2149629; Robert Jervis, *The Illlogic of American Nuclear Strategy* (Ithaca, NY: Cornell University Press, 1984); Robert Jervis, *The Meaning of the Nuclear Revolution* (Ithaca, NY: Cornell University Press, 1989); Charles L. Glaser, “Why Even Good Defenses May Be Bad,” *International Security* 9, no. 2 (1984): 92–123, doi.org/10.2307/2538669; Charles L. Glaser, *Analyzing Strategic Nuclear Policy* (Princeton, NJ: Princeton University Press, 1990); Kenneth N. Waltz, *The Spread of Nuclear Weapons: More May Be Better*, Adelphi Paper no. 171 (London: International Institute for Strategic Studies, 1981); Kenneth N. Waltz, “Nuclear Myths and Political Realities,” *American Political Science Review* 84, no. 3 (September 1990): 730–45, doi.org/10.2307/1962764; John J. Mearsheimer, “Nuclear Weapons and Deterrence in Europe,” *International Security* 9, no. 3 (1984): 19–46, doi.org/10.2307/2538586. For recent critiques of the theory of the nuclear revolution, see Daryl G. Press and Kier A. Lieber, “The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence,” *International Security* 41, no. 4 (2017): 9–49, doi.org/10.1162/ISEC\_a\_00273; Brendan R. Green and Austin Long, “The MAD Who Wasn’t There: Soviet Reactions to the Late Cold War Nuclear Balance,” *Security Studies* 26, no. 4 (2017): 606–41, doi.org/10.1080/09636412.2017.1331639; Mark S. Bell, “Nuclear Opportunism: A Theory of How States Use Nuclear Weapons in International Politics,” *Journal of Strategic Studies* 42, no. 1 (2019): 3–28, doi.org/10.1080/01402390.2017.1389722.

10 Mearsheimer, “Nuclear Weapons and Deterrence in Europe,” 20; John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: Norton, 2001), 129 (emphasis added).

11 Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons Since 1945* (New York: Cambridge University Press, 2008); Glenn Snyder, “The Balance of Power and the Balance of Terror,” in *Balance of Power*, ed. Paul Seabury (San Francisco, CA: Chandler, 1965).

12 Kroenig, “Nuclear Superiority and the Balance of Resolve”; Kroenig, *The Logic of American Nuclear Strategy*; Sechser and Fuhrmann, “Crisis Bargaining and Nuclear Blackmail”; Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*. These debates echo prior disagreements. See, for example, Trachtenberg, “The Influence of Nuclear Weapons in the Cuban Missile Crisis”; Betts, *Nuclear Blackmail and Nuclear Balance*; Mueller, “The Essential Irrelevance of Nuclear Weapons.”

13 Partial exceptions include Betts, *Nuclear Blackmail and Nuclear Balance*; and Robert Powell, “The Theoretical Foundations of Strategic Nuclear Deterrence,” *Political Science Quarterly* 100, no. 1 (1985): 75–96, http://doi.org/10.2307/2150861, which distinguish between crises that exhibited different levels of risk and different types of nuclear threat, respectively.

14 See, for example, Kroenig, “Nuclear Superiority and the Balance of Resolve,” 154.





Table 1: Indicators of the Two Variables

| Incentives to use nuclear weapons first                                  | Crisis controllability                                       |
|--|--|
| Significant nuclear asymmetry  | Robust command and control institutions                      |
| Asymmetric escalation posture on either side                             | Clear and mutually understood red lines                      |
| Perceptions by leaders of political advantages associated with first use | Likelihood of interaction of nuclear and conventional forces |
|  | Avenues for crisis communication                             |

the crisis. These two variables are determined by the objective features of a given crisis, although we incorporate the possibility that the crisis participants' perceptions of these variables may diverge from reality in ways that influence how they behave. Incentives for first nuclear use and the degree of controllability are well understood to affect how a nuclear crisis plays out, however, they have not previously been incorporated into a single framework that sheds light on the diversity of nuclear crises. Examining these two dimensions leads to four possible "ideal type" models of nuclear crisis: the "staircase" model, the "brinkmanship" model, the "stability-instability" model, and the "firestorm" model. These models, in turn, correspond to prominent ways that scholars and analysts have thought about nuclear crises. The framework demonstrates that different models of nuclear crisis should be expected to operate under different circumstances. This insight holds important implications for how to understand existing scholarship on nuclear crises, as well as variation among these crises across time.

Table 1 summarizes the indicators of the variables that we examine in the case studies below. Each of these variables is itself the aggregation of other variables. Grouping them in this way, however, allows us to impose some conceptual order on the ways in which nuclear crises can vary, and thus begin to shed light on the diversity of this class of events.

The first variable we examine is the extent to which either side faces incentives to use nuclear weapons first in a crisis. This variable asks whether the crisis is one in which either side would gain substantial advantages from using nuclear weapons

first. Such incentives may emerge in at least two distinct ways.

First, the dynamics of a possible nuclear war may mean that first nuclear use could meaningfully affect the final outcome of the conflict. In particular, if there is a large disparity in capabilities between the nuclear forces of the participants in the crisis, there will be stronger incentives for both sides to use nuclear weapons first. For the weaker state, having a vulnerable and small nuclear force may generate doubts about the ability of that state's nuclear arsenal to survive a first strike, thereby creating pressure for states to "use them or lose them," and incentivizing aggressive nuclear postures and first nuclear use. As Peter Feaver argues, a state with a vulnerable nuclear arsenal has an "incentive to posture its forces for an early use in a crisis, before its nuclear option is curtailed."<sup>15</sup> For the state with the more powerful arsenal, meaningfully limiting damage through engaging in offensive nuclear counterforce missions might be tempting, as might be the possibility of a splendid first strike — the ability to completely take out an opponent's nuclear capabilities.<sup>16</sup> Crises characterized by significant nuclear asymmetry — in particular, where one side plausibly lacks a secure second-strike capability — will therefore feature greater incentives to use nuclear weapons first than crises characterized by a greater degree of symmetry, in which meaningful damage limitation and/or a splendid first strike are less plausible. Second, nuclear first use may be threatened as part of the bargaining process within a crisis or war. Crises in which one (or both) states has a nuclear posture designed to credibly threaten the first use of nuclear weapons — what Vipin Narang refers to as an "asymmetric

15 Peter D. Feaver, "Command and Control in Emerging Nuclear Nations," *International Security* 17, no. 3 (1992/93): 165, doi.org/10.2307/2539133. For a critique of the concept of "use them or lose them," see Kroenig, *The Logic of American Nuclear Strategy*, 137–42.

16 For recent debates on the feasibility of damage limitation and counterforce, see Charles L. Glaser and Steve Fetter, "Should the United States Reject MAD? Damage Limitation and U.S. Nuclear Strategy Toward China," *International Security* 41, no. 1 (2016): 49–98, doi.org/10.1162/ISEC\_a\_00248; Press and Lieber, "The New Era of Counterforce."

escalation” posture — will be characterized by greater incentives to use nuclear weapons first.<sup>17</sup>

These two factors contributing to incentives for first use are objective features of a given crisis. However, they can only affect the dynamics of a crisis if they are perceived to exist by the leaders

**A crisis can escalate to (and beyond) the nuclear threshold in a controlled fashion, i.e., in a process in which each leader makes a conscious and deliberate strategic calculation to escalate at every stage.**

involved. If leaders do not perceive that first use could provide significant political advantages in a crisis or conflict, those incentives will not affect crisis dynamics. We therefore code crises in which either side lacks a secure second-strike capability and/or has an asymmetric escalation posture *and* in which one or both leaders perceive that nuclear first use may offer substantial political benefits within the crisis as being characterized by incentives to use nuclear weapons first. That is to say, crises in which *either* side has *and* perceives incentives for nuclear first use are coded as having incentives for first nuclear use.

The second dimension is the extent to which a crisis is controllable by the actors participating in the crisis. Controllability refers to the ability of leaders to make conscious and strategic decisions to determine the level of escalation in a given crisis. It is important to note that crisis controllability does not refer to the level of escalation that occurs. A crisis can escalate to (and beyond) the nuclear threshold in a controlled fashion, i.e., in a process in which each leader makes a conscious and

deliberate strategic calculation to escalate at every stage. Controllability instead refers to the *process* by which escalation occurs — to whatever level.<sup>18</sup>

We code crisis controllability on the basis of a number of features of a crisis. These features are not intended to be an exhaustive list of factors contributing to crisis controllability, but rather a series of indicators that can be observed and that influence crisis controllability in important ways. First, different states have different command and control arrangements, which means that leaders exercise different levels of control over nuclear use.<sup>19</sup> For example, a crisis in which both leaders have exclusive authority to make decisions about nuclear use, and robust institutions exist that enforce that authority even in crisis situations, thereby minimizing the risk of accidental or inadvertent use, is more controllable than one without such checks. Second, clear and mutually understood red lines for nuclear use, if they exist, can increase controllability, since they reduce the likelihood that a state will accidentally cross another state’s red line for nuclear use.<sup>20</sup> Third, if a state’s conventional forces are likely to target forces relevant to the adversary’s ability to use nuclear weapons, or if forces relevant to conventional and nuclear operations are likely to interact with each other in a crisis or military operation, crisis controllability will likely be lower.<sup>21</sup> Fourth, states have varying abilities to communicate with each other during crises: A crisis in which the two states have well-established avenues through which to communicate, or in which a third party can reliably convey information between two states in a crisis, may be more controllable than crises in which states communicate through unreliable or ad hoc channels or exclusively through public signaling. Further, the ability to communicate is not simply institutional: For example, certain pairs of leaders may better understand or empathize with each other than others, improving crisis controllability.<sup>22</sup>

It is worth noting four potential objections

17 Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability," *International Security* 34, no. 3 (2009/10): 38–78, doi.org/10.1162/isec.2010.34.3.38; Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, N.J.: Princeton University Press, 2014).

18 For a critique of the claim that nuclear crises can ever be controllable, see Pelopidas, "The Unbearable Lightness of Luck."

19 Feaver, "Command and Control in Emerging Nuclear Nations;" Narang, *Nuclear Strategy in the Modern Era*.

20 This factor can be hard to observe empirically, since red lines need not be publicly articulated if they are implicitly understood, and publicly articulated red lines are not necessarily clear or may not be believed by other states. For recent work on red lines, see, Daniel W. Altman, *Red Lines and Facts Accomplish in Interstate Coercion and Crisis* (Ph.D. dissertation, Massachusetts Institute of Technology, 2015); Daniel W. Altman and Nicholas L. Miller, "Red Lines in Nuclear Nonproliferation," *Nonproliferation Review* 24, no. 3–4 (2017): 315–42, doi.org/10.1080/10736700.2018.1433575; Dan Altman, "Advancing without Attacking: The Strategic Game Around the Use of Force," *Security Studies* 27, no. 1 (2018): 58–88, doi.org/10.1080/09636412.2017.1360074.

21 Barry R. Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, NY: Cornell University Press, 1991); Caitlin Talmadge, "Would China Go Nuclear? Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States," *International Security* 41, no. 4 (2017): 50–92, doi.org/10.1162/ISEC\_a\_00274.

22 See, for example, James G. Blight and Janet Lang, "When Empathy Failed: Using Critical Oral History to Reassess the Collapse of U.S.-Soviet Détente in the Carter-Brezhnev Years," *Journal of Cold War Studies* 12, no. 2 (2010): 29–74, doi.org/10.1162/jcws.2010.12.2.29.



Figure 1: Models of Nuclear Crises

| Crisis Controllability              |      |                       |                                |
|-------------------------------------|------|-----------------------|--------------------------------|
| Incentives for deliberate first use |      | Low                   | High                           |
|                                     | High | “Firestorm” crises    | “Staircase” crises             |
|                                     | Low  | “Brinkmanship” crises | “Stability-Instability” crises |

Table 2: Answers to Key Questions About Nuclear Crises

|   | “Staircase” Model  | “Stability-Instability” Model   | “Brinkmanship” Model   | “Firestorm” Model   |
|---|--|---|--|---|
| <b>Risk of nuclear use within crisis?</b>   | Moderate<br>(from deliberate first use)                                | Lowest<br>(neither deliberate first use nor uncontrolled escalation likely) | Moderate<br>(from uncontrolled escalation)   | Highest<br>(both deliberate first use and uncontrolled escalation possible) |
| <b>Is the nuclear or conventional balance more important in determining outcomes?</b> | Conventional and nuclear balance<br>(depending on level of escalation) | Conventional balance  | “Balance of resolve” more important than nuclear or conventional balance           | Nuclear balance   |
| <b>Is nuclear superiority valuable?</b>   | In some crises   | No  | No*  | Yes   |
| <b>How feasible is signaling within crisis?</b>                                       | Feasible<br>(with conventional and nuclear escalation)                 | Feasible<br>(but only with conventional escalation)                         | Feasible<br>(with conventional escalation; risk of nuclear escalation unavoidable) | Hard to signal during crisis  |
| <b>Empirical example</b>  | Kargil War (1999)  | Doklam Crisis (2017)  | Cuban Missile Crisis (1962)  | Potential U.S.-North Korean crisis  |

\* Nuclear superiority is of value within the brinkmanship model if it contributes to resolve, as Matthew Kroenig argues.

at this point. First, it might be objected that the two variables are not independent of each other. For example, one reason why a crisis might lack controllability is if there are incentives to use nuclear weapons first and battlefield commanders are therefore given pre-delegated authority to use nuclear weapons.<sup>23</sup> However, the relationship between these two variables is not determinative (as discussed above, there are many other sources of crisis controllability), and one can conceive of

crises that are controllable — where there is firm control over nuclear assets, clear red lines, etc. — but in which incentives to use nuclear weapons first are nonetheless strong. These two dimensions are therefore appropriately considered separately because each exerts an independent effect on the character of nuclear crises.

A second potential criticism is that neither variable accounts for how high the stakes of the crisis are: Shouldn’t the stakes involved affect the

23 See Narang, *Nuclear Strategy in the Modern Era*.

way a crisis plays out? As we discuss below, the stakes of the crisis can be incorporated within our framework. This is because we expect that states would be willing to enter different types of crises to protect different interests. For example, because stability-instability crises pose relatively little risk of nuclear escalation, we expect that policymakers will be more willing to enter them even over relatively unimportant stakes. By contrast, firestorm crises have a much higher risk of nuclear escalation, and we therefore expect that policymakers would only enter such crises if the most vital national interests were at risk. This has implications for understanding existing, contradictory empirical findings, which we discuss more fully in the following sections.

Third, some might ask if these are the only two variables that matter. Probably not. As mentioned above, this framework represents a first step in exploring the variation among nuclear crises, but additional variables likely affect how individual crises play out, including perceptual, bureaucratic, normative, and technological variables. Exploring whether adding additional variables sheds greater light on the heterogeneity of nuclear crises would be a valuable avenue for future research and one that we return to in the conclusion.

A fourth objection could concern the fact that these variables are determined by objective features of a given crisis, which may be imperfectly known or misperceived by participants at the time of the crisis: Is this not problematic for our analysis? The framework we offer allows for an initial disaggregation of nuclear crises that permits us to begin exploring their diversity and includes leaders' perceptions of incentives for nuclear first use. This represents an advance on prior literature, but is only a first step. While these objective features of the crisis should be expected to exert a profound influence on the nature of the crisis, even if they are not known or fully understood by policymakers, further incorporation of policymakers' perceptions and misperceptions could add richness to our framework and would be a productive next step. Indeed, policymakers' misperceptions of (or uncertainty about) these variables may add explanatory power to our framework by allowing us to better account for miscalculations that states make within crises. For example, Pakistan might have been less willing to

provoke the Kargil War had it known that the crisis would be primarily determined by the conventional balance of forces, which favored India.

As shown in Figure 1, these two variables create a conceptual space within which existing models of nuclear crisis can be situated. We highlight four models that correspond to the quadrants of this conceptual space. Of course, each model represents an "ideal type." More types of crisis exist in the conceptual space between these four possibilities.

The four models we identify offer very different interpretations of nuclear crises. Indeed, they suggest different answers to four basic questions about such crises: How likely is nuclear use within a crisis? Does the conventional or nuclear balance have a stronger effect on the outcome? Is nuclear superiority valuable within a crisis? And how feasible is signaling within a crisis? Table 2 summarizes the differences between these four models. The following sections of the paper describe these differences in more detail.

### Stability-Instability Crises

Crises that are controllable and have limited incentives for nuclear first use are "stability-instability" crises. This model approximates Glenn Snyder's view of nuclear weapons. Snyder famously suggested that "the greater the stability of the 'strategic' balance of terror, the lower the stability of the overall balance at its lower levels of violence. ...Thus firm stability in the strategic nuclear balance tends to destabilize the conventional balance."<sup>24</sup> Jervis describes the same idea: "To the extent that the military balance is stable at the level of all-out nuclear war, it will become less stable at lower levels of violence."<sup>25</sup> We should not expect nuclear powers, according to this view, to fight all-out nuclear wars, but they may engage in more lower-level conflicts. Similarly, for scholars who argue that a powerful taboo inhibits nuclear use, crises between nuclear states will be characterized by a clear prohibition against nuclear use, and relative freedom to engage in conventional escalation.<sup>26</sup>

The possibility of nuclear escalation within stability-instability crises is low. Even in stability-instability crises that escalate significantly, actors are likely to remain confident that the nuclear threshold will not be breached. Since the risk of nuclear use is low and relatively constant across

24 Snyder, "The Balance of Power and the Balance of Terror," 198–99.

25 Jervis, *The Illogic of American Nuclear Strategy*, 31. For an empirical test of the implications of the stability-instability paradox, see Mark S. Bell and Nicholas L. Miller, "Questioning the Effect of Nuclear Weapons on Conflict," *Journal of Conflict Resolution* 59, no. 1 (2015): 74–92, doi.org/10.1177/0022002713499718.

26 Tannenwald, *The Nuclear Taboo*.





crises of this sort, we expect the nuclear balance to be unrelated to the outcomes of stability-instability crises, and nuclear weapons will not regularly enter the calculations of leaders in these crises. The outcomes of stability-instability crises will instead be determined by other factors, such as the conventional military balance. Finally, signaling is feasible within stability-instability crises, since the two sides can calibrate their forces and level of conventional escalation to send signals about their political interests. However, since nuclear use is viewed by both sides as unlikely, making nuclear threats will not generally be credible within this type of crisis.

Stability-instability crises are therefore relatively safe, at least in terms of the risk of nuclear escalation, and we therefore expect to see statesmen being more willing to enter this type of crisis than others that pose greater risk of nuclear escalation. We also expect stability-instability crises to be relatively common within datasets of crises, a point that has implications for interpreting contradictory empirical findings in existing literature. We argue below that the recent Doklam crisis between India and China is best categorized as a stability-instability crisis.

### Staircase Crises

We term a crisis that is controllable but in which there are incentives for nuclear first use a “staircase” crisis. This model approximates the view of escalation that Hermann Kahn offers in his book, *On Escalation*, and emphasizes deliberate, calibrated escalation. Despite the deliberate and conscious way in which escalation occurs according to this model, escalation to and beyond the nuclear threshold is possible given that states may have incentives to use nuclear weapons first, or to use them in a deliberately limited way. In Kahn’s formulation, the first use of nuclear weapons can serve a range of political purposes, including “redressive, warning, bargaining, punitive, fining, or deterrence purposes.”<sup>27</sup> Even apparently accidental nuclear use may, in fact, be deliberate, resulting from a desire to “give the impression that [nuclear] use was unintentional.”<sup>28</sup> In short, according to the staircase model of nuclear escalation, deliberate first nuclear use is highly plausible.

What determines victory in a staircase crisis? All staircase crises have a nuclear dimension: Escalation to the nuclear level is always feasible and may be deliberately chosen, making nuclear

use plausible. However, we expect the degree to which nuclear weapons weigh on the minds of participants in staircase crises to vary according to the level of escalation reached: Because of the significance of nuclear use and the many less escalatory options states typically have available to them before resorting to this extreme level of force, a staircase crisis is unlikely to suddenly

**Staircase crises are dangerous and states are therefore unlikely to enter them over trivial matters, although they may be willing to enter them when important national interests are at stake.**

escalate across the nuclear threshold without prior conventional escalation. For this reason, staircase crises that do not escalate close to the nuclear level may be determined almost entirely by the conventional balance of power, while those that escalate closer to, or beyond, the nuclear threshold are likely to be determined more by the nuclear balance. Because crises that operate according to the staircase model are, by definition, characterized by high levels of controllability, escalation and de-escalation within such a crisis is possible: Escalation levels can be controlled and calibrated, and signaling by using both nuclear and conventional forces is feasible. Lastly, because a staircase crisis may be determined by the nuclear balance, and because limited nuclear use is plausible, both nuclear superiority and limited nuclear options may well be of value to states engaging in a crisis of this sort. Indeed, calls for “escalation dominance” by policymakers — that is, the ability to deter an adversary at every rung of the escalation ladder — draw implicitly on the staircase model since they assume that escalation occurs as a conscious and strategic choice at each level of escalation. Staircase crises are dangerous and states are therefore unlikely to enter them over trivial matters, although they may be willing to enter them when important national interests are at stake. We would therefore expect staircase crises to be rarer than stability-instability crises,

27 Herman Kahn, *On Escalation: Metaphors and Strategies* (London: Pall Mall Press, 1965), 45.

28 Kahn, *On Escalation*, 44.

but more common than firestorm crises. We argue below that the 1999 Kargil War between India and Pakistan is best categorized as a staircase crisis.

### Brinkmanship Crises

We label crises that are characterized by limited incentives to use nuclear weapons first and low levels of controllability as “brinkmanship” crises. This model approximates the views of Thomas Schelling, who emphasized the political utility of “threats that leave something to chance” under circumstances in which deliberate first nuclear use is not credible.<sup>29</sup> Similarly, scholars of the “nuclear revolution,” such as Kenneth Waltz, Charles Glaser, and Robert Jervis, also view nuclear crises in this way, although such scholars tend to be more cautious than Schelling about the possibility of using the political leverage that comes from the manipulation of nuclear risk.

In this model, states may take steps to escalate a conflict, but those steps are unlikely to involve deliberate first nuclear use, which is not typically credible in brinkmanship crises given low incentives to use nuclear weapons first. As Schelling argued, “There is just no foreseeable route by which the United States and the Soviet Union could become engaged in a major war.”<sup>30</sup> Similarly, for scholars of the “nuclear revolution” school, because achieving a reliable first-strike counterforce capability is extremely difficult compared to the relative ease of achieving a second-strike capability, the incentives for using nuclear weapons first in a crisis are small. States will not lose the ability to retaliate by delaying the use of nuclear weapons, and can still cause enormous destruction even after absorbing a first strike. The lack of incentives for nuclear first use, however, “does not mean that a major nuclear war cannot occur.”<sup>31</sup> Schelling describes the process of escalation as one in which “either side can take steps—engaging in a limited war would usually be such a step—that genuinely raise the probability of a blow-up. ...What makes [these steps] significant and usable is that they create a genuine risk...that the thing will blow up for reasons not fully under

control.”<sup>32</sup> For Schelling, this possibility is what gives nuclear-armed actors political leverage even in the absence of incentives for nuclear first use. For scholars in the “nuclear revolution” camp, the possibility of uncontrolled nuclear escalation is why nuclear-armed states should avoid challenging each other’s vital interests.

What dynamics underpin a brinkmanship crisis? First, as with the staircase model, all brinkmanship crises involve some risk of nuclear escalation. However, nuclear escalation is only likely as part of a process of uncontrolled escalation. What determines the outcome of a brinkmanship crisis? Because the manipulation of the risk of uncontrolled escalation is the primary source of political leverage within brinkmanship crises, outcomes are determined by “competitions in risk taking” and by the “balance of resolve” rather than by the conventional or nuclear balance (the conventional or nuclear balance could affect crisis outcomes by affecting resolve).<sup>33</sup> Signaling and escalation are possible, but we should expect significant conventional escalation within brinkmanship crises to be accompanied by fear that uncontrolled nuclear escalation might occur. Nuclear crises of this sort are therefore dangerous for statesmen to enter into, but they may be willing to do so when the stakes are high, i.e., to secure important national interests. We should therefore expect that brinkmanship crises will occur less frequently than stability-instability crises, but more frequently than firestorm crises, as we discuss next. We argue below that the Cuban Missile Crisis unfolded according to this logic.

### Firestorm Crises

We label crises where there are both incentives for nuclear first use and low levels of controllability as “firestorm” crises. A firestorm crisis is the most dangerous and volatile type of crisis: Both deliberate and uncontrolled escalation to the nuclear level might occur even in the absence of significant prior escalation. The fear of a firestorm crisis has played an important role in public discourse and

29 Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960); Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966). For other interpretations of nuclear crises using the brinkmanship framework, see, Nalebuff, “Brinkmanship and Nuclear Deterrence,” Trachtenberg, “The Influence of Nuclear Weapons in the Cuban Missile Crisis,” Kroenig, “Nuclear Superiority and the Balance of Resolve”; Kroenig, *The Logic of American Nuclear Strategy*.

30 Schelling, *Arms and Influence*, 94.

31 Schelling, *Arms and Influence*, 94.

32 Schelling, *Arms and Influence*, 104.

33 An extreme version of this argument is offered by Barry Nalebuff, who argues that because nuclear crises involve competitions in risk taking, and crisis participants will generate as much risk as is required to communicate their political interests and resolve, crisis outcomes are independent of a state’s military or nuclear position or posture. See Nalebuff, “Brinkmanship and Nuclear Deterrence.” For the argument that nuclear superiority is important within the brinkmanship framework because it affects resolve, see Kroenig, “Nuclear Superiority and the Balance of Resolve.”

policy discussions throughout the nuclear age. For example, the fear of nuclear “sneak attacks” had strong domestic political salience during the early years of the Cold War.<sup>34</sup> Indeed, early U.S. assessments of the political implications of nuclear weapons viewed them as offensive weapons that would be used to land the first blows of any potential third world war. The desire to prevent a “nuclear Pearl Harbor” was one motivation for the United States abandoning its isolationist tendencies in the aftermath of World War II. Similarly, “worst-case” scenarios in which “rogue states” acquire nuclear weapons draw on the possibility that irrational or religiously motivated states might attack other states out of the blue — for example, that Iran might seek to “wipe Israel off the map” if it acquired nuclear weapons.

How do firestorm crises unfold? First, the possibility of nuclear escalation is high: A firestorm crisis could escalate at any moment and without significant prior escalation, which, in turn, encourages crisis participants to be deeply fearful and increases the temptation to take pre-emptive action. Signaling is likely to be difficult given the instability of such a crisis and the speed with which it can escalate. Indeed, crisis participants should be well aware that early blows in any crisis might in fact be nuclear. Because this type of crisis is prone to escalate to the nuclear level swiftly, the nuclear balance is likely to ultimately determine the outcome to a greater degree than the conventional balance. Thus nuclear superiority may be useful to states. Crises of this sort are extremely dangerous, and we therefore expect that statesmen will only enter them to achieve absolutely vital national interests. Because of these dangers, we also expect that firestorm crises will be the most rarely observed type of nuclear crisis. We argue below that future crises between the United States and North Korea would likely unfold according to this model’s logic.

## **Historical Crises: The Cuban Missile Crisis and the Kargil War**

We first examine the utility of our typology using the 1962 Cuban Missile Crisis between the United States and Soviet Union, and the 1999 Kargil War between India and Pakistan. In each case, we analyze incentives for first nuclear use and crisis controllability to show which model of nuclear crisis best applies, and the insights that it provides into the crisis. We use these cases because both are widely considered among the most important in the history of nuclear crises, both involved national interests that participants considered important, both involved an attempted *fait accompli* by one side followed by efforts by the other to reverse it,<sup>35</sup> and both crises reached high levels of military escalation. Furthermore, recent work on nuclear crises explicitly seeks to account for the dynamics of these two cases with a single explanation.<sup>36</sup> As a result, we might expect that these two crises would be more likely than most pairs of nuclear crises to share similar dynamics. If we can show that even these two crises — ostensibly more similar than many others — differed in ways that our framework sheds light on, it would provide significant validation for our approach.

### **The Kargil War**

The disputed region of Kashmir has been a source of friction between Pakistan and India since their partition in 1947.<sup>37</sup> Control over the territory is split, with a Line of Control (LoC) demarcating the territorial status quo. India has long viewed the territory as an integral part of the Indian Union, while the Pakistani government contends that Kashmir’s accession to India was unlawful and has sought the eventual “liberation” of Indian Kashmir. In May 1999, one year after Pakistan and India publicly tested nuclear weapons, the Pakistani North Light Infantry, backed by guerrillas, mounted an incursion along the LoC, with the aim of presenting

34 Technically, one could see sneak nuclear attacks under the staircase model if the incentives for first use were strong enough to outweigh even high levels of controllability in incentivizing a state to cross the nuclear threshold as a first move in a crisis. We thank an anonymous reviewer for this point.

35 On *faits accomplis* in international politics, see Schelling, *Arms and Influence*, 44–45; Alexander L. George and Richard Smoke, *Deterrence in American Foreign Policy: Theory and Practice* (New York: Columbia University Press, 1974), 536–40; Daniel W. Altman, “By Fait Accompli, Not Coercion: How States Wrest Territory from their Adversaries,” *International Studies Quarterly* 61, no. 4 (2017): 881–91, doi.org/10.1093/isq/sqx049.

36 See, for example, Kroenig, “Nuclear Superiority and the Balance of Resolve,” 150–51; Kroenig, *The Logic of American Nuclear Strategy*, 84–94, 106–113; Powell, “Nuclear Brinkmanship, Limited War, and Military Power,” 590–91; Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*, 147–55, 200–210.

37 On the Kashmir dispute see Alastair Lamb, *Kashmir: A Disputed Legacy, 1946–1990* (Oxford: Oxford University Press, 1991); Lars Blinkenberg, *India-Pakistan: The History of Unsolved Conflicts* (Odense: Odense University Press, 1997); Robert Wirsing, *India and Pakistan, and the Kashmir Dispute: On Regional Conflict and Its Resolution* (New York: St. Martin’s Press, 1998); Sumit Ganguly, *Conflict Unending: India-Pakistan Tensions Since 1947* (New York: Columbia University Press, 2002).

India with a *fait accompli*.<sup>38</sup> Initial Indian attempts to dislodge Pakistani troops proved ineffective, and the Indian government granted Gen. Ved Prakash Malik, Chief of the Army Staff, the right to employ airpower in support of ground operations.<sup>39</sup> On May 26, the Indian military forces initiated a combined air and ground campaign resulting in intense combat.<sup>40</sup> By early July, Pakistan was on the brink of defeat. Pakistan's Prime Minister, Nawaz Sharif, travelled to Washington D.C. to meet with U.S. President Bill Clinton, who demanded that Pakistan unconditionally withdraw and restore the ante bellum status quo. Sharif conceded to Clinton's demands, calling for the withdrawal of all troops from the disputed region on July 12.<sup>41</sup>

### *Coding the Kargil War*

The Kargil War was characterized by incentives to use nuclear weapons first. Specifically, Pakistan's nuclear posture threatened first nuclear use in order to compensate for its relatively weak conventional military force.<sup>42</sup> Facing a conventionally stronger enemy, Pakistan had adopted a nuclear posture that integrated nuclear weapons into its military forces in order to credibly threaten a first strike against advancing Indian conventional forces.<sup>43</sup>

At the time of the Kargil War, Pakistan had the capability to use nuclear weapons. The 1998 tests had confirmed its nuclear status, and by May 1999, Pakistan had credible delivery systems: several dozen tactical nuclear warheads that could be mated with missiles, a smaller number of short- and medium-range ballistic missiles, and delivery-capable aircraft.<sup>44</sup> Both Pakistani and Indian leaders recognized Pakistan's incentives for nuclear first use. Upon the initiation of Indian air attacks, the Pakistani foreign secretary publicly warned New Delhi that his country "would not hesitate to use any weapons in [Pakistan's] arsenal to defend [its territorial] integrity."<sup>45</sup> According to Bruce Riedel, a senior adviser to Clinton, U.S. intelligence was aware that the Pakistani army was readying its nuclear-tipped missiles in preparation for an Indian attack across the border.<sup>46</sup> Indian leaders also understood Pakistani incentives for making the first nuclear move.<sup>47</sup> When Malik told Prime Minister Atal Bihari Vajpayee that opening a second front at the border might be militarily necessary, Vajpayee looked shocked and responded, "but General Sahib, they have a nuclear bomb!"<sup>48</sup> Indian National Security Advisor Brajesh Mishra confirmed this fear, stating that while the Indian leadership was "95 percent sure" that its army would not need to cross the

38 S. Paul Kapur, "India and Pakistan's Unstable Peace: Why Nuclear South Asia is Not Like Cold War Europe," *International Security* 30, no. 2 (2005): 137, doi.org/10.1162/016228805775124570; Christopher J. Watterson, "Competing Interpretations of the Stability-Instability Paradox: The Case of the Kargil War," *Nonproliferation Review* 24, no. 1–2 (2017): 90–91, doi.org/10.1080/10736700.2017.1366623; Sumit Ganguly, "Nuclear Stability in South Asia," *International Security* 33, no. 2 (2008): 45–70, doi.org/10.1080/10736700.2014.1072991. For more details on the war, see P.R. Chari, Pervaiz Iqbal Cheema, and Stephen P. Cohen, *Four Crises and a Peace Process* (Washington, DC: Brookings Institution Press, 2007), chap. 5; S. Paul Kapur, *Dangerous Deterrent: Nuclear Weapons Proliferation and Conflict in South Asia* (Stanford, CA: Stanford University Press, 2007), chap. 6; Bruce Riedel, *American Diplomacy and 1999 Kargil Summit at Blair House* (Philadelphia: University of Pennsylvania Center for Advanced Study of India, 2002); Ved Prakash Malik, *Kargil: From Surprise to Victory* (Delhi: Harper Collins, 2006); Peter R. Lavoy, ed., *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict* (New York: Cambridge University Press, 2009).

39 Narang, *Nuclear Strategy in the Modern Era*, 268–69.

40 S. Paul Kapur, "Ten Years of Instability in a Nuclear South Asia," *International Security* 33, no. 2 (2008): 73–74 doi.org/10.1162/isec.2008.33.2.71; Chari, Cheema, and Cohen, *Four Crises and a Peace Process*, 121–22.

41 Sumit Ganguly and Harrison Wagner, "India and Pakistan: Bargaining in the Shadow of Nuclear War," *Journal of Strategic Studies* 27, no. 3 (2004): 490, doi.org/10.1080/1362369042000282994; Ganguly, "Nuclear Stability in South Asia," 58.

42 As discussed above, only one side in the crisis has to have incentives for nuclear first use for the crisis as a whole to be characterized by incentives for first use.

43 Narang "Posturing for Peace?" 56, 66; Narang, *Nuclear Strategy in the Modern Era*, 259. In 1999, India had an active-duty force double that of Pakistan, enjoyed a 2:1 advantage in combat aircraft, and a 1.7:1 advantage in main battle tanks. Taken at face value, these figures somewhat overstate the degree of India's conventional military advantage over Pakistan given that India must focus significant military attention on the Sino-Indian border in addition to the India-Pakistan border. Nonetheless, there is little question that India had the capability to assemble a larger conventional military force on the Pakistani border than Pakistan would be able to. Because of this imbalance, even though Pakistan had a local tactical advantage in Kashmir due to the Pakistani military's early defensive positioning and the region's difficult terrain, India retained the ability to deploy a superior conventional force to the region. Kapur, "India and Pakistan's Unstable Peace," 139; "Central and South Asia," *The Military Balance* (London: International Institute for Strategic Studies, 1999), 151–70, doi.org/10.1080/04597229908460132; Anthony H. Cordesman and Arleigh Burke, *The India-Pakistan Military Balance* (Washington, DC: Center for Strategic and International Studies, 2002).

44 Narang "Posturing for Peace?" 57. Indeed, Pakistan may have had the ability to deliver nuclear weapons by aircraft as early as 1995. See Narang, *Nuclear Strategy in the Modern Era*, 267; Watterson, "Competing Interpretations of the Stability-Instability Paradox," 91–92.

45 Quoted in P.R. Chari, "Reflections on the Kargil War," *Strategic Analysis* 33, no. 3 (2009): 363, doi.org/10.1080/09700160902790019. See also Chari, Cheema, and Cohen, *Four Crises and a Peace Process*, 139–41.

46 Riedel, "American Diplomacy and the 1999 Kargil Summit at Blair House," 11.

47 Ganguly and Wagner, "India and Pakistan," 492; Ganguly, "Nuclear Stability in South Asia," 59; Sumit Ganguly and Devin Hagerty, *Fearful Symmetry: India-Pakistan Crises in the Shadow of Nuclear Weapons* (Seattle: University of Washington Press, 2005), 161.

48 Quoted in Narang, *Nuclear Strategy in the Modern Era*, 272. Malik confirms that Pakistani nuclear weapons ruled out full-scale conventional war with Pakistan. See Kapur, "Ten Years of Instability in a Nuclear South Asia," 79.





LoC, the use of “nuclear weapons would have been risked *if* we did.”<sup>49</sup> Reports of Pakistani nuclear mobilizations exacerbated these fears. During the crisis, India received intelligence reports indicating Pakistani missiles were “being readied for possible launching,”<sup>50</sup> and the chief of the Indian army staff after the Kargil War, Gen. Sundararajan Padmanabhan, stated that Pakistan had “activated one of its missile bases and...threatened India with a nuclear attack.”<sup>51</sup> Because of these reports, some of India’s missiles were “dispersed and relocated,” and India’s nuclear forces placed on “Readiness State 3,” which involved the assembly and deployment of nuclear warheads near delivery vehicles.<sup>52</sup>

First, consider Pakistani and Indian command and control institutions, which have contrasting implications for controllability. On the Pakistani side, delegative command and control increases the credibility of nuclear first use and thus increases the deterrent power of Pakistan’s nuclear weapons, but also raises the risk of accidental nuclear use and reduces crisis controllability.<sup>54</sup> Indian command and control, by contrast, increases the controllability of a crisis. Indian leaders, fearful of granting the military too much influence over nuclear matters, have consistently maintained high levels of control over the decision to use nuclear weapons. Indian nuclear weapons are maintained in a manner that limits inadvertent or unauthorized use: The

civilian department of atomic energy controls fissile materials, while delivery vehicles are held in separate locations and controlled by the military.<sup>55</sup>

Second, Pakistani red lines for nuclear use were relatively clear. Specifically, as long as Indian forces did not cross the LoC, the risk of Pakistani nuclear use would remain low. The Pakistani army’s director of strategic

plans division, Khalid Kidwai, had publicly outlined scenarios in which first use would occur: “If India conquered a large part of Pakistan’s territory, destroyed a large part of its military forces, strangled Pakistan economically or caused large scale internal subversion in Pakistan.”<sup>56</sup> Former Pakistani President Pervez Musharraf claims that whenever he met with a foreign leader, “I asked him to convey my message...that if [Indian] troops took even a step across the international border of the LoC...it will not remain a conventional war.”<sup>57</sup> This message was well understood by Indian leaders. As we discuss further below, India was careful not to cross Pakistan’s key red line for nuclear use,

## Both Pakistani and Indian leaders recognized Pakistan’s incentives for nuclear first use.

Despite incentives for nuclear first use, the Kargil War was relatively controllable for four reasons: India’s strong command and control institutions, relatively clear Pakistani red lines that India did not seek to cross, a limited geographic zone of conflict that reduced the risk of conventional and nuclear forces interacting, and well-established avenues of crisis communication. This controllability was enhanced by the active involvement of the United States in the crisis, providing additional avenues of communication and clarifying the red lines of both sides.<sup>53</sup> Only Pakistan’s delegative command and control institutions indicate a lack of controllability in the crisis.

49 Narang, *Nuclear Strategy in the Modern Era*, 272.

50 Quoted in Narang, *Nuclear Strategy in the Modern Era*, 270–71.

51 Quoted in Chari, “Reflections on the Kargil War,” 363.

52 Quoted in Narang, *Nuclear Strategy in the Modern Era*, 270–71; Chari, “Reflections on the Kargil War,” 363; Raj Chengappa, *Weapons of Peace* (New Delhi: Harper Collins, 2000), 437.

53 On the role of the United States in the crisis, see Peter R. Lavoy, “Why Kargil Did Not Produce General War: The Crisis-Management Strategies of Pakistan, India, and the United States,” and Bruce Riedel, “American Diplomacy and the 1999 Kargil Summit at Blair House,” both in *Asymmetric Warfare in South Asia*, ed. Lavoy.

54 Narang, *Nuclear Strategy in the Modern Era*, chaps. 3, 10.

55 Narang, *Nuclear Strategy in the Modern Era*, 101.

56 Quoted in Ganguly and Wagner, “India and Pakistan,” 483.

57 Quoted in Narang, *Nuclear Strategy in the Modern Era*, 268.

even though it would have been to their military advantage to do so.

Third, the limited geographic range of the conflict meant that the likelihood of nuclear and conventional forces interacting was low. While both sides took steps to increase the alert status of their nuclear forces, neither sides' nuclear forces, nor the command and control centers necessary to use nuclear weapons, were close to the conflict zone. As long as India eschewed opening a second front in the war, or invading Pakistani territory, the possibility of Indian conventional forces placing Pakistani commanders under pressure to "use or lose" their nuclear assets was low.

Fourth, the existence of official and back-channel negotiations between India and Pakistan, along with the involvement of numerous outside countries — the United States, China, Russia, France, the United Kingdom, and Saudi Arabia — seeking to facilitate a negotiated solution also enhanced controllability. Regular calls between Indian and Pakistani leaders, a hotline link between the two directors of general military operations, and the additional channels of communication provided by outside parties created many opportunities for de-escalation during the crisis.<sup>58</sup>

### Predictions

The Kargil War was characterized by incentives for first nuclear use and high levels of crisis controllability, and is therefore best understood as a staircase crisis. Based on this assessment, what dynamics should we expect to see in the case? First, because the crisis did not come close to the nuclear threshold, we should expect that the conventional balance would determine the outcome of the war, rather than the nuclear balance or balance of resolve. Second, the primary danger of nuclear use should be expected to have come from deliberate first nuclear use rather than uncontrolled escalation. Third, signaling should have been feasible within the crisis.<sup>59</sup>

As predicted, the conventional military balance does appear to explain the outcome of the conflict: Pakistan was on the verge of conventional military defeat when Pakistani leaders acceded to U.S. demands to withdraw their forces, and once India was able to build up its forces sufficiently, it experienced increasing success in pushing Pakistani forces back toward the Line of Control.<sup>60</sup> This occurred despite India restraining its conventional operations in various ways in order to prevent crossing Pakistan's red lines for nuclear use. By contrast, and as anticipated by the framework we offer, neither the nuclear balance nor the balance of resolve appears to satisfactorily explain India's ability to prevail in the crisis. The balance of resolve likely favored Pakistan given its consistently more risk-acceptant and revisionist foreign policy preferences, as evidenced by Pakistan's decision to initiate the crisis in the first place. The nuclear balance was highly ambiguous at the time of the war and it is unlikely that either side could have known its opponent's nuclear capabilities with much certainty. The Kargil War took place in the immediate aftermath of both countries conducting nuclear tests. Assessments at that time acknowledged the difficulty of estimating the India-Pakistan nuclear balance, with continued debate about whether India's thermonuclear test "fizzled," how much fissile material both states possessed, and how many weapons both sides had developed.<sup>61</sup> Even Kroenig, who argues that India had nuclear superiority and that this mattered in the crisis, acknowledges that "it is difficult to know the precise nuclear balance of power" in this case.<sup>62</sup> Indeed, the evidence that Kroenig uses to support his claim that the balance of nuclear power mattered for the outcome is that Pakistan ultimately backed down in the crisis, and that Indian officials stated subsequent to the war that Pakistan would be hurt more by a nuclear exchange than India. However, Indian officials would have strong incentives to make such public statements about the effects of a hypothetical nuclear exchange whether or not

58 John H. Gill, "Provocation, War and Restraint Under the Nuclear Shadow: The Kargil Conflict 1999," *Journal of Strategic Studies* 42, no. 5 (2019): 701–26, doi.org/10.1080/01402390.2019.1570144; Lavoy, "Why Kargil Did Not Produce General War."

59 We leave aside assessing the prediction of the model regarding the probability of nuclear use, since this is hard to evaluate within a single case.

60 As discussed previously, Pakistan may have been less willing to enter into the war had it known that the outcome would be determined by the conventional balance. Pakistan may have miscalculated the effects of nuclear signaling on Indian decision-makers and underestimated the number of conventional forces that India would marshal in response. Incorporating these miscalculations into the framework we offer would be a productive avenue for future research.

61 For differing assessments, see David Albright, "India's and Pakistan's Fissile Material and Nuclear Weapons Inventories, End of 1999," Institute for Science and International Security, Oct. 11, 2000, <https://www.isis-online.org/publications/southasia/stocks1000.html>; Robert S. Norris, William M. Arkin, Hans M. Kristensen, and Joshua Handler, "India's Nuclear Forces, 2002," *Bulletin of the Atomic Scientists* 58, no. 2 (2002): 70–72, doi.org/10.1080/00963402.2002.11460559; Robert S. Norris, William M. Arkin, Hans M. Kristensen, and Joshua Handler, "Pakistan's Nuclear Forces, 2001," *Bulletin of the Atomic Scientists* 58, no. 1 (2002): 70–71, doi.org/10.1080/00963402.2002.11460540; Hans M. Kristensen and Robert S. Norris, "Global Nuclear Weapons Inventories, 1945–2013," *Bulletin of the Atomic Scientists* 69, no. 5 (2013): 75–81, doi.org/10.1177/0096340213501363.

62 Kroenig, *The Logic of American Nuclear Strategy*, 107.

they were true.<sup>63</sup> Moreover, Pakistan's behavior in the crisis is also consistent with the conventional balance determining the outcome. Overall, it is hard to make a strong case that nuclear superiority played a key role in determining the outcome of the Kargil War.

The key danger of nuclear use was seen by participants on both sides to be Pakistan's deliberate first use rather than uncontrolled or unauthorized nuclear use. As mentioned above, a key dynamic of the conflict was India ensuring that its forces did not cross the LoC to avoid provoking Pakistan's deliberate first use of nuclear weapons. Upon granting the Indian army authority to use Indian air force assets at the end of May, the Indian government stipulated that "the air force refrain from crossing the LoC in pursuit of its goals." India was clear that the Indian army not enlarge "the theater of operations beyond the Kargil sector or... attack Pakistani forces, staging posts, and lines of communications across the LoC, despite the fact that this...entailed the acceptance of heavier casualties."<sup>64</sup> This restriction remained in place despite substantial Indian casualties and the fact that it would have been tactically useful for India to enlarge the conflict zone to spread out Pakistani forces.<sup>65</sup> This restraint is especially notable given previous Indian responses to Pakistani incursions in both 1965 and 1971, when Indian forces showed little hesitation in invading Pakistan.<sup>66</sup>

Both sides in the war were also able to signal their limited intentions, as our framework would anticipate in a staircase crisis. On the Pakistani side, the military took a number of measures to signal limited intentions: Pakistan withheld reserve forces, refrained from the use of air power across the LoC, and did not attempt to cut off the Indian highway in Kargil on the assumption that taking such action "would have far-reaching strategic effects" and risk Indian escalation.<sup>67</sup> Similarly, Pakistan made clear nuclear threats to signal to India that they should avoid broad retaliation. On

the Indian side, policymakers deliberately chose not to open a second front of the war or cross the LoC, signaling their limited political goals and lack of interest in a broader war.

Overall, therefore, viewing the Kargil War as a staircase crisis accounts for the key dynamics of the case.

## Cuban Missile Crisis

The 1962 Cuban Missile Crisis is widely considered the most dangerous crisis of the Cold War. After detecting the movement of Soviet ships toward Cuba and the development of missile sites, President John F. Kennedy called up 150,000 reservists and issued statements on Sept. 4 and Sept. 13, 1962, warning that the United States "would do whatever must be done" to protect its security.<sup>68</sup> On October 22, Kennedy announced that a naval quarantine would be established around Cuba.<sup>69</sup> Soviet leader Nikita Khrushchev responded by issuing a stern note to Kennedy and instructing Soviet ships headed for Cuba to run the blockade. By October 26, however, Khrushchev's resolve had waned. Kennedy received a letter from Khrushchev offering to remove the missiles from Cuba in exchange for an end to the blockade and a U.S. assurance that it would not invade Cuba, with a second letter the next day adding a further condition: the removal of U.S. Jupiter missiles from Turkey. Kennedy publicly accepted the terms of the first letter, while in private agreeing to Khrushchev's demand to remove the Jupiter missiles.<sup>70</sup> On October 28, Khrushchev notified the United States that he had ordered work on the Cuban missile sites to cease and all equipment shipped back to the Soviet Union. The blockade was lifted on November 20, marking the end of the crisis.

63 Kroenig, *The Logic of American Nuclear Strategy*, 108–110.

64 Quoted in Narang, *Nuclear Strategy in the Modern Era*, 271.

65 Chari, "Reflections on the Kargil War," 362; Ganguly and Wagner, "India and Pakistan," 491.

66 Chari, Cheema, and Cohen, *Four Crises and a Peace Process*, 139; Kapur, "India and Pakistan's Unstable Peace," 147.

67 Quoted in Watterson, "Competing Interpretations of the Stability-Instability Paradox," 97. This restraint presents a puzzle for the stability-instability model of nuclear crises, of which the Kargil War is often believed one manifestation. Instead of escalating further, as would be expected by the stability-instability logic, Pakistan chose to acquiesce rather than open additional fronts and divert the superior Indian forces. Under the staircase model, however, this behavior makes more sense. See Chari, "Reflections on the Kargil War," 364.

68 Ernest R. May and Philip Zelikow, eds., *The Kennedy Tapes: Inside the White House During the Cuban Missile Crisis* (New York: W.W. Norton and Company, 2002), 189.

69 Michael Beschloss, *The Crisis Years: Kennedy and Khrushchev 1960-63* (New York: Harper Collins, 1991), 414, 423–35; Aleksandr Fursenko and Timothy Naftali, *'One Hell of a Gamble': Castro, Kennedy, and the Cuban Missile Crisis, 1958-1964* (London: John Murray, 1997), 206, 227.

70 David Holloway, "Nuclear Weapons and the Escalation of the Cold War, 1945-1962," in *The Cambridge History of the Cold War*, volume 1, ed. Odd Arne Westad and Melvin Leffler (Cambridge, MA: Cambridge University Press, 2010), 393–94.

### *Coding the Cuban Missile Crisis*

We argue that the Cuban Missile Crisis was not characterized by incentives for deliberate first nuclear use, despite the United States possessing significant nuclear superiority. In the early 1960s, the United States could have launched 1,000 to 2,000 nuclear warheads at the Soviet Union, the majority of which would have been delivered by over 500 bombers and 200 intercontinental ballistic missiles. The Soviet Union, on the other hand, had only 160 bombers to carry around 260 nuclear warheads, 38 intercontinental ballistic missiles, and 48 nuclear-missile-armed submarines.<sup>71</sup> Despite America's nuclear superiority, it was not clear that either a disarming first strike or politically meaningful damage limitation was possible. The U.S. government did not know where all of the Soviet warheads were located, and there were concerns that U.S. forces were too inaccurate to successfully target the Soviet arsenal. According to Secretary of Defense Robert McNamara, by 1962 the United States knew that it could not deliver a "splendid first strike," and that a U.S. first strike "would have led to unacceptably high casualties both in Europe and in the United States" and "destroyed us as well as the Soviets."<sup>72</sup> McNamara's recollection is consistent with a briefing that Kennedy received in 1961 from the Chairman of the Joint Chiefs of Staff, which assessed that "under any circumstances—even [in the case of] a pre-emptive attack by the U.S.—it would be expected that some portion of the Soviet long-range nuclear force would strike the United States."<sup>73</sup>

Whether such advantages were perceived as politically meaningful within the Cuban Missile Crisis itself is debateable. Certainly, several key U.S. leaders believed that nuclear superiority conferred political advantages to the United States within the

crisis.<sup>74</sup> However, this superiority was not absolute, and, crucially, the key leader — Kennedy — was skeptical both that U.S. nuclear superiority granted such benefits and that nuclear first use would offer the United States meaningful damage limitation, stating, "What difference does it make? They've got enough to blow us up now anyway."<sup>75</sup>

## **U.S. superiority was not, however, sufficient to cast doubt on the Soviets' own ability to inflict significant destruction on the United States after absorbing a first strike.**

Similarly, the Soviet Union had little incentive to use nuclear weapons first. A first strike by the Soviets aimed at damage limitation was implausible: A speech delivered by Deputy Secretary of Defense Roswell Gilpatric on Oct. 21, 1961, confirmed that the Soviet Union was behind the United States in the nuclear arms race, and that the United States could endure a Soviet surprise attack and still inflict mass damage on the Soviet Union.<sup>76</sup> U.S. superiority was not, however, sufficient to cast doubt on the Soviets' own ability to inflict significant destruction on the United States after absorbing a first strike. Moscow was therefore unlikely to face pressures to "use them or lose them" during a crisis. "Missiles are not cucumbers," Khrushchev quipped, "one cannot eat them and one does not require more than a certain number in order to ward off an attack."<sup>77</sup>

The Cuban Missile Crisis was, however, characterized by low controllability. Indeed, each of our four indicators of this variable suggests low levels of crisis controllability.

First, both U.S. and Soviet command and control institutions governing nuclear weapons suffered from significant shortcomings. On the U.S. side, a series of breakdowns of command and

71 Daryl G. Press, *Calculating Credibility: How Leads Assess Military Threats* (Ithaca, NY: Cornell University Press, 2005), 121.

72 McNamara quoted in Press, *Calculating Credibility*, 124.

73 Quoted in Press, *Calculating Credibility*, 123–24. At this meeting, Kennedy did raise the possibility of a surprise nuclear strike against the Soviets, commenting that since "the use of nuclear weapons was bound to escalate...we might as well get the advantage by going first." Quoted in Francis J. Gavin, *Nuclear Statecraft: History and Strategy in America's Atomic Age* (Ithaca, NY: Cornell University Press, 2012), 37. In the end, these deliberations amounted to little in terms of U.S. defense planning and by mid-1962 there is little evidence that Kennedy considered a first strike against the Soviet Union feasible.

74 See, for example, Kroenig, "Nuclear Superiority and the Balance of Resolve," 150–51; Kroenig, *The Logic of American Nuclear Strategy*, 84–106.

75 Quoted in Trachtenberg, "The Influence of Nuclear Weapons in the Cuban Missile Crisis," 148. See also James Cameron, *The Double Game: The Demise of America's First Missile Defense System and the Rise of Strategic Arms Limitation* (New York: Oxford University Press, 2018), chap. 1; Dean Rusk, Robert McNamara, George W. Ball, Roswell L. Gilpatric, Theodore Sorensen, and McGeorge Bundy, "The Lessons of the Cuban Missile Crisis," *Time Magazine*, Sept. 27, 1982, 85; Schelling, *Arms and Influence*, 94.

76 Betts, *Nuclear Blackmail and Nuclear Balance*, 105.

77 Gavin, *Nuclear Statecraft*, 68.



communication could have led to accidental nuclear use or other actions that could have triggered escalation. As Scott Sagan concludes, Kennedy “did not...have unchallenged final control over U.S. nuclear weapons.”<sup>78</sup> For example, navigational errors by U.S. pilots led one B-52 to come close to penetrating Soviet airspace and possibly coming within range of Soviet interceptors.<sup>79</sup> Similarly, the U-2 incident at the height of the crisis could easily have led to nuclear escalation: After the American U-2 reconnaissance plane strayed into Soviet airspace, U.S. F-102s armed with nuclear-tipped missiles and possessing the authorization to use them were sent to defend the U-2 from Soviet fighter jets. At that point, the “decision about whether to use a nuclear weapon was in the hands of a pilot.”<sup>80</sup> Beyond these institutional deficiencies, many of the safety features that now exist to prevent accidental explosions had not yet been developed. Benoît Pelopidas notes that in the early 1960s, merely “pull[ing] the arming wires out of a Mark 7 nuclear warhead” would trigger the arming sequence, and that “if the X-Unit charged, a Mark 7 could be detonated by its radar, by its barometric switches, by its timer, or by falling...and landing on a runway.”<sup>81</sup> Moreover, readiness was privileged over safety during the Cuban Missile Crisis. For example, when Strategic Air Command went to DEFCON 2, safety rules had not yet been approved for the B-53 gravity bomb. Strategic Air Command (with the support of the Air Force Chief of Staff) nonetheless requested approval for these non-approved bombs to be loaded onto bombers.<sup>82</sup>

Command and control arrangements on the Soviet side also led to the possibility of unauthorized nuclear use. Most notably, Soviet submarines were loaded with nuclear-tipped torpedoes and at least one captain reported that the Cuban Missile Crisis represented his first experience

on board a ship carrying nuclear weapons.<sup>83</sup> The authorization to use nuclear weapons appears to have been granted to commanders and included the instructions, “if you get...a hole in your hull... use the nuclear weapons first, and then you will figure out what to do after that.”<sup>84</sup> The Soviets may also have believed that their submarines were less likely to provoke escalation than they really were since the Soviet leadership was unaware that the deployed submarines were the noisier and slower diesel submarines in their fleet that were more likely to be located. Indeed, nuclear launch came close to occurring: The commander of one submarine, which was being targeted with depth charges by U.S. anti-submarine warfare ships, interpreted the explosions of the depth charges as an attack and ordered his officers to ready the submarine’s nuclear torpedoes for use, apparently screaming that “we will die but we will sink them all.”<sup>85</sup> America’s understanding of these risks was limited. The United States was unaware that Soviet submarines were armed with nuclear missiles, and lacked certainty about Soviet command and control more broadly. During a conversation with Secretary of State Dean Rusk, Secretary of Defense Robert McNamara acknowledged not knowing “what kinds of communications the Soviets have with those sites...what kinds of control they have over the warheads.”<sup>86</sup>

Second, the U.S. and Soviet red lines for nuclear escalation were unclear to both sides at the outset of the crisis. The Soviet Union misjudged America’s red lines by placing missiles in Cuba in the first place. Khrushchev initially believed that once the missiles were installed in Cuba the United States would be unwilling to risk war to remove them.<sup>87</sup> This belief was overturned, however, as Khrushchev became deeply concerned by U.S. mobilizations and nuclear alerts, writing to Kennedy on October

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78 Sagan, *The Limits of Safety*, 72–73.

79 Sagan, *The Limits of Safety*, 74.

80 Pelopidas, “The Unbearable Lightness of Luck,” 246; Sagan, *The Limits of Safety*, 135–38.

81 Pelopidas, “The Unbearable Lightness of Luck,” 246–47; Eric Schlosser, *Command and Control: Nuclear Weapons, the Damascus Accident, and the Illusion of Safety* (London: Penguin, 2013), 261.

82 Sagan, *The Limits of Safety*, 72–73.

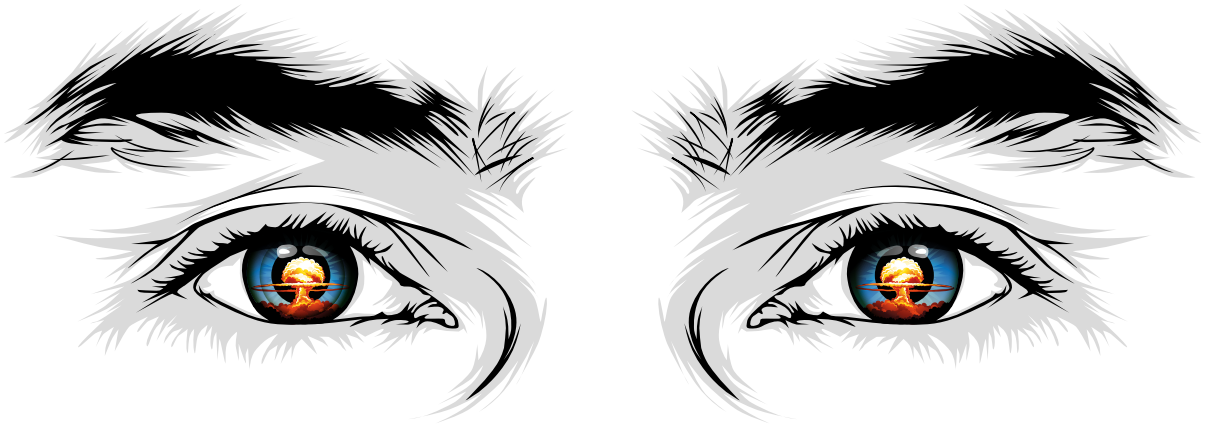
83 Svetlana Savranskaya, “New Sources on the Role of Soviet Submarines in the Cuban Missile Crisis,” *Journal of Strategic Studies* 28, no. 2 (2005): 238, doi.org/10.1080/01402390500088312; Scott D. Sagan, “Nuclear Alerts and Crisis Management,” *International Security* 9, no. 4 (1985): 112–18, doi.org/10.2307/2538543.

84 Savranskaya, “New Sources on the Role of Soviet Submarines,” 240.

85 Savranskaya, “New Sources on the Role of Soviet Submarines,” 247.

86 Trachtenberg, “The Influence of Nuclear Weapons in the Cuban Missile Crisis,” 154.

87 Anatoly Dobrynin, *In Confidence* (New York: Random House, 1995), 52; Sergei Khrushchev, *Creation of a Superpower* (Philadelphia, PA: Penn State University Press, 2000), 565; Oleg Troyanovsky, “The Making of Soviet Foreign Policy,” in *Nikita Khrushchev*, ed. William Taubman, Sergei Khrushchev, and Abbott Gleason (New Haven, CT: Yale University Press, 2000), 236.



26 of the tightening “knot of war” and the difficulty of de-escalating hostilities.<sup>88</sup> Khrushchev’s concern increased further on October 27 with news that a Soviet commander in Cuba had shot down an American U-2 plane without his authorization, and that Cuban leader Fidel Castro was advocating a nuclear strike against the United States.<sup>89</sup> Similarly, the United States was unsure what military actions might trigger Soviet escalations: U.S. officials were divided over the significance the Soviets attached to missiles in Cuba, and what the Soviets might be willing to risk to avoid removing them. Similarly, U.S. officials assumed that the Soviet Union would respond if the United States attacked Cuba but were unsure what form those reprisals would take and whether they might lead to general war or a more limited Soviet response. Indeed, officials in the Executive Committee of the National Security Council made a range of arguments regarding the relative likelihood of different Soviet responses should the United States invade Cuba.<sup>90</sup>

Third, conventional and nuclear forces interacted during the crisis on multiple occasions in ways that reduced the controllability of the crisis and raised the risk of nuclear use. As discussed above, Soviet submarines could have launched nuclear weapons while under pressure from conventional U.S. anti-submarine warfare assets unaware that they were engaging nuclear-armed Soviet submarines. On the U.S. side, the F-102s sent to retrieve and escort the U-2 inadvertently flying into Soviet airspace could have launched their own nuclear weapons while under pressure from Soviet fighters. This interaction between nuclear and conventional

forces raised the risk of inadvertent escalation and reduced the controllability of the crisis.

Fourth, crisis communication between the United States and Soviet Union was widely recognized to be problematic, leading to the establishment of the U.S.-Soviet “hotline” in 1963. Official messages took six hours to deliver, while unofficial channels were prone to miscommunication. The confusion that resulted from contrasting letters sent by Khrushchev on October 26 and 27 exemplifies the problematic nature of crisis communication. Kennedy received a letter offering to remove the missiles from Cuba and to cease further shipments in exchange for ending the quarantine and a non-invasion pledge. This message took twelve hours to receive and decode. By the time a reply had been drafted, a second letter had arrived in which Khrushchev added a further condition: the removal of Jupiter missiles in Turkey. Puzzled by the shifting demands, Kennedy publicly accepted the terms of the first letter, while privately agreeing to remove the Jupiter missiles.<sup>91</sup>

### *Predictions*

The Cuban Missile Crisis exhibited few incentives to use nuclear weapons first and low levels of crisis controllability. It is therefore best understood as a “brinkmanship” crisis. What dynamics should we therefore expect to see in this case? First, we should expect the crisis to have been primarily characterized by the manipulation of risk, with the conventional or nuclear balance affecting the crisis outcome in less direct ways. Second, the primary

88 Within our framework, it is plausible that U.S. alerts and mobilizations may have led Khrushchev to better understand U.S. red lines over the course of the crisis, contributing to its resolution.

89 Fursenko and Naftali, ‘One Hell of a Gamble’, chap. 19; Sheldon M. Stern, *The Week the World Stood Still: Inside the Secret Cuban Missile Crisis* (Stanford, CA: Stanford University Press, 2005), 157.

90 Trachtenberg, ‘The Influence of Nuclear Weapons in the Cuban Missile Crisis,’ 153–54.

91 Holloway, ‘Nuclear Weapons and the Escalation of the Cold War,’ 393–94.

**The brinkmanship  
model, by emphasizing  
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Missile Crisis.**



danger of nuclear use should be expected to have come from uncontrolled nuclear escalation rather than deliberate first nuclear use. Third, signaling should have been feasible within the crisis.<sup>92</sup>

These predictions are, indeed, confirmed. First, scholars have often been skeptical that U.S. nuclear or conventional military superiority in the region affected the outcome in a direct way, and if it did affect the outcome, that it did so by affecting U.S. resolve and willingness to manipulate risk.<sup>93</sup> There is indeed evidence that some of Kennedy's advisors believed that U.S. nuclear superiority should factor into their calculations.<sup>94</sup> However, as discussed above, Kennedy himself seems to have been disinclined to draw comfort (or courage) from U.S. nuclear advantages. Historians have largely shared this assessment: Marc Trachtenberg concludes that "there is no evidence that President Kennedy and his advisers counted missiles, bombers, and warheads, and decided on that basis to take a tough line," while James Cameron shows that, despite Kennedy having come to power railing against the (fictional) missile gap with the Soviet Union, once in office, he viewed U.S. nuclear superiority as largely useless.<sup>95</sup> As veterans of the crisis McNamara, Rusk, McGeorge Bundy, Ted Sorensen, Roswell Gilpatric, and George Ball later commented, "American nuclear superiority was not in our view a critical factor...Not one of us ever reviewed the nuclear balance for comfort in those hard weeks. The Cuban missile crisis illustrates... the insignificance of nuclear superiority."<sup>96</sup> Although the United States succeeded in achieving its goals once the crisis had begun, and is therefore often (and reasonably) understood to have "won" the crisis,<sup>97</sup> the actual result of the crisis — a *quid pro quo* that left the Soviets better off than the pre-crisis status quo<sup>98</sup> — seems inconsistent with both

American strategic nuclear superiority as well as U.S. conventional superiority in the region. Instead, as Schelling argues, the crisis is best understood as a case of states manipulating risk: "The Cuban Crisis was a contest in risk taking, involving steps that would have made no sense if they led predictably and ineluctably to a major war, yet would also have made no sense if they were completely without danger."<sup>99</sup> Our argument does not require nuclear superiority to have had no effect during the crisis. For example, as discussed above, nuclear superiority could affect risk tolerance or resolve within the framework of brinkmanship crises. Nonetheless, the brinkmanship model accurately captures the key dynamic — the manipulation of risk — of the Cuban Missile Crisis.

Second, historians, political scientists, and participants in the crisis agree that the primary danger of the Cuban Missile Crisis was uncontrolled escalation rather than deliberate first nuclear use. As a group of former officials from the Executive Committee of the National Security Council later recalled, "The gravest risk in this crisis was not that either head of government desired to initiate a major escalation but that events would produce actions, reactions, or miscalculations carrying the conflict beyond the control of one or the other or both."<sup>100</sup> Similarly, scholars have repeatedly emphasized the importance of luck in preventing nuclear war during the Cuban Missile Crisis. For example, Sagan writes that "good luck [was] involved in avoiding accidental war in October 1962", while Dean Acheson concluded that the peaceful resolution of the crisis came down to "dumb luck."<sup>101</sup> Len Scott and Steve Smith write that "the fact that the crisis did not lead to nuclear war was due...to good luck," while Pelopidas concludes that the "peaceful outcome cannot be reduced to

92 Again, we leave aside assessing the prediction of the model regarding the probability of nuclear use, since this is hard to evaluate within a single case.

93 See, for example, Trachtenberg, "The Influence of Nuclear Weapons in the Cuban Missile Crisis"; Cameron, *The Double Game*, chap. 1; Rusk et al., "The Lessons of the Cuban Missile Crisis," 85; Schelling, *Arms and Influence*, 94. For the argument that U.S. nuclear superiority affected U.S. resolve, see Kroenig, "Nuclear Superiority and the Balance of Resolve," 150–51.

94 Kroenig, "Nuclear Superiority and the Balance of Resolve," 150–51; Kroenig, *The Logic of American Nuclear Strategy*, 84–106.

95 Cameron, *The Double Game*, chap. 1.

96 Rusk et al., "The Lessons of the Cuban Missile Crisis," 85. These statements should be taken with a grain of salt given the political context in which they were made: by officials from a former Democratic administration opposed to the Reagan administration arms buildup.

97 See, for example, Kroenig, "Nuclear Superiority and the Balance of Resolve."

98 In exchange for the removal of missiles from Cuba, the Soviet Union received two new concessions from the United States: the withdrawal of Jupiter missiles from Turkey and a commitment not to invade Cuba.

99 Schelling, *Arms and Influence*, 94.

100 Rusk et al., "The Lessons of the Cuban Missile Crisis," 85.

101 Sagan, *The Limits of Safety*, 154. For a thorough examination of the role of luck in the Cuban Missile Crisis, see Pelopidas, "The Unbearable Lightness of Luck."



successful, fully informed crisis-management.”<sup>102</sup> The brinkmanship model, by emphasizing the dangers of uncontrolled escalation, sheds light on why luck was required to peacefully negotiate the Cuban Missile Crisis.

Third, as anticipated, both sides engaged in signaling and escalation using conventional military forces and the alerting of nuclear forces, behaviors that the brinkmanship model would anticipate. American officials “were willing during the crisis to accept a certain risk of nuclear war; and...the risk of nuclear war was consciously manipulated.”<sup>103</sup> Military deployments and alerts were ordered less because of their narrow military utility but more as measures to signal U.S. intentions and raise the risk of war. For example, McNamara argued that the point of the blockade “was not to shoot Russians but to communicate a political message from President Kennedy to Premier Khrushchev.”<sup>104</sup> Throughout the crisis, the United States used escalatory measures as signaling mechanisms: When Kennedy addressed the nation on October 22, for example, U.S. nuclear forces were placed on DEFCON 3 alert, *Polaris* submarines moved out of their ports to pre-assigned stations, and U.S. military commands throughout the world increased levels of readiness for war.<sup>105</sup> On October 24, Kennedy made the unprecedented decision to raise the nuclear threat level to DEFCON 2 — one level short of general war.<sup>106</sup> On October 27, Minuteman solid fuel missiles were placed on alert at Malmstrom Air Force Base in Montana.<sup>107</sup> As Gen. David Burchinal, the director of plans on the Air Staff, recalled in an oral history, “All these moves were signals the Soviets could see and we knew they could see them.”<sup>108</sup>

Overall, viewing the Cuban Missile Crisis as a brinkmanship crisis accurately captures key dynamics of the case.

## **Contemporary and Future Crises: Doklam and U.S.-North Korea**

Our framework therefore sheds light on prominent historical crises. Accounting for the heterogeneity of nuclear crises allows us to understand key differences between the Cuban Missile Crisis and the Kargil War better than a single model of nuclear crisis. What, then, does the framework offered here suggest about more contemporary crises? In this section, we briefly use our framework to shed light on the 2017 Doklam crisis between India and China and a potential U.S.-North Korean crisis.

### **The Doklam Crisis**

The 2017 Doklam crisis between India and China — a standoff over disputed territory where the borders between China, India, and Bhutan intersect — would be classified as a stability-instability crisis according to our framework.<sup>109</sup> First, neither side had strong incentives for first nuclear use: Both India and China had relatively small nuclear arsenals, geographically large territories and dispersed populations, longstanding no-first-use policies, and nuclear postures that are designed to credibly threaten retaliation in the aftermath of a nuclear attack rather than first use.<sup>110</sup> Second, the crisis was characterized by high levels of controllability: Neither sides’ nuclear weapons were close to the conflict zone, both countries’ nuclear postures made unauthorized or accidental nuclear use unlikely, high levels of communication between the two sides existed throughout the crisis, and each country’s declaratory no-first-use policy made it highly unlikely that either side would accidentally stumble over the other’s red lines for nuclear use.<sup>111</sup>

Indeed, viewing the crisis as a stability-instability crisis appears to correctly account for key

102 Len Scott and Steve Smith, “Lessons of October: Historians, Political Scientists, Policy-Makers, and the Cuban Missile Crisis,” *International Affairs* 70, no. 4 (1994): 683, doi.org/10.2307/2624552; Pelopidas, “The Unbearable Lightness of Luck,” 244.

103 Trachtenberg, “The Influence of Nuclear Weapons in the Cuban Missile Crisis,” 140.

104 Sagan, “Nuclear Alerts and Crisis Management,” 110.

105 Michael Dobbs, *One Minute to Midnight* (New York: Alfred A. Knopf, 2008), 51–52.

106 Sagan, “Nuclear Alerts and Crisis Management,” 109. See also “Strategic Air Command Operations in the Cuban Missile Crisis of 1962,” Strategic Air Command Headquarters, History and Research Division, Historical Study no. 90, volume 1 (1963), [https://nsarchive2.gwu.edu/nsa/cuba\\_mis\\_cri/dobbs/SAC\\_history.pdf](https://nsarchive2.gwu.edu/nsa/cuba_mis_cri/dobbs/SAC_history.pdf).

107 “Strategic Air Command Operations in the Cuban Missile Crisis,” 97.

108 Quoted in Trachtenberg, “The Influence of Nuclear Weapons in the Cuban Missile Crisis,” 157.

109 For analyses of various aspects of the Doklam crisis, see Simon Denyer and Annie Gowen, “Who Blinkered in the India-China Military Standoff,” *Washington Post*, Aug. 30, 2017, [https://wapo.st/2wRCH4x?tid=ss\\_tw&utm\\_term=.75e6447451b4](https://wapo.st/2wRCH4x?tid=ss_tw&utm_term=.75e6447451b4); Ankit Panda, “The Political Geography of the India-China Crisis at Doklam,” *Diplomat*, July 13, 2017, <http://thediplomat.com/2017/07/the-political-geography-of-the-india-china-crisis-at-doklam/>; Ankit Panda, “Disengagement at Doklam: Why and How Did the India-China Standoff End,” *Diplomat*, Aug. 29, 2017, <http://thediplomat.com/2017/08/disengagement-at-doklam-why-and-how-did-the-india-china-standoff-end/>.

110 Narang, *Nuclear Strategy in the Modern Era*, chaps. 4 and 5.

111 Narang, *Nuclear Strategy in the Modern Era*.

dynamics of this case. Despite the relatively high levels of military escalation — hundreds of troops were deployed to the region — there was little fear by either side that nuclear weapons would be used. Signaling took place using conventional troop deployments but without using nuclear threats. The outcome of the crisis — a return to the status quo desired by India and Bhutan — appears consistent with the conventional balance given India's "unique hard power advantages in the Himalayan region."<sup>112</sup> Finally, viewing the Doklam standoff as a stability-instability crisis provides an explanation for why China was prepared to provoke a crisis with another nuclear-armed state over relatively low stakes: Stability-instability crises are relatively "safe" in terms of the risk of nuclear escalation, and states should therefore be willing to provoke them to secure even relatively limited interests.

### A Possible U.S.-North Korean Crisis

Finally, what does our framework suggest about a potential U.S.-North Korea crisis?

Both sides in a potential U.S.-North Korea nuclear crisis might be incentivized to use nuclear weapons first.<sup>113</sup> This is both because North Korea appears to be adopting an asymmetric escalation posture and because of the significant disparities between the nuclear capabilities of the two sides, which means that North Korea plausibly lacks a secure second-strike capability. For North Korea, using nuclear weapons early in a conventional conflict might be the only way to prevent a conventional defeat by a far more powerful enemy or to make the United States think twice about pursuing regime change.<sup>114</sup> As Vipin Narang argues, North Korea's nuclear strategy appears to be one of asymmetric escalation: threatening nuclear first use to degrade a conventional invasion while retaining longer-range nuclear missiles to deter nuclear retaliation by the United States. Narang notes that,

faced with the prospect of a U.S.-led invasion, Pyongyang's conventional inferiority requires it to degrade the United States' ability to sustain the attack against it. This means it essentially has no option but to use nuclear weapons first against targets such as Andersen Air Force Base in Guam, which stations American bombers, and a variety of allied bases in Japan and South Korea. North Korea has to use nuclear weapons there because it does not have enough conventional warheads to damage the bases meaningfully; a conventional response would not slow or stop a U.S. onslaught.<sup>115</sup>

The United States may also face temptations for first nuclear use.<sup>116</sup> A nuclear counterforce strike might be crucial to removing North Korea's ability to retaliate against South Korea or Japan (or the United States): The imperative to destroy North Korean offensive capabilities could thus lead to the temptation to use nuclear weapons first and early in a conflict. As David Barno and Nora Bensahel argue, only a "surprise nuclear strike provides a decisive option. There is simply no other way to destroy North Korea's nuclear capabilities while minimizing the risk of massive conventional or nuclear retaliation."<sup>117</sup> Barry Posen, in arguing against a U.S. war with North Korea, acknowledges that "a surprise American nuclear attack would offer the greatest chance of eliminating the North Korean nuclear arsenal and of preventing a conventional counterattack," making it a potentially attractive option if war was deemed inevitable or necessary by U.S. planners.<sup>118</sup> Moreover, recent scholarship has suggested that some impediments to U.S. nuclear use may be weaker than anticipated. For example, the U.S. public may, in fact, be willing to endorse nuclear use under a wide range of scenarios.<sup>119</sup> Similarly, Daryl Press and Kier Lieber argue that a nuclear counterforce attack against North Korea could potentially be conducted with

112 Panda, "Disengagement at Doklam."

113 Van Jackson, *On the Brink: Trump, Kim, and the Threat of Nuclear War* (New York: Cambridge University Press, 2019), 197.

114 Vipin Narang, "Why Kim Jong Un Wouldn't be Irrational to Use a Nuclear Bomb First," *Washington Post*, Sept. 8, 2017, [http://wapo.st/2gRxldm?tid=ss\\_tw&utm\\_term=.20ae71c09a9b](http://wapo.st/2gRxldm?tid=ss_tw&utm_term=.20ae71c09a9b); Jackson, *On the Brink*, 158, 197. See also Keir A. Lieber and Daryl G. Press, "The Nukes We Need: Preserving the American Deterrent," *Foreign Affairs* 88, no. 6 (November/December 2009): 39–51, <https://www.jstor.org/stable/20699714>.

115 Narang, "Why Kim Jong Un Wouldn't be Irrational to Use a Nuclear Bomb First,"

116 On U.S. senior policymakers' public support for preventive war options, see Jackson, *On the Brink*, 137, 158–61, 163.

117 David Barno and Nora Bensahel, "The Growing Danger of a U.S. Nuclear First Strike on North Korea," *War on the Rocks*, Oct. 10, 2017, <https://warontherocks.com/2017/10/the-growing-danger-of-a-u-s-nuclear-first-strike-on-north-korea/>.

118 Barry R. Posen, "The Price of War With North Korea," *New York Times*, Dec. 6, 2017, <https://www.nytimes.com/2017/12/06/opinion/north-korea-united-states-war.html>.

119 Daryl G. Press, Scott D. Sagan, and Benjamin A. Valentino, "Atomic Aversion: Experimental Evidence on Taboos, Traditions, and the Non-Use of Nuclear Weapons," *American Political Science Review* 107, no. 1 (2013): 188–206, [doi.org/10.1017/S0003055412000597](https://doi.org/10.1017/S0003055412000597); Scott D. Sagan and Benjamin A. Valentino, "Revisiting Hiroshima in Iran: What Americans Really Think About Using Nuclear Weapons and Killing Noncombatants," *International Security* 42, no. 1 (2017): 41–79, [doi.org/10.1162/ISEC\\_a\\_00284](https://doi.org/10.1162/ISEC_a_00284).

minimal casualties and limited environmental consequences.<sup>120</sup> In short, both sides in a potential U.S.-North Korean crisis could plausibly perceive incentives for first nuclear use.

Furthermore, a crisis between the United States and North Korea would likely have low levels of controllability.<sup>121</sup> The robustness of North Korea's command and control systems is unknown and would likely be aggressively targeted in the initial stages of any military confrontation; there are few institutionalized avenues for crisis negotiation or communication between the two sides; North Korea's or America's red lines for nuclear use are unclear and ambiguous; and while any nuclear use would likely be limited on the U.S. side given the small geographic territory of North Korea, North Korea's small arsenal makes it more likely that it would have to quickly use all weapons at its disposal in order to try to respond to any U.S. first strike.<sup>122</sup> If our assessment of incentives for first use and controllability are correct, a potential crisis between the two countries would likely unfold according to the logic of the firestorm model — the most volatile and dangerous of the four models and one in which sudden and significant escalation across the nuclear threshold is possible. U.S. policymakers should therefore be under no illusions that a conventional war with North Korea will reliably remain conventional — rapid nuclear escalation is highly possible. Given the costs of such a war, avoiding any crisis with North Korea that could quickly escalate should be a higher priority for U.S. policymakers than if a potential U.S.-North Korean crisis were likely to unfold according to one of the other models of nuclear crisis.

## **Conclusion**

Nuclear crises do not operate according to a single logic. Instead, the presence of incentives to use nuclear weapons first in a crisis and the degree of crisis controllability significantly affect both the way in which nuclear crises unfold and the dynamics that underpin them. Furthermore, historical crises exhibit variation on these dimensions, suggesting that the varieties of nuclear crises we identify above are not merely of hypothetical interest. In our concluding remarks, we highlight some

implications and contributions of our argument.

First, the framework offered here provides a simple way to assess the relative danger and likely dynamics of a potential nuclear crisis in a way that may be useful for analysts and policymakers. This framework would suggest, for example, that any crisis between the United States and North Korea would be more likely to lead to nuclear escalation and be more volatile than a crisis between the United States and China, in which there would be fewer incentives for either state to use nuclear weapons first and higher levels of controllability. Similarly, nuclear superiority may grant the United States benefits in a crisis with certain opponents, such as North Korea, but offer limited benefits in a crisis with another state, like Russia. Such insights are likely to be more tailored and, therefore, more useful to policymakers than inferences drawn from analyses that do not take into account the variation among nuclear crises.

Second, our framework has implications for scholars conducting both theoretical and empirical research on nuclear crises. Theoretically, it demonstrates that seemingly divergent understandings of nuclear crises can be incorporated within a broader framework that specifies the circumstances under which each type of crisis should be expected to occur. This framework also allows scholars to make better sense of the historical diversity of nuclear crises and of conflicting findings by scholars. It makes sense that the Cuban Missile Crisis and Kargil War unfolded according to different logics. Similarly, we should not expect that other events commonly coded as nuclear crises, such as the 1970 Cienfuegos Crisis, the 2001 Indian parliament attack, or the various Berlin crises, should have unfolded in the same way.

For empirical scholars, the framework may provide a way to make sense of apparently contradictory findings. Conclusions drawn from one or two cases should not necessarily be expected to apply to crises of a different type.<sup>123</sup> For quantitative researchers, because different types of crises may be represented to varying degrees in different datasets, it is not surprising that scholars drawing on different sources reach different conclusions. For example, the disagreement between Kroenig and Sechser and Fuhrmann over

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120 Lieber and Press, "The New Era of Counterforce," 31.

121 For example, Jackson notes that a U.S.-North Korea crisis would be "much less controlled" than the Cuban Missile Crisis — a crisis already coded as having low controllability in our framework. Jackson, *On the Brink*, 159.

122 On these points, see Jackson, *On the Brink*, 164–65, 197, 207.

123 See, for example, Trachtenberg, "The Influence of Nuclear Weapons in the Cuban Missile Crisis"; and Foot, "Nuclear Coercion and the Ending of the Korean Conflict."

## This framework would suggest, for example, that any crisis between the United States and North Korea would be more likely to lead to nuclear escalation and be more volatile than a crisis between the United States and China...

the role nuclear weapons play in nuclear crises might be accounted for if the Militarized Compellent Threat dataset that Sechser and Fuhrmann use contains a greater number of stability-instability crises (in which nuclear weapons should be expected to be unrelated to conflict outcomes) and fewer staircase or firestorm crises (in which nuclear superiority may be consequential) than the International Crisis Behavior dataset that Kroenig employs.<sup>124</sup> More broadly, crisis dynamics should differ systematically across different types of crises. Seeking to find, for example, the average effect of variables on crisis outcomes may be unrepresentative of the likely effects in any given crisis. Scholars should therefore be cautious about drawing conclusions about a specific crisis from scholarship that analyzes all nuclear crises without taking this variation into account.<sup>125</sup>

Finally, the framework presented above opens up a number of avenues for future research. First, we only offered an initial examination of the utility of our framework using four cases. Future work could more systematically assess the extent to which our variables explain variation across all nuclear crises, and the relative frequency with which different types of crises occur. Second, the framework offered here provides an initial effort to explore the heterogeneity of nuclear crises. Further disaggregating nuclear crises could reveal additional insights. For example, it would be useful to incorporate literature on psychological

biases and misperceptions into our framework to further problematize policymakers' perceptions of the concepts we identify.<sup>126</sup> Third, it would be valuable to explore in greater depth how knowledgeable policymakers are about various features of our framework. One could imagine, for example, that some factors, like the conventional balance or an adversary's nuclear force posture, may be more easily known by decision-makers than others, such as an adversary's threshold for nuclear use. Similarly, it would be interesting to explore the implications when adversaries lack a common understanding of the features of a nuclear crisis — when “mismatches” emerge in adversaries' assessments — and whether these beliefs can change over time. There may also be other variables that profoundly affect the dynamics of nuclear crises that could be profitably added to our framework to produce a richer understanding of these cases. Finally, while this paper focuses on the dynamics of nuclear crises rather than the substantive issues that underly them (for example, disputed territory in the Doklam Crisis or Kargil War, or Soviet missiles in Cuba in the Cuban Missile Crisis), it is possible that crises in the nuclear age may occur over different issues than in prior eras. Further research exploring the extent to which nuclear weapons affect the issues that states compete over would be theoretically and empirically useful.

Thus, while our study offers an initial framework to allow scholars, analysts, and policymakers to begin incorporating the historical richness of nuclear crises into their analyses, it is far from the last word on the subject. Much more remains to be done to fully understand the complexity and variety of nuclear crises, and the different risks and dangers that they involve. 📌

**Acknowledgements:** For helpful suggestions and comments, we thank the anonymous reviewers and editors at the Texas National Security Review. We also thank Stephen Biddle, Austin Carson, Cosette Creamer, Fiona Cunningham, Raymond Duvall, Rebecca Hersman, Sumit Ganguly, Francis Gavin, Charlie Glaser, Avery Goldstein, Brendan Green, Sameer Lalwani, Austin Long, Sean Lynn-Jones, Martin Malin, Ronald Krebs, Andrew Kydd, Nicholas Miller, Alex Montgomery, Reid Pauly, Benoît

124 Kroenig "Nuclear Superiority and the Balance of Resolve"; Sechser and Fuhrmann, "Crisis Bargaining and Nuclear Blackmail." Kroenig proposes a different explanation for the differences in their findings based on selection effects. See Kroenig, *The Logic of American Nuclear Strategy*.

125 For a similar point on the literature on the causes of nuclear proliferation, see Mark S. Bell, "Examining Explanations for Nuclear Proliferation," *International Studies Quarterly* 60, no. 3 (2016): 527, doi.org/10.1093/isq/sqw007.

126 See, for example, Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976); Robert Jervis, Ned Lebow, and Janice Stein, *Psychology and Deterrence* (Baltimore, MD: Johns Hopkins University Press, 1985); Keren Yarhi-Milo, *Knowing the Adversary: Leaders, Intelligence, and Assessment of Intentions in International Relations* (Princeton, NJ: Princeton University Press, 2014).





*Pelopidas, Joshua Rovner, Elizabeth Saunders, Jennifer Spindel, Stephen Walt, Jessica Weeks, Sharon Weiner, Ketian Zhang, and audiences at George Washington University, Harvard Kennedy School, Princeton University, Sciences Po, the Stimson Center, the University of Minnesota, the University of Wisconsin, and annual meetings of the International Studies Association and the American Political Science Association. For excellent research assistance, we thank Sooyeon Kang.*

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