

Why do States Pursue Nuclear Weapons (or Not)

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Abstract

This essay traces the evolution of the literature on the rationale behind states' pursuit of nuclear weapons, from classical neorealist explanations focusing on relative power to neoliberal institutionalist ones underlining the deterrent power of institutions and constructivist work on the impact of norms, status, and identities. We call attention to their contributions as well as their conceptual and empirical deficiencies and introduce an approach that links both nuclear ambition and nuclear restraint to models of domestic political survival. The inclusion of this previously overlooked independent variable harnesses the utility of extant approaches, allowing more effective weighing of the impact of other causal variables, while accounting for variation over time, across and within states. We take stock of more recent work employing quantitative and qualitative approaches and identify an agenda for advancing causal theories explaining why some states pursue nuclear weapons whereas others do not.

INTRODUCTION

What are the driving forces behind state decisions to pursue nuclear weapons, to reverse course in their quest, or to reject them altogether? Since the onset of the nuclear age, a breadth of scholarship has detailed the incentives and disincentives that account for nuclear behavior, including security, status/prestige, cost, technical difficulties, and domestic and international opposition. Single-country historical accounts and policy-oriented studies dominated the first phase of this literature. This tendency placed some limits on generalizability, given the modest number of cases and data restrictions during the Cold War. Theoretical analysis was relatively limited and circumscribed to balance of power theory, known also as *neorealism*. The 1990s witnessed efforts to broaden the theoretical repertoire and transcend monocausal explanations, challenging the dominant neorealist paradigm (Lavoy, 1993; Ogilvie-White, 1996; Sagan, 1996; Solingen, 1994a, 1994b). This

trend, however, also led to contestation regarding the main causal drivers for acquiring nuclear weapons or abstaining from doing so.

We begin by exploring three main approaches: neorealism, neoliberal institutionalism, and constructivism. We acknowledge the important insights each provides but also raise some conceptual difficulties; the empirical record further challenges their validity and generalizability. The study of proliferation pathways requires a degree of analytical flexibility not afforded by these extant theories in isolation. A fuller understanding of nuclear decisions requires a framework able to estimate whether, when, and how relative power, international institutions, and norms weigh on different cases. We introduce an approach pivoted on domestic political survival models capable of endogenizing those variables, a framework applicable to the universe of cases (Solingen, 1994a, 1994b, 2007). Our final section raises challenges for future research.

THEORETICAL EVOLUTION OF THE FIELD

NEOREALISM

Neorealist theory provided the conventional explanation for nuclear behavior: the absence of an ultimate authority above the sovereign state perpetuates a purely competitive international structure, leading states to the “individualistic pursuit of security,” “self-help,” and balance of power (Dunn, 1982; Jervis, 1982; Rosecrance, 1964; Waltz, 1981). The pursuit of nuclear weapons, accordingly, is an imperative of state survival in an anarchic world. But, why have so many states abdicated that canon? External insecurity has proven an insufficient condition for nuclear weapons’ acquisition (Betts, 2003). Egypt, South Korea, Jordan, Taiwan, and Japan, all ultimately eschewed nuclear weapons, even as their rivals acquired or developed them. Some neorealist scholars invoke the role of alliances in explaining anomalies (Paul, 2000). Yet, the evidence for that is similarly mixed. The absence of alliances and hegemonic guarantees did not prevent states from reversing nuclear ambitions, as with Egypt, Libya, South Africa, Argentina, and Brazil. Conversely, coercive action by the United States and the Soviet Union did not stop North Korea, India, Pakistan, or Israel from weapons’ acquisition. The putative structural trap may be less confining than stipulated by neorealism: states opt for different solutions—nuclear and nonnuclear—to comparable security predicaments.

Such inconsistencies in the empirical record are compounded by fundamental conceptual difficulties, including elastic and subjective definitions of vulnerability and power (Haas, 1953). A focus on “threats” (Walt, 1987) draws attention away from systemic consideration, squarely on which

domestic actors define what constitutes a threat. Crucially, neorealist theory is underdetermining, allowing for multiple possible outcomes: state survival might be secured by a wide range of behavior. Nuclear weapons may enhance or undermine security. The thresholds explaining nuclearization are unclear at best: power differentials lead to open-ended operational implications ranging between abstention and acquisition.

These deficiencies raise a fundamental analytical and methodological consideration.

High national security is the arena where neorealism should perform best, its home court, easy grounds for testing theories of balance of power and *state* security under anarchy. Nuclear weapons are at the heart, the inner sanctum of states' security dilemmas. This is the theory's most auspicious domain for corroborating its tenets, loading the dice in its favor. Further, leaders, politicians, and bureaucrats are more likely to portray decisions for or against nuclear weapons as dictated by "state survival" rather than domestic political expediency or other factors. The evidentiary record—public and private—thus tilts the analysis toward an already privileged theoretical driver. All these considerations magnify the weight of empirical anomalies.

A theory that cannot be easily confirmed at high levels of confidence, even under the best circumstances, compels serious rethinking. Nuclear outcomes are clearly not the sole perfunctory reflection of international power structure.

NEOLIBERAL INSTITUTIONALISM

The neoliberal institutionalist school of thought emerged to challenge neorealist assumptions regarding cooperation, questioning the rigidity and severity of the self-help world, and offering institutions as the means to reduce conflict (Jervis, 1999). Institutions provide an attractive alternative to the unilateral pursuit of security: they lower transaction costs, enhance information about preferences and behaviors, monitor compliance, detect defections, and foster repeated and continuous interactions between states (Axelrod & Keohane, 1985; Keohane, 1984; Lipson, 1984; North, 1981). Their presence constrains state behavior, altering strategies and beliefs over outcomes. Significantly, the nuclear arena boasts one of the most prominent and long-lasting international institutions. The Treaty on the Nonproliferation of Nuclear Weapons (NPT) has become the center of an encompassing regime that includes organizations (e.g., the International Atomic Energy Agency [IAEA]), negotiating forums (Conference on Disarmament), consortiums (Nuclear Suppliers Group), and nested treaties (Comprehensive Test Ban Treaty, Nuclear-Weapon-Free Zones) (Wan, 2014b). The International

Atomic Energy Agency safeguards agreements in place under the NPT aim to prevent the diversion of materials from peaceful nuclear activities to weapons programs, while the 1997 optional Additional Protocol expanded the range of information submitted by the states and granted the IAEA complementary access for verification. As Nye argued (1988, p. 336), “That most states adhere to a regime in which they forswear the right to use the ultimate form of self-help in technological terms is quite an extraordinary situation.”

Placed under closer scrutiny, however, a narrative that links the NPT regime to the nuclear decisions of states—as in the work of Walsh (2005)—encounters myriad difficulties. While it is reasonable to presume that states join international institutions with an eye on absolute (rather than relative) gains, the extent to which that presumption has held in this arena is questionable and fundamentally understudied empirically. The durability of the NPT regime masks long-standing discord regarding the central bargain. There is widespread belief among nonnuclear weapon states that the NPT does not represent “collective interests, but rather [serves] as an instrument utilized by the major powers ... to constrain and discipline other states” (Miller, 2012, pp. 8–9). Further, challenges posed by nonstate actors, by noncompliance with safeguards, and by enforcement issues undermine the image that the regime fulfills the promise of international institutions (Braun & Chyba, 2004; Goldschmidt, 2009). Beyond all that, we do not yet have a systematic empirical foundation that would allow us to ascertain whether or not the NPT regime has played a central role in the nuclear behaviors of states. Selection effects, the reasons that led states to join the treaty—domestic interests, hegemonic coercion, and others—may in fact explain subsequent compliance (and the rejection of nuclearization) better than the NPT itself. As Guzman (2008, p. 80) suggests, “for many [parties] ... one would expect compliance even in the absence of a treaty.” As with neorealism, neoliberal institutionalism encounters very significant difficulties when considering causal processes, including the sequence, effect, and mechanisms connecting regime membership to nuclear weapons’ renunciation.

CONSTRUCTIVISM

While earlier work explored the ethics of nuclear weapons (Hardin, Goodin, Mearsheimer, & Dworkin, 1985; Nye, 1986), the constructivist wave intensified the consideration of norms, status, and identity in the non/pursuit of weapons of mass destruction (Husbands, 1982; Tannenwald, 2005, 2007). From this perspective, the significance of the NPT regime does not center on its ability to reduce transaction costs or other rationalistic considerations.

Rather, international institutions and norms are sociological phenomena reflecting and imprinting the collective identities of member states, changing actors' beliefs and identities, and altering the very definition of interests (Finnemore & Sikkink, 1998; Johnston, 2001; Klotz & Lynch, 2007; March & Olsen, 1998). Institutions "constitute and construct the social world" (Barnett & Finnemore, 1999, p. 700). The NPT regime, in this view, stems from the evolution of antinuclear weapons norms embedded in the centerpiece treaty. The regime socialized nuclear and nonnuclear bureaucracies, created new expectations and habits, and transformed states' beliefs about the ethical status of nuclear weapons, thereby leading to near-universal compliance. Overall, it stands as a constellation of entities that restrict freedom of action on nuclear matters and has contributed to the emergence of a taboo defining nuclear weapons as unconventional, abhorrent, and unacceptable (Schelling, 2000).

Yet, evidence for the norm against acquisition of nuclear weapons is far more questionable than a norm against their use (Solingen, 2007; Walker, 2010). Weapons development has spanned more than half a century in the aftermath of the Manhattan Project, from the first Soviet nuclear test in 1949 to the most recent North Korean test in 2013; the consideration of nuclear weapons by Sweden, Norway, Yugoslavia, Switzerland, and others also questions the existence of a taboo. There are too many anomalies throughout the life span of the NPT, with another 15 states seeking to acquire weapons-related capabilities through the 1990s and several cases of noncompliance with safeguards in the early 2000s in Iran, Libya, South Korea, and Egypt. Very mild international responses to India and Pakistan's 1998 tests further undermine the argument of a prohibition taboo, as do more recent discussions of new nuclear claimants such as Saudi Arabia and others.

Nuclear weapons have not been "unthinkable" even in Japan, a "crucial" case for antinuclear norms, given the experiences of Hiroshima and Nagasaki. Japan's pacifist movement sensitized its leaders to domestic opposition to nuclear weapons, but this was only one strand in Japan's public opinion. The very conduct of several government studies on Japan's nuclear options suggests that nuclear weapons' acquisition—although unlikely—was less than a taboo (Okimoto, 1978). Public opinion polls suggest that the "nuclear allergy" was much stronger subsequently than during the first two decades of the postwar era, when historic nuclear decisions were under consideration (Solingen, 2010). Japan delayed ratification of NPT by nearly 7 years, which stood in contrast with its sustained support for UN multilateralism in the postwar era. While domestic institutional restraints such as the Atomic Energy Law and the Three Nonnuclear Principles had significant force, there was also continuous contestation over interpretations of Article IX of the Constitution (renouncing the right of belligerency without referring to nuclear weapons), which may explain why the Principles never

became law (Chai, 1997). Even the reliance on the US nuclear umbrella was not precisely a policy suggestive of nuclear abstinence. Compromises over US introduction of nuclear weapons into Japan were also an expression of what opponents of nuclear weapons considered akin to “embedded nuclearization.” As Mochizuki (2006) argued, “Japan’s pacifism has always been pragmatic.”

All these cases, and continued expectations of nuclear dominoes in the Middle East and Asia—responsive to nuclearized Iranian or North Korean threats—continue to question the existence of a taboo against acquisition. United Nations Secretary-General Kofi Annan suggested in 2006 that many states were revisiting their logic on the issue of nuclear weapons (Broad & Sanger, 2006). As with the other theories, conceptual, methodological, and empirical problems plague the normative/sociological account.

DOMESTIC MODELS OF POLITICAL SURVIVAL (MPS)

The three preceding theoretical frameworks share a fundamental inattention to an important omitted variable: domestic political drivers. In a study of Taiwan, Bueno de Mesquita, Morrow, and Wu (1993) argued that nuclear behavior is necessarily linked to a supportive domestic coalition. This was a progressive move away from both underdetermining systemic balance of power considerations and a reductionist focus on treaties, taboos, and arguments focused on individual leaders as single-handedly driving outcomes. Yet, coalitions come in many forms; the microfoundations of why some coalitions might support the acquisition of nuclear weapons (whereas others might not) remained undertheorized. Focusing on the domestic distributional consequences of integration in the global political economy as a point of departure, Solingen (1994a, 1994b) identified two ideal-typical coalitions, advancing competing models of political survival (MPS) in power. These models entailed not simply different orientations to the global political economy and associated economic, political, and security institutions; they also had different implications for nuclear choices in the aftermath of the 1970 inception of the NPT.

While nuclear proliferation and political economy had been highly segregated fields of inquiry, “The Political Economy of Nuclear Restraint,” published in *International Security* in 1994, foregrounded the linkages between the two along the following lines: Internationalizing coalitions advocating economic growth through integration in the global economy had incentives to avoid the domestic and international, political and economic (including opportunity) costs of embarking on nuclear weapons programs. They were more receptive to renouncing nuclear weapons for several synergistic reasons: to enhance their appeal to foreign investors,

signaling a commitment to economic growth and stability; to reassure neighbors and boost regional cooperation, stability, and attractiveness; to secure access to international markets for exports, capital, technology, and raw materials; to avoid incurring reputational losses at home and abroad for uncertain nuclear gains; and to avoid alienating domestic agents of internationalization that might be adversely affected by nuclear weapons development. Such weapons, in other words, would burden efforts to enhance exports, economic competitiveness, macroeconomic and political stability, and global access, all objectives of internationalizing models, and would strengthen adversarial state bureaucracies and industrial complexes opposed to economic openness.

Inward-looking coalitions had greater tolerance—and sometimes strong incentives—to develop nuclear weapons. Nuclearization entailed fewer costs for political platforms rooted in mistrust for international markets, investment, technology, and institutions. Backed by protected and uncompetitive national industries, sprawling state enterprises and ancillary military–industrial and nuclear complexes, foes of internationalizing models benefited from import substitution, nationalism, and claims of self-sufficiency. They thus had greater incentives to exploit nuclear weapons as tools in inward-looking platforms of political competition and survival; often relied on extreme language to compel and threaten regional adversaries; misled or violated international nonnuclear commitments; and were more promiscuous regarding state-directed or state-endorsed dissemination of sensitive nuclear technologies as sources of financing inward-looking models.

Thus, whereas nuclear weapons programs may have been assets in the arsenal to build inward-looking regime legitimacy, they were drawbacks for outward-oriented models.

These hypothesized patterns of nuclear behavior find support from systematic observations in the Middle East, East Asia, and beyond across different regional security contexts, diverse associations with hegemonic powers, and over successive leaderships within the same state. Heavy regional concentration of internationalizing models in East Asia since the 1970s reinforced each state's incentives to avoid nuclearization. Conversely, heavy regional concentration of nationalist, protectionist, and militarized models throughout the Middle East exacerbated mutual incentives to develop nuclear weapons. Considering the *relevant* universe of cases where nuclear weapons were entertained or launched over the last four decades, not one endorsed denuclearization—fully and effectively—under inward-looking models. Only internationalizing coalitions undertook effective commitments to eschew nuclear weapons, from Egypt (under Sadat) to South Africa, Brazil, Argentina, Japan, Taiwan, South Korea,

Spain, and Libya in 2003. Most defiant nuclear courses were associated with inward-looking models, from Argentina under Perón (*Liberación o Muerte*) to North Korea (*juche*), India (*swadeshi*), and equivalents in Pakistan, Nasser's Egypt, Iraq, Iran, and Libya pre-2003. The pace and timing of renunciation was nested in broader shifts toward internationalization in economics and security. Where internationalizing models were stronger politically, departures from nuclear claims were sustained even where the security context remained challenging, as in Japan, South Korea, and Taiwan. Weaker internationalizing coalitions in Iran, Pakistan, and Argentina and Brazil until the 1990s were more politically constrained in curbing nuclear programs. A *model's* relative regional incidence influenced nuclear decisions more than a neighbor's nuclearization per se.

These MPS help explain why different actors within the same state diverge in their approaches and preferences regarding nuclear policy; why a state's nuclear policies may vary over time as a function of the relative power of particular domestic forces; why different states vary in their commitments to increase information, transparency, and compliance with international commitments; why security dilemmas are sometimes seen as more (or less) obdurate; why some states rank alliances higher than self-reliance but not others; when and how hegemonic coercion and inducements are effective and when they play a secondary or marginal role; why nuclear weapons' programs surfaced where there was arguably little need for them (the Southern Cone or South Africa among others); and why such programs were obviated where one might have expected them (Vietnam, Singapore, Jordan, and many others).

The omission of this significant independent variable in first-generation studies may have led to an overestimation of other causal variables (balance of power, institutions, norms) and to potential spurious effects. Its inclusion may improve our understanding of the actual effects of security dilemmas, international norms, and institutions. This is different from arguing that MPS are the only relevant variable; only that MPS enable a better understanding of the relative impact of other variables on nuclear choices. Indeed, several empirical studies have provided support for a MPS framework (Lieberman, 2001; Solingen, 2004, 2007). Potter and Mukhatzhanova (2008, 2010) endorsed its caution in overestimating the effects of any single causal variable and its solid grounding in comparative field research and social science theory. They found it particularly persuasive in accounting for much of the variation over time across and within states. For instance, internationalizing coalitions relinquished the nuclear option even in the absence of alliances (Egypt, South Africa, Argentina, Brazil). The centrality of MPS is especially notable since the evidentiary dice (archives, statements, etc.) is loaded against ulterior domestic political justifications. Leaders have incentives to cast decisions

favoring or rejecting nuclear weapons as “reasons of state” invoking national security, international institutional incentives, or normative considerations. Hence, whereas nuclear behavior provides neorealism with “most likely” conditions for supporting its tenets, it offers “least likely” conditions for corroborating a MPS argument. Consequently, empirical support for findings along these lines gains particular significance in this unfriendly terrain.

MPS may not capture all the correlates of nuclear preferences and are, after all, only ideal types, conceptual constructs rather than historical or “true” realities. As such, they need not fit every case or indeed any particular case completely (Eckstein, 1975), but rather provide a heuristic, a helpful shortcut, and a fruitful comparative framework capable of reducing a complex reality down to some fundamentals. Propositions derived from a MPS framework remain bounded in three ways: with respect to conditions of necessity and sufficiency in developing nuclear weapons; the incidence of compatible models in the region; and temporal sequences in the acquisition of nuclear weapons. Eliminating existing weapons may be more costly politically than eradicating precursor programs, as stipulated by prospect theory, and the incentives emanating from the global political economy may operate more forcefully both at earlier stages in the inception of internationalizing models and earlier stages in the consideration of nuclear weapons. These hypotheses remain subject to further investigation.

RECENT RESEARCH DEVELOPMENTS

There has been a significant shift across the methodological range toward theorizing and testing the role of domestic political drivers to a much greater extent than was the case two decades ago. The international relations theory toolkit for studying nuclear decision-making is far more sophisticated theoretically and more diverse methodologically. However, it still suffers from weak efforts to rely on complementary methods, to explore linkages across perspectives, and to envisage scope conditions for the operation of different variables across time and space. The absence of a more analytically eclectic approach (Sil & Katzenstein, 2010) has hindered the field as a whole, with works too often speaking past rather than building on one another.

In particular, the last decade has witnessed the newfound application of quantitative methods to gauge the nuclear motivations of states. Jo and Gartzke (2007, p. 186) downplay the general role of domestic political factors—regime type plays no role in the initial decision to nuclearize. Their study is in many ways an affirmation of the neorealist argument: states’ willingness to seek nuclear weapons is linked to “external concerns,” and especially to “countervail conventional disadvantage.” Singh and Way (2004) not only similarly highlighted the external threat environment, but

also found support for the propositions that “the process of economic liberalization is associated with a reduced likelihood of exploring nuclear weapons;” that “economic openness has a statistically significant negative effect across all three levels of proliferation” (i.e., exploring, pursuing, or acquiring them); and that “economic liberalization dampened the risk” of states deciding “to explore seriously the nuclear option” (pp. 876, 878). This study also recognizes that the connection might have been even stronger, had cases of states that abandoned nuclear programs been included. Also excluded were *prospective* efforts to enhance economic openness and attract foreign investment, which are the crucial drivers in MPS arguments. There is no one-to-one correspondence between incentives and efforts to open up the economy at time T and measures of trade openness at T+1. Fuhrmann and Li (2008) found that economic liberalization had a positive and statistically significant effect on nuclear-weapon-free zone treaty ratification as well. Yet, the process by which those treaties emerge suggests the possibility of selection effects.

Overall, the quantitative turn has done little to settle debates regarding state motivations to acquire or renounce nuclear weapons. Given their disparate findings, the diversity of datasets, coding rules, and statistical methods has only served to muddle the waters; furthermore, the operationalization of variables failed to capture the nuance of some theories, undermining the robustness of their conclusions (Montgomery & Sagan, 2009; Sagan, 2011). Many studies, for instance, rely on the Composite Index of National Capabilities in order to measure state power. Yet, such an operationalization obscures the subjectivity inherent in notions of power, overlooking the role of different domestic actors in shaping the definition and perception of threats. The notion of institutional effects is oftentimes reduced to NPT membership, severely underrepresenting the depth of the nonproliferation regime. The negative correlation between existing levels of trade openness and nonproliferation in some studies is curious, but quantitative studies are ill-suited to make causal claims about the nature of ruling coalitions, their *expected* utilities, the crucial role played by regional coalitional homogeneity/heterogeneity, and the implications of all these for the pursuit or renunciation of nuclear weapons.

Several recent works have infused social psychology into the study of proliferation, following the broader constructivist turn in international relations theory. Long and Grillot’s (2000) overview of South African and Ukrainian denuclearization argued that causal beliefs about their respective Western identities played “a significant role *both in preference formation and strategic choice* regarding nuclear policymaking” (p. 36). However, the conceptualization of these causal beliefs appears overly deterministic and

inflexible, hardly allowing for the possibility of domestic dissension regarding those identities. South Africa's Western identity was firmly in place by the 1940s, they argue, with only slight fluctuations subsequently, while Ukrainian leaders simply began asserting Ukraine's status as a European state after independence. Hymans (2006) linked the individual identity of state leaders—"oppositional nationalists"—with the drive toward nuclear weapons' ambitions. Yet, individual psychology as a causal factor presents significant methodological challenges, including accurate assessment of the leaders' presumed profiles. For instance, Japan's nonnuclear status is often—wrongly—traced to Premier Sato's putative antinuclear weapons commitments (he received the Nobel Prize on that account). But, declassified records suggest otherwise: Sato conveyed to US Ambassador Reischauer a personal preference for a nuclear Japan in 1964, oversaw a confidential inquiry into possible distinctions between offensive and defensive nuclear weapons in 1967 (the latter allowed by Japan's constitution according to some readings), and declared in a 1969 meeting with business leaders that a defense system was incomplete "if we cannot possess nuclear weapons in the era of nuclear weapons" (Solingen, 2007, p. 73).

Further exploration of the Japanese case demonstrates the empirical fallacies of attributing nuclear policy to individual psychology. The confluence of major systemic triggers (North Korea's repeated nuclear and missile tests, the rise of China, conflict over the Senkaku/Diaoyu and Takeshima/Dokdo islands) and strong conservative leaders at Japan's helm have not yielded the shifts expected by personality—or neorealist—variables (Mearsheimer, 1981). The succession of a large number of premiers over decades—with a wide range of personalities and psychological identities—has yielded the same outcome thus far. This includes the "most-likely" (ideational) cases of Premiers Fukuda Yasuo, Aso Taro and Abe Shinzo, the latter an ardent conservative nationalist at heart who learned about Japanese strategic options at his grandfather's (Kishi's) knee. Yet, he did not move Japan beyond the nonnuclear principles in his first term or even his second, after North Korea tested nuclear weapons three times, once under his watch. Abe reaffirmed Japan's nonnuclear status, aware of the economic, political, regional, and global requirements without which Japan's survival in the twenty-first century global political economy could not be guaranteed. Such deficiencies of personality-based approaches led Rublee (2009) to link nuclear forbearance to the international social environment, highlighting mechanisms of persuasion, social conformity, and identification. Yet, despite her acknowledgment that "some segments of a state may be more susceptible than others" (p. 5), her treatment of domestic politics remains imprecise. The discussion of social costs can also obscure the connection of nuclear issues to other domestic concerns, leading to seemingly inconsistent policies

that are more difficult to reconcile with identity-based factors. For instance, despite Sato's chronicled private inclinations toward nuclear weapons' acquisition, his foremost political purpose was Okinawa's reversion to Japan—a goal he was prepared to advance even if it meant accepting the formal adoption of the nonnuclear principles in exchange for the Diet's approval of his Okinawa agreement. As available historical data suggest, political survival models and "audience costs" considerations appear to have neutralized other proclivities that Kishi, Yoshida, Sato, Nakasone, Aso, or others have had and expressed publicly. Ultimately, the ideational qualitative studies vary in the extent to which they contend seriously with competing hypotheses and are amenable to systematic testing.

THE AGENDA AHEAD

The classic perspectives remain very much part of the menu in the study of nuclear behavior. However, a future agenda should move beyond indeterminacy, tautologies, or posthocism. Studies along neorealist lines must cast their arguments precisely and in falsifiable terms; grapple with more precise notions of power and vulnerability; further stipulate the impact of alliances and hegemonic guarantees; and specify threshold conditions for nuclear breakout. Given their systemic assumptions, they must explain variation in nuclear behavior independently of domestic or other auxiliary considerations extraneous to structural (relative) power. Studies advancing neoliberal institutionalist perspectives must expand the empirical base for stipulating causal linkages between regime membership and nuclear decisions; address the problem of selection effects through counterfactual analysis of decisions in a hypothetical environment free of NPT commitments; and reconcile the presumption of Pareto-optimality with the reality of power hierarchies in the NPT (Wan, 2014a). Constructivist work must distinguish across nuclear norms (acquisition, use, etc.); explain the resilience of advocacy for nuclear weapons in nuclear weapons states and some nuclear aspirants; improve our understanding of selective socialization into antinuclear weapons norms; explain clustered regional behavior toward or away from nuclearization under the shadow of the same international norm (or, why has the norm diffused selectively); and complement normative accounts of nuclear weapons' acquisition or rejection with a theory of domestic politics (or, what explains domestic receptivity to some norms but not others) that may explain barriers to norm diffusion. Political survival models must improve classification of coalitions along the internationalizing/inward-looking spectrum; estimate thresholds beyond which coalitional shifts might overturn a trajectory toward or away from nuclear weapons (in other words, when can path-dependence dominate

coalitional tendencies); and consider the impact of world-time—and an evolving global economy—on the character of coalitions.

Analysis of nuclear behavior that is attentive to complexity—interaction among variables—and to historical context can enhance both historical accuracy and predictive capabilities. As Philip Tetlock's (2005) masterful treatise on expert political judgment and prediction suggests, parsimony can be the enemy of accuracy, a substantial liability in real-world forecasting. Quantitative work should be more attentive to the inclusion of relevant cases only (Cape Verde does not add much validity to a database on this topic); improve the fit between variables and conceptual arguments; harmonize databases; and integrate more recent and sophisticated arguments from the overarching international relations toolkit. Qualitative studies should improve the criteria for case selection, seeking crucial cases and least likely conditions that force the empirical analysis to overcome difficult conditions. Cases that feature a reversal of course in either direction seem especially fruitful analytically, the various periods of fluctuation enhancing the number of observations and the opportunity to gauge variation over time. Nuclear outcomes may be conceptualized not as finite and final but as malleable and operating on a continuum.

One may find an approach reasonably persuasive in explaining the past, but it does not necessarily follow that it will also apply in the future. Nonetheless, causal theories must be able to lay out *a priori* what kind of evidence would question or corroborate their expectations. They must avoid suggesting many outcomes that would all be consistent with one particular value of their key variable, to elude the problem of multifinality. Clarity is a *sine qua non* for avoiding circularity and *ex post facto* rationalizations (such as "state x went nuclear because of acute insecurity," whereby a nuclear test is used to signal *a posteriori*, retroactively, that an acute threshold of insecurity has been crossed). Arguments must be cast in falsifiable terms *a priori*, with more clearly defined and testable propositions. Sensitivity to these and other conceptual and methodological issues described above can lead to analytical progress and offer better policy insight on the processes and mechanisms that drive the nuclear behaviors of states.

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