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THE PROBLEM OF WEAK NUCLEAR STATES

William Walker and **Nicholas J. Wheeler**

Governments are increasingly recognizing the problem posed by internally weak nuclear-capable states. The problem, however, is under-theorized. This article brings together literature on sovereignty and international order, the nonproliferation regime, and weak states, and introduces new concepts to provide a more structured understanding of this problem. Insight comes from focusing attention on the function and governance of two nuclear estates (termed the production and operational estates), and on their resilience to decay and disorder occurring within the state and society. Drawing on empirical observation, the authors suggest a typology of weakness in nuclear states, involving state fragmentation typified by the former Soviet Union, the "hard weak state" typified by North Korea, and the internally conflicted state typified by Pakistan. Although these types give rise to distinctive difficulties, their alleviation depends heavily on the maintenance of internal authority within the state and estates, the presence or absence of cooperative relations, and the international regulatory framework's vitality.

KEYWORDS: Sovereignty; international society; weak states; Treaty on the Non-Proliferation of Nuclear Weapons; nuclear security; United States; Russia; Pakistan; North Korea; Iran

It was usually assumed during the Cold War that nuclear-armed states could be regarded as robust political entities. In keeping with the realist cast of mind, their internal stability could largely be taken for granted just as their governments could be trusted to manage nuclear assets competently and protect them against theft, sabotage, or other mishap. Despite perpetual worries about the effectiveness of command and control and the quality of decision making, the main dangers were perceived to stem from conflict *between* states and the stresses arising from them.

This comforting assumption took a major knock with the collapse of the Soviet Union, the most heavily armed of all nuclear weapon states. It has taken further knocks with the realization that other nuclear-armed and -arming states have attributes of what have been called weak states. Although Pakistan and, in a different way, North Korea today give greatest cause for concern, the problem does not end there. Even the break up of the United Kingdom, ostensibly a strong state, is now being contemplated as the referendum on Scotland's independence approaches. In the long run, all nuclear-armed states are potentially contested spaces, as all political units are prone to decay and replacement. None of the current nuclear-armed states, including the United States, China, and India, can be exempted from this truism.

Threats arising from weak states that possess nuclear capabilities have been highlighted recently by US policy makers. The 2010 Quadrennial Defense Review asserts,

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for instance, that, "The instability or collapse of a WMD [weapon of mass destruction]-armed state is among our most troubling concerns. Such an occurrence could lead to a rapid proliferation of WMD material, weapons and technology, and could quickly become a global crisis posing a direct physical threat to the United States and all other nations."[1] This concern has influenced the development of counterproliferation policy and President Barack Obama's Nuclear Security Summit process. By now, there is a voluminous literature on specific measures, and on individual cases such as Pakistan. What is still lacking, however, is a conceptual framework that goes beyond the particular, enabling scholars and practitioners to address the problem of the weak nuclear state in international society with sophistication. Our purpose here is to offer some new ideas and perspectives as a contribution to this task.

We are not overlooking the literature on the unreliability of nuclear decision making, sparked especially by the late Kenneth Waltz's *The Spread of Nuclear Weapons: More May Be Better*.[2] In his subsequent debate with Stanford University's Scott Sagan, Waltz proposed that states and regimes of any complexion will rationally choose to avoid war when faced with threats of nuclear devastation, and that, as a consequence, they can be assumed to exercise effective internal control over their nuclear assets.[3] Sagan, given his concern with identifying imperfections in the management of deterrence, especially in times of crisis, also skirted the question of the weak nuclear state. Hitherto, there has been no systematic attempt to address the problem of the nuclear-armed or -arming state that is a weak state, the diverse forms that state weakness and its effects might take, the risks (now prominently including nuclear terrorism) associated with the absence of strong controls over productive assets as well as deployed weapons, and the manner in which external powers (the United States in particular) have responded, with varying success, to this phenomenon.

It is this gap that we seek to fill. The first section addresses pertinent aspects of the framework of international order centered on the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), especially regarding sovereignty, responsibility, and judgment (or its absence) about the internal "fitness" of states to engage with nuclear technology. This links to the developing notion of "responsible nuclear sovereignty."[4]

The second section considers definitions and bridges the largely distinct literatures on weak states and international nuclear politics. It will take us inside the state by examining the normative and instrumental characteristics of two "nuclear estates" (the production and operational aspects) and their coordinating executives, exploring the interplay between these estates and executives and the states, regimes, and societies in which they are situated. It will also open discussion of what we call a "hard weak state," today's clearest example being North Korea. In the third section, we identify three types of weak nuclear states and the international responses that they have invited or frustrated, drawing on empirical observation. These are (1) the fragmenting nuclear-armed state (exemplified by the Soviet Union); (2) the proliferating "hard weak state" (exemplified by Iraq and North Korea), and (3) the conflicted nuclear-armed state (exemplified by Pakistan). Reference will also be made to the United Kingdom, Libya, South Africa, India, Iran, and Israel in this section. The threads are drawn together in the concluding section.

By nuclear state, we refer to a state that possesses or is acquiring nuclear weapons. Our analysis touches on but does not encompass the category of states hosting civil nuclear capabilities whose sound governance also matters, given the dual-purpose nature of technology and the globalization of science and commerce.

The International Societal Framework

Our starting point is University of Notre Dame Professor Daniel Philpott's depiction of the modern constitution of international society as possessing "three faces of authority" (they could also be called faces of legitimacy).[5] The first face defines the entities that are the primary political units within international society (i.e., states in the Westphalian system). The second face determines who is inside and outside the club (i.e., which governed territories may become states) and how its membership is decided. The third face concerns the basic principles and norms by which members will customarily abide, such as respect for state sovereignty, avoidance of military aggression, and *pacta sunt servanda* (agreements must be kept).

Shortly after the 1945 atomic bombings of Hiroshima and Nagasaki, the US government tabled a proposal that the constitution of international society pertaining to atomic energy should *not* rest on Westphalian principles. The Acheson-Lilienthal Report and the Baruch Plan of 1946 suggested that states should collectively renounce the right to possess nuclear weapons. Doubting that adequate control could be sustained through regulatory oversight, their authors advocated placing all nuclear materials and technologies under common ownership and control vested in an International Atomic Development Authority under the United Nations's aegis.

These proposals were stillborn.[6] After a period of unconstrained nuclear arms racing which also saw the bomb spread to the United Kingdom, France, and China, there emerged instead a distinctive regulatory order governing the application of atomic energy —a "constitution of international nuclear society" in Philpott's terminology.[7] This order was basically Westphalian, but modified in ways that both strengthened and circumscribed the Westphalian model. Unsurprisingly, states upheld the principle that they alone could possess nuclear weapons and make decisions relating to possession and usage (Philpott's first face). However, an international approach was sought that could, within a single constitutional framework, introduce restraint among states that had already acquired nuclear weapons while preventing an ever-expanding number of states from similarly arming themselves. Just as the veto's inclusion in the UN Charter granted special status to the five great powers that became permanent members of the UN Security Council, so the principle of sovereign equality, which otherwise underpinned the Charter, was waived where nuclear weaponry was involved. The result was the formal identification, set in law by the NPT, of two classes of states—nuclear weapon states (NWS) and non-nuclear weapon states (NNWS).

By this means, the NPT defined Philpott's second face of authority by closing the club of acknowledged NWS to new members whilst endeavoring to shepherd all other states into the much larger club of NNWS. His third face of authority was fractured, however, by the application of markedly different rules, rights, and obligations to its

nuclear and non-nuclear state parties. Two societies were in effect being created within the overarching society. In one, deterrence could be legitimately practiced as an instrument of foreign policy and strategy. In the other, deterrence was forbidden unless within an alliance under the legalized umbrella of an acknowledged nuclear weapon state. Henceforth, how to define and manage the relationship between these two societies and their members became the contentious stuff of international nuclear politics. It was resolved within the NPT, but only to a fashion, by the Article IV and VI bargains linking renunciation of a state's right to possess nuclear weapons to access to civil technology and trade, and to the pursuit of arms control and disarmament, respectively.

Within this international societal framework, states therefore exercised Westphalian sovereignty differently depending on which side of the NPT's line they sat. The NNWS parties agreed to allow foreign intrusion into their sovereign territory so that their renunciations of nuclear weapons could be verified through international safeguards. In contrast, the NWS parties upheld the Westphalian norm of nonintervention to an exceptional degree, despite individual concessions allowing the International Atomic Energy Agency (IAEA) to inspect nominated civil facilities through voluntary-offer safeguards agreements, followed by agreements with the IAEA on Additional Protocols (in each respect, agreements varying greatly in substance and scope across the NWS). They protected their positive sovereignty, in Boston University Professor Robert Jackson's terminology, to develop, deploy, and use nuclear weaponry, and their negative sovereignty to maintain freedom from external interference.[8] In neither case, however, did the NPT pay regard to a member state's *domestic sovereignty*, in Stanford University Professor Stephen Krasner's terminology, involving the organization and exercise of control over nuclear activity within its territory.[9]

As a result, the "fitness" of a state and its agencies played no part in determining the legal standing and responsibilities of holders of nuclear weapon technology. Instead, the line drawn between NWS and NNWS rested on a temporal criterion of eligibility, namely that "a nuclear-weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to January 1, 1967."[10] This singular criterion provided an elegant means of asserting the primacy of the nonproliferation norm and removing an incentive to proliferate. But it provided neither means nor grounds for distinguishing between states according to their "fitness" to possess nuclear weapons.

Nevertheless, the NPT did incorporate certain understandings of what it took to be a "responsible sovereign" in the nuclear age.[11] Indeed, international society in the nuclear domain could be described as one that aspired to be a society of universally responsible sovereigns, each of which would suffer serious reputational damage if they did not meet exacting standards of behavior. "Responsible sovereignty" has recently been considered, particularly in the United States, doubly beneficial both internally—good internal governance (usually entailing democracy), a lively civil society, and respect for human rights—and externally, through cooperative, nonaggressive relations with other states. It has been linked to the notion of "sovereignty as responsibility" discussed by former US Ambassador Lee Feinstein and Princeton University Professor Anne-Marie Slaughter, among others.[12] Although the term "responsible sovereignty" has not yet fully caught on in international nuclear politics, adoption of the term seems appropriate. As in international security more

broadly, it can imply a similar double benefit in the nuclear realm—reliable internal governance of nuclear policies and assets, whether civil or military, and reliable external conduct of nuclear relations in compliance with international norms and rules.

For NNWS parties to the NPT, responsibility has entailed honoring Article II's ban on their acquisition of nuclear weapons and Article III's requirement that they submit to full IAEA safeguards. For these states, compliance with safeguards obligations has provided a routine test of their qualification to be regarded as responsible sovereigns, a perceived failure of which may lead to coercive action to enforce compliance (as per Iran today). For the five NPT NWS, matters have been less straightforward. Being a responsible sovereign has certainly involved honoring the Treaty's Article I prohibiting assistance to other states to acquire weapons. It has also involved provision of assurances to *bona fide* NNWS outside the main alliances that nuclear weapons would not be used against them. For good or ill, however, the extent to which the NWS have honored the NPT's Article IV and VI bargains has became the main yardstick by which their exercise of responsible sovereignty has been judged, often negatively, by other NPT members.

Yet this cannot be the only yardstick. For the NWS, responsible and—of necessity—*capable* sovereignty has involved altogether fuzzier notions of restraint, reasonable behavior, and effective governance of nuclear doctrines and capabilities. Besides compliance with arms control treaties, there has been a scarcity of explicit, reliable tests of responsibility, mainly because the practice of nuclear deterrence has discouraged external scrutiny. Matters have been further complicated by expansion of the number of nuclear-armed states—four of the current nine are outside the NPT and formally unconstrained by its norms, rules, and purposes—and by the efforts of so-called rogue states to proliferate "from within" the regime. We shall return to the difficulties created by these "outlier states."[13]

Overall, the approach to nuclear statehood adopted in the NPT, as in the UN Charter, was "pluralist."[14] NPT state parties could be large or small, strong or weak, democratic, autocratic, or totalitarian, clean or corrupt, or under civilian or military rule (a presumption shared by Waltzian structuralists). As a consequence, what you are and how you govern yourself did not matter as a criterion of NPT membership, provided that governments remained committed to the bedrock norm of nonproliferation. This implicit presumption has become increasingly untenable as vulnerability to internal failings in governance have become apparent. At the heart of this growing concern were the anxieties about nuclear proliferation and terrorism exacerbated by the September 11, 2001 terrorist attacks. As Krasner and US diplomat Carlos Pascual observed, "In today's increasingly interconnected world, weak and failed states pose an acute risk to US and global security. … The international community is not … adequately organized to deal with governance failures."[15] It was only natural that, in French historian Justin Vaïsse's words, "American diplomacy should be reformed to act not only in the interstate arena to preserve order *between* nations, but also on the nature of the units making up the international system in order to guarantee order *within* nations."[16]

Aware of this reality and its risks, attention turned to tightening controls on nuclear materials and technologies wherever, and in whatever form, they were held. Resulting initiatives are exemplified by the UN Security Council's Resolution 1540 (UNSCR 1540) of

April 2004, which sought to inhibit the acquisition of nuclear, chemical, and biological weapons by non-state actors. Issued under Chapter VII of the UN Charter, it is legally binding on *all* states (NWS and NNWS, NPT and non-NPT). It requires them to monitor and physically protect all relevant capabilities, introduce laws prohibiting access and impose penalties for violation, and establish effective export controls and law enforcement procedures. However, significant limits were placed on rights of intrusion, and obligations for transparency, especially when military activities were involved, and the resolution's implementation has been patchy.[17]

The fundamental problem remains. States and their governments are inherently fragile organisms. Their possession of nuclear weapon technology, sometimes protected by sovereignty and by international law, threatens international security when authority breaks down and regulation is weak. This said, the equation of weak nuclear state and danger to international security is not necessarily reliable, for reasons that will now be explored.

Weak Nuclear States

No state is strong in every respect and for all time. Even the most powerful and apparently durable states exhibit weaknesses which can take many forms, including shortcomings in decision making and failures of organizational design, a lack of respect for political institutions, operational carelessness, and an inability to command public affairs and deliver public goods effectively. A strong state may ultimately be distinguished from a weak state by its ability in a competitive environment, and over the long term, to generate new advantages, rejuvenate allegiances, and respond to internal and external challenges. A weak state lacks these generative and remedial capacities and can become caught in a vicious circle. A stage can be reached when weakness becomes chronic and can only be alleviated through actions which transform the state's political and economic condition. The ability to bring about this transformation, which requires great strength of will and may be helped or hindered by external intervention, can decide whether a state enjoys a rebirth or descends into profound disorder.

Most contemporary literature on weak states has been concerned with the plight of poor and developing countries that became sovereign states after the collapse of European, including Russian, imperialism. It lacks standard definitions. Former Senior Fellow at the Brookings Institution Susan E. Rice and Council on Foreign Relations Senior Fellow Stewart Patrick defined a weak state as a country that lacks "the essential capacity and/or will to fulfill four sets of critical government responsibilities: fostering an environment conducive to sustainable and equitable economic growth; establishing and maintaining legitimate, transparent and accountable political institutions; securing their populations from violent conflict and controlling their territory; and meeting the basic human needs of their population."[18] Nor are there accepted definitions of state failure and collapse. Judgments on whether a state has failed are often subjective, depending upon the choice, combination, and weighting of criteria of failure. Former Harvard University Professor Robert Rotberg calls a collapsed state "a rare and extreme version of a failed state," which is not a great help.[19]

There is, however, broad agreement that state weakness is complex, dynamic, multidimensional, and exhibits itself in diverse ways. Johns Hopkins University Emeritus Professor William Zartman speaks of indicative "signposts" on the "slippery slope" to failure and collapse including devolution of power to the periphery as the center fights within itself and the government loses its power base; malfunction as incumbent governments avoid necessary but difficult choices and practice only defensive politics; and—the ultimate danger sign—the central state losing control over its own agencies.[20] He also draws a distinction between state collapse and societal collapse that may go hand in hand but should not be confused:

> State collapse … is the breakdown of good governance, law, and order. The state, as a decision-making, executing, and enforcing institution can no longer take and implement decisions. Societal collapse, on the other hand, is the extended breakdown of social coherence: society, as the generator of institutions of social coherence and maintenance, can no longer create, aggregate, and articulate the supports and demands that are the foundations of the state.[21]

The Soviet Union's collapse involved both state and societal collapse in these terms. It also entailed regime collapse—the loss of power and authority by the Communist Party and its agencies. Focus on regimes allows an important distinction to be drawn between strong and "hard" states. The hard state is authoritarian and usually highly militarized, its leadership dedicated to the maintenance of internal control through fear and coercion. By "overplaying its control function," in Zartman's words, it may progressively weaken its legitimacy whilst thwarting development of institutions of civil society and discarding opportunities for self-sustained recovery.[22] Such ostensibly strong states are in reality weak states—"hard weak states"—with weak civil societies and weak legal and regulatory systems. North Korea is a prime example. It has sought to overcome a chronic lack of external interaction capacity (international relations theorist Barry Buzan's term) by acquiring or threatening to acquire nuclear weapons, hoping thereby to buttress the state and governing regime's capabilities and chances of survival.[23]

Nuclear Estates

Although containing valuable insights, the literature on weak states does not provide a sufficient platform for assessing risks arising in our context. There is a need to move inside the hard shell of the nuclear-armed state and focus on what we call its "estates" and their governance.

For states possessing or arming themselves with nuclear weapons, the institutions involved in nuclear policy and praxis have invariably, we suggest, taken on the guise of an *estate* within the state. Although the degree of enclosure may vary, impenetrable barriers are usually erected between the nuclear estate and other organs of state and society. This happens due to the special dangers associated with nuclear arms, the desire to withhold knowledge of their acquisition and deployment (whether to escape detection, enhance deterrence, or avoid aiding proliferation), and the self-serving behavior of agencies granted special privileges. A characteristic of this "estate within the state" is that it is routinely ascribed, and ascribes itself, a thick protecting shell of Westphalian sovereignty.

Jackson's negative sovereignty is powerfully upheld. Where sovereignty is waived to enable the verification of arms control treaties and agreements, it only happens in a manner that is heavily circumscribed.

Besides being highly resistant to foreign intrusion, the nuclear estate is characteristically kept at one remove from the "normal" institutions of the state. The sites where nuclear weapons are deployed and produced are kept out of bounds (sometimes their locations are not revealed), the roles of parliaments, congresses, and assemblies are more than usually constrained, organizations are largely self-regulating, there is extensive vetting of staff, and policy is customarily controlled by small groups answering directly to heads of state and their inner circles.[24] The degree of openness has varied over time and across states, with the United States and the United Kingdom at one end of the spectrum and China and India at the other, with the Soviet Union/Russia oscillating between them. Whether relatively open or closed, however, the nuclear estate has everywhere been treated as a special domain exempt from rules and practices applied elsewhere.

Unusual stress is thus laid by states on their exercise of authority and control (Krasner's domestic sovereignty) over and within their nuclear estates. The heightened Westphalian sovereignty fortifying the "estate within the state" is thus accompanied—and *has* to be accompanied—by a heightened attention to domestic sovereignty where that estate and its activities are concerned. The norms of Westphalian and domestic sovereignty thus tend to reinforce one another, at least where states possess the authority to exercise the latter.

The implication is that a state of any complexion setting out to acquire and deploy nuclear weapons will be driven to create a resilient, shielded estate within the state. Questions will, however, remain whether a weak state can contain an eternally strong nuclear estate, whether any nuclear estate can avoid succumbing to the frailties of a "hard weak state," and whether the nuclear estate can escape instability in a state that suffers collapse or, worst of all, civil war.

At a general level, there is scope for both confidence and concern on this count. On the one hand, the great strategic and symbolic value ascribed to nuclear weapons encourages political leaders, elites, and bureaucracies to pay attention to the effectiveness with which internal estates and assets are managed. A strong attachment to a "duty of care" will naturally develop, even if it is not codified in international rules and does not everywhere result in adequate protection of nuclear assets. In addition, the nuclear estate's substantial insulation from the rest of the state and from civil society, the geographical apartness of its installations, the requirement for absolute loyalty, and the importance that political leaders attach to maintaining authority may make it less immediately vulnerable to instabilities within the wider state and society. The state may be able to prevent some of Rice and Stewart's aspects of weakness from manifesting themselves within the intrinsically hierarchical, authoritarian, and necessarily, "hard" nuclear estate.

On the other hand, the loyalty of employees of the state, which seems fundamental to confidence in nuclear governance, may not be universal if the state is unstable and prone to ethnic or ideological conflict, if some employees consider that they owe a higher allegiance to religious, political, or tribal entities beyond the state, or if they place their

own individual profit and advancement above the interests of the state. Recent anxieties about Pakistan stem substantially from concerns, not easily allayed, that groups with radical Islamist agendas might gain access to nuclear assets and expertise, possibly with internal assistance. Trust has been specifically eroded by A.Q. Khan and his black market network's cavalier trade in nuclear materials, technologies, and weapon designs.[25]

Furthermore, whilst the estate's enclosure may cause it to be less vulnerable to internal instability in the short run, it is inevitably accompanied by absences of transparency and checks on power. Even in liberal democracies, routine scrutiny of administrative and regulatory efficiency, and routine engagement in policy debates, are often absent, constrained, or kept at high levels of generality. When states are in conflict and nuclear deterrence is active, intelligence-gathering becomes the primary source of knowledge about an opponent's nuclear weapon activities and intentions. Yet this knowledge is often incomplete and untrustworthy, especially when deception is being routinely practiced.

None of this suggests that nuclear-armed states do not communicate with one another when they have reasons to be concerned about the governance of friends' or enemies' nuclear assets (viz. the discrete conversations between the United States and Pakistan). Nor does it imply that they cannot develop some mutual trust through personal contacts, dialogue, and gradually acquired reputations for reliability and competence, or even that they have failed to learn from each other's activities after decades of mutual observation and engagement in regulation. However, the normative and structural pressures and the political interests that drive them to exercise caution and proclaim responsible nuclear sovereignty in the international arena are often accompanied by intrinsic, deliberately nurtured uncertainties about internal nuclear assets, practices, and policies. Those uncertainties and resulting anxieties are bound to be magnified where there is pronounced weakness in a state's internal governance.

The Production and Operational Estates and Nuclear Policy Executive

It is further clarifying to recognize that there are, in fact, two primary nuclear estates. The first we shall call the *production estate*. It encompasses the cycle of acquisition from research, design, and development to the validation, testing, production, and servicing of weapons.[26] This estate itself has two distinct parts, usually involving different facilities, sites, and organizations: the *materials* production estate supplies plutonium, enriched uranium, and tritium to the *warhead* production estate, which designs, assembles, and tests (now nondestructively) nuclear warheads.

The second primary estate is the *operational estate* which encompasses military deployment, exercising, early warning, and command and control. Answering to defense ministries or their kin, it reaches out into whichever armed services are entrusted with nuclear weapons. The operational estate is the production estate's demand side.

These estates are linked within the state through the coordination of policy, doctrine, and strategy by whichever elite groups bear authority within the state. This we term the *nuclear policy executive*. Its composition varies according to the functions being performed and issues being addressed, including in times of crisis. Typically, it will involve the president or prime minister, ministers from involved departments, chiefs of pertinent

armed forces, directors of weapon design laboratories, and representatives of intelligence services. In essence, the nuclear estate comprises the two estates and the overarching policy executive, the latter providing the main interface with other organs of government and with other states.

The development of the two estates and the nuclear policy executive has followed the same evolutionary path in all states arming themselves with nuclear weapons. In the first phase, research and development laboratories are established along with pilot industrial facilities, the path to nuclear weapons beginning amidst great secrecy with the formation of a production estate. The second threshold-crossing phase, occurring when warheads and their delivery systems are "weaponized" and deployed for the first time, is the main institution-building phase. It is then that the operational estate is formed, the nuclear policy executive takes shape, groups involved in the formation of nuclear doctrine are assembled, and the production estate's main manufacturing installations are established. The third phase sees the maturation of both estates.

Although the production and operational estates develop in tandem beyond the threshold-crossing stage, an important socio-cultural difference exists between them. The production estate is primarily *scientific and industrial*, whereas the operational estate is primarily *military* (the policy executive is primarily *political*, although dominated by the military in a state like Pakistan). Each has its distinctive normative and organizational traditions, expertise, structures, and practices relating to the functions that it performs. There may, for instance, be a presumption of absolute loyalty and confidentiality within each estate, but the means by which loyalty is assured in military and scientific/industrial contexts differs in significant ways.

The two estates also have markedly different relations with the society outside. The operational estate lacks the equivalent of the production estate's private and civilian hinterlands. Insofar as there is a hinterland, it is military and firmly under the wing of the state. In contrast, the production estate draws upon—whilst being kept at some arms length from—the broad scientific and industrial base. That base may encompass the civil nuclear industry in addition to scientific and industrial organizations that produce knowledge and components relevant to nuclear weaponry. This wider industrial domain requires extensive regulation to limit the diffusion of weapon-related materials and technologies, and to avoid the development of black markets and other forms of criminality.

Krasner calls a state's capacity to exert control over transboundary movements its *interdependence sovereignty*. The diffusion of technology causes both domestic and interdependence sovereignty to become essential to the containment of nuclear proliferation. Matters are complicated by the realization that high technology firms across the world, many having no direct or conscious involvement in the nuclear sector, together carry the potential to become a *transnational* materials production estate for hungry state and non-state actors if outputs and transfers are not adequately monitored and regulated. Networks formed to draw from this estate will not hesitate to exploit weaknesses in host states, to the extent of corrupting officials or leaders where possible.

From the 1960s onwards, efforts have therefore been made to achieve collective discipline through the mechanisms, notably, of international safeguards, export control,

physical security, and disruption of illicit shipments. They began with the NPT-related development of IAEA safeguards, identification of "trigger-lists" of items that should be submitted to export controls (evolving in the 1970s into the Nuclear Suppliers Group, or NSG, guidelines), and the IAEA's publication of standards of physical security to be applied to nuclear materials and facilities. They have continued with reform of IAEA safeguards through the Additional Protocol of 1997, the periodic refinement of NSG guidelines, the Proliferation Security Initiative, the upgrading of physical security through *inter alia* UNSCR 1540, President Obama's Nuclear Security Summit process, and the debate (still unresolved) over bringing nuclear fuel cycle activity under multinational control.

Taking these developments together, it is as if an attempt is being made to establish a system of global control more far-reaching than was imagined in the Acheson-Lilienthal Report. To work, this requires a visible perfection of regulatory capacities in *every* state, strong or weak, engaged in nuclear activity. This is far from being achieved in a state system in which deterrence is being practiced, pertinent scientific and technological capabilities are diffusing, strong governance is not universal, and mistrust is common.

Responding to the Weak Nuclear State: Some Lessons From Empirical Experience

We now turn to the experiences of governments when they have found themselves compelled to address the dangers associated with the weakness, failure, or collapse of particular nuclear states. There being no room here for case studies, discussion will be restricted to identifying some salient features associated with the fragmenting nuclear-armed state, the proliferating "hard weak state," and the conflicted nuclear-armed state. Despite diversity between and within these categories, the following factors emerge as having particular influence over outcomes: survival of central authority over nuclear assets; the presence or absence of interstate cooperation and transparency, linked to the wider security environment; and the constraining and enabling conditions provided by the NPT- and UN-centred frameworks of norms and rules.

The Fragmenting Nuclear-Armed State

This circumstance arises when the governmental center of power in a state loses political authority over its whole territory, resulting in the emergence of new states with individual characteristics, capabilities, and identities. Stakes are exceptionally high when nuclear weapons are involved. The great precedent was the Soviet Union's collapse in the early 1990s. Although less momentous, the United Kingdom's potential break up after Scotland's 2014 referendum reminds us that what happened to the Soviet Union cannot be considered a unique, unrepeatable event.

The Soviet Union's demise involved the collapse of a state, regime, and socio-economic system (Soviet communism). In retrospect, the management of this nuclear superpower's demise was a remarkable achievement.

Four main reasons for the success stand out. Firstly, the nuclear policy executive was able to maintain central authority over the nuclear arsenal and broad operational estate

(importantly, the warhead and material production estates were located on Russian territory). The Soviet Union had deployed nuclear weapons across several of the republics that were taking steps to become sovereign states. Although tactical weapons were quickly withdrawn to the Russian heartland, strategic weapons in Ukraine, Kazakhstan, and Belarus were tied to launch sites. This led to the invention of the Commonwealth of Independent States, which temporarily exercised joint authority over the weapons, legitimizing Russia's continuing exercise of control over weapons stationed outside its formal jurisdiction. Authority over the operational estate and sustenance of a functioning nuclear policy executive was only fully achieved when Russia took sole charge, which did not occur until the strategic weapons had been removed from their bases in the three newly independent states.

Secondly, the successful transfer of nuclear assets from the newly sovereign republics to Russia was facilitated by the climate of cooperation established between Russia and the newly emerging states, and crucially between Russia and the United States, which had already decided to moderate their strategic rivalry. The US-Russian cooperation became especially important to securing the Soviet Union's huge nuclear production estate which had been shockingly under-regulated. For a few vital years, the hardened shell of Westphalian sovereignty softened in this domain, allowing a previously unimaginable cooperation between Russian and US scientists, military agencies, policy makers, and nongovernmental organizations, partly supported by funds drawn from the US defense budget under the Cooperative Threat Reduction program.

Thirdly, it mattered greatly that the breakup of this state was largely peaceful and consensual rather than contested and violent. The elites guiding the new states out of the Soviet Union had a common desire to create a new future and escape the communist past, the pseudo-federal structure established under Vladimir Lenin meant that comparatively few border disputes erupted, and, with few exceptions, the new states did not challenge each others' right to exist.[27] A state system could therefore emerge in the former Soviet space without the units being drawn into struggles for survival and supremacy in which nuclear weapons would gain an immediate salience. One shudders to think what might have happened if Yugoslavia had mounted a nuclear weapon program, as Josip Broz Tito once considered.

Fourthly, the Soviet Union's breakup occurred after a long effort to create a constitutional nuclear order in which Moscow had been a prime mover with Washington. The US government chose to use its enhanced structural power to strengthen rather than challenge that order in the early post-Cold War years. Washington's determination to extend the NPT's lifetime indefinitely in 1995 played a part, with anxieties that this cardinal treaty might expire leading the United States to reemphasize its centrality to global security. The approaching Review and Extension Conference also gave new states a timetable for acceding to the NPT and an opportunity to demonstrate that they took their international responsibilities seriously.

All in all, this was a fortuitous environment in which to manage the collapse of a nuclear superpower. To achieve this, each of Philpott's three faces of authority had to be addressed in the former Soviet space. It entailed affirmation (the first face) that the state was the sole legitimate authoritative institution and identification of the entity or entities

that would exercise formal authority during the transition. It entailed decisions (the second face) on the political units that would become states, their standings within the United Nations and NPT, and the division of assets. And it entailed affirmation (the third face) of the principles, norms, and rules by which the new states would abide. Whether nuclear weapon state (Russia) or non-nuclear weapon state (the rest), all were required to accept their obligations as NPT parties. Last but not least, it involved negotiation of various political accords and understandings reconciling the thirteen NNWS to the NPT's legalized hierarchy of power and to Russia's retention of nuclear arms. It was important here that Russia and the United States appeared committed to "strategic stability" and the continued reduction of their nuclear armaments through the Strategic Arms Reduction Treaty process.

As noted earlier, fragmentation can occur in strong as well as weak states (judged by Rice and Patrick's definition), the current example being the United Kingdom's possible breakup after the Scottish referendum, scheduled for September 2014. The ability of the United Kingdom—or its successor—to regulate and protect its nuclear assets and estates is not in doubt, although Scotland's departure from the Union would have major consequences for the nuclear deterrent, since the Scottish government has pledged to close the Royal Navy's Trident submarine bases in Scotland if it wins the referendum (there is general agreement that relocation is impossible).[28] After breakup, the example of the former Soviet Union suggests that the United Kingdom would share the centrality of the NPT framework in deciding and ascribing legitimacy to the status and obligations of the emerging states (Scotland becoming non-nuclear weapon state, the rest of the United Kingdom remaining a nuclear weapon state).

The Proliferating "Hard Weak State"

Iraq, North Korea, South Africa, Libya, and (questionably) Iran may be included in this category. The very weakness and insecurity of these states and regimes have motivated their leaders to acquire nuclear weapon capabilities, provoking international reaction and aggressive counterproliferation measures on occasion. If they cannot be persuaded to change tack and abandon nuclear arms by nonmilitary means, two options have presented themselves to foreign powers: adopt a policy of containment aimed at moderating behavior and impeding acquisition and deployment (or at least slowing down the development of a latent weapons capability as in Iran's case); or intervene with force to try and bring about the hard weak state's transformation, collapse, or both. In the early 2000s, the US government veered toward a general policy of regime change backed by threats of military action. Now fully alive to the policy's risks and costs after the 2003 Iraq War debacle, it has since moved in the direction of containment whilst still aiming to achieve fundamental changes in the offending regime's character and policies.

Unusual though it may seem, Libya and South Africa can be usefully paired together. Their presiding regimes chose to abandon weapon programs, albeit with contrary aims of preserving and yielding their grip on power.[29] Disarmament was therefore achieved without enormous to-do, in cooperation with external powers and international organizations (prominently the IAEA), with Libya being brought into compliance with the NPT and with South Africa joining the treaty and accepting its obligations. Both revealed their

capabilities by accepting transparency where there had previously been secrecy and disguise. By contrast, the cases of Iraq, North Korea, and Iran reveal the challenge of reversing proliferation in the face of strong resistance, thereby complicating and politicizing intervention and creating international discord over its means, purposes, and legitimacy.

It should be recalled that Iraq's collapse occurred in two stages. Its defeat in the 1991 Persian Gulf War led to an international effort, guided by the UN Security Council, to reveal and dismantle its weapon of mass destruction programs, the previous extent of which had been greatly underestimated. Although periodically obstructing this effort, Saddam Hussein's regime had survived the war and provided a necessary coordinating authority on the Iraqi side to manage the dismantlement of its nuclear capabilities. By 1998, the IAEA was able to confirm that the nuclear weapon program had been comprehensively shuttered. It is doubtful that this nuclear disarmament could have happened if the Iraqi regime had been overthrown in 1991 and Iraq had then descended into the civil war that occurred after the 2003 war. There might then have followed the nightmare of weapon capabilities, of yet unknown types and quantities, being dispersed in chaotic circumstances to state and non-state actors, and used as instruments of blackmail. Anyone contemplating military action against Iran, hoping to provoke internal rebellion, should keep this in mind.

North Korea is the ultimate "hard weak state," its regime using the nuclear weapon program and practice of brinkmanship to prize concessions out of much more powerful states.[30] Since it is not a defeated power and has enjoyed some protection from China, others have had to treat the North Korean regime cautiously, fearful also of the devastation that would be wrought by another war on the Korean peninsula. At the time of writing in September 2013, it is unclear whether a climax is approaching when heightened threats, internal stresses, and waning international patience, especially in Beijing, hasten a conclusion, with or without violence, or whether the game will continue as before, albeit with increased US military deployments to allay Japanese and South Korean fears and discourage North Korean aggression.

If the current North Korean regime collapses, a novel situation could arise, potentially involving unification of a powerful non-nuclear weapon state, South Korea, with a now-powerless nuclear-armed state. The NPT and its safeguards system would again become vital guiding frameworks. Dismantling North Korea's capability—involving both production and operational estates—and confirming the unified Korea's non-nuclear status would become the overriding international objective. Cooperation would again be vital at all levels, within Korea, between Korea, foreign powers, and international organizations, and especially between China, the United States, and Russia, inside and outside the UN Security Council.

Whether Iran should be included in this category of "hard weak state" is debatable. The strength of the Iranian state and regime, and its nuclear program's purpose, are all the subject of debate. The Iranian case again underlines the necessity of cooperation among the great powers, and cooperation that is consistent rather than intermittent.[31] Governments, crucially the permanent members of the Security Council—the United States, United Kingdom, Russia, China, and France—have struggled to agree on common approaches inside and outside the UN Security Council, due, among other things, to

diversity of interests and the difficulty of interpreting Iranian motives and intentions against the strict legal requirements of the NPT's safeguards system. Our particular observation is that Iran, like Iraq and North Korea, has been scene of a struggle between transparency on the one hand, and secrecy on the other hand. The former can be observed in the ongoing efforts of external actors to attain full information about the location, character, and activity of Iran's nuclear program, entailing submission to comprehensive international safeguards in line with NPT and IAEA obligations. The latter can be seen in Iran's creation of at least a latent nuclear production estate—whatever the motivations, beyond scrutiny and attack—often underground. A likely consequence is that Iran's nuclear program will be as comprehensively guarded as any.

The Conflicted Nuclear-Armed State

Among all nuclear-armed states, Pakistan has most warranted the label "unfit to bear arms" in the opening years of this century. It has been and remains both externally and internally conflicted: a state locked in a "hot" deterrent relationship and nuclear arms race with India unconstrained by arms control, a state outside the NPT that has long defied international pressures to abandon or constrain its nuclear weapon program, yet a state that was and remains weak and unreliable by most criteria.[32] It has met all of Rice and Patrick's conditions for a weak state, and the possibility that Pakistan could descend into civil war or that the state could become severely dysfunctional must be taken seriously. In addition, Pakistan's internal instability and fractious external relations have been aggravated by its location in a complex, volatile, and high-stakes regional security environment.

This was also a nuclear state that had demonstrably failed to exercise adequate control over its production estates, and which provoked justifiable concerns over the effective governance of its operational estate. Pakistan seemed to offer the clearest rebuttal of the Waltzian view that nuclear-armed states' management of their capabilities is inherently worthy of trust. Its reputation as a responsible nuclear sovereign was especially tarnished by the A.Q. Khan affair. Despite the government's strenuous denials of involvement, it remains unclear whether agencies of the state were complicit.[33] As BBC Security Correspondent Gordon Corera put it in his authoritative 2006 book, "[e]ither they knew nothing and their most sensitive national security programs were essentially out of their control or they knew of Khan's actions and failed to stop them."[34] Anxieties were further stoked by reports that Pakistani scientists had met with members of al Qaeda and discussed the making of nuclear devices.[35] Even General Pervez Musharraf, the former Pakistani president, publicly raised the specter of radical groups gaining access to Pakistan's "strategic assets" when justifying his November 2007 decision to impose a state of emergency.[36]

Since the late 1990s, the Pakistani government and military have exerted themselves to improve command and control and the governance of nuclear assets. Steps taken have included the formation in 2000 of the Nuclear Command Authority and its secretariat, the Strategic Plans Division, and of the Pakistani Nuclear Regulatory Authority a year later. In 2004, the legislature adopted export control rules and processes that mirror the NSG's guidelines, and an act of parliament in 2010 identified actions that would be deemed

criminal. The government has also given assurances that warheads and delivery systems are normally "de-mated," and that it has introduced technical measures, equivalent to Permissive Action Links (coded locks that restrict access to authorized users), to prevent unauthorized firing.

These steps have helped to calm international nerves. President Obama asserted in 2009 that, "We have confidence that Pakistan's nuclear arsenal is safe; that the Pakistani military is equipped to prevent extremists from taking over those arsenals."[37] However, such pronouncements are always accompanied by caveats. Writing in March 2013, retired Pakistani Brigadier Naeem Salik and Kenneth Luongo, president of the Partnership for Global Security, observed that, "The situation on the ground is not as bad as it may appear to distant observers. … Yet, there is much that the US and other governments do not know about the Pakistani nuclear arsenal, despite closer cooperation."[38] In his wide-ranging assessment of 2010, South Asia expert Christopher Clary concluded that "the Pakistani state has taken visible and important steps to secure the arsenal. What is not known, and is in fact unknowable, is whether such steps are sufficient given the prevailing threat environment in Pakistan."[39] That so much is unknowable, sometimes deliberately so, is the nub of the problem, making it difficult for outsiders to fully trust statements of reassurance.[40]

The presence of nuclear weapons and capabilities in such a profoundly disturbed state and society, and in such an unstable conflict-ridden region, takes security policy making into uncharted territory. Risks of nasty surprises are inescapable. Even if the state remained intact, what would happen if part of the Pakistani capability fell into the wrong hands? Would and could the Pakistani government and military respond promptly and effectively, with or without foreign assistance? What kind of external intervention could be imagined in this conflict zone that had chances of success, by whom might it be conducted, and upon whose intelligence and risk assessments might actions be grounded and legitimized inside and outside the UN Security Council? There are rumors that US military contingency plans exist for such scenarios. If true, their political and military credibility, whether they carry domestic support, and whether they could succeed without Pakistan's active military assistance, remain unclear.[41] In addition, have any such plans already involved discussion and coordination with Indian and Chinese authorities, and with what results? The questions are legion, few having answers, certainly in public. An analysis of US military intervention in such circumstances concluded: "If there is one single broad theme that emerges … it is the criticality of preventing that type of collapse [of a nuclear-armed state] in the first place."[42]

The focus here has been on Pakistan. India has not stood accused of such aberrant behavior. Indeed, the 2005 US-India civilian nuclear cooperation agreement amounted to a declaration that India was inherently trustworthy and deserved to be regarded as a "responsible nuclear sovereign." However, India, too, is prone to internal conflict and weak internal governance, and thus to nasty surprises. Should Israel also be included in this category? It, too, is a conflicted state, experiencing internal division and violence, and is engaged in longstanding conflict with regional neighbors. More than any other nuclear-armed state, however, Israel has been alive to the dangers of internal seizure or sabotage of its nuclear assets. Its nuclear capabilities and policies have therefore been placed off

limits, beyond any access and discussion. Although Israel's nuclear policy is highly controversial, there is considerable international confidence in the effective and restrained governance of its nuclear estates and in their security, despite the febrile political environment. This confidence has not developed, however, as a consequence of openness, but through the apparent absence of incident. There and elsewhere, confidence in sound governance lacks solid foundation when there is no transparency and democratic accountability.[43]

Conclusion

Since 1945, there have been four main fields of inquiry into international nuclear affairs: strategic studies, involving the role of force in relations between nuclear-armed states, alliances, and the management of deterrence; proliferation studies, concerning the causes and dynamics of nuclear weapons acquisition and its prevention; disarmament studies, concerning the processes by and circumstances in which nuclear weapons might be eliminated; and institutional studies, addressing the development of norms and rules and their expression in treaties and regimes.

These four need to be joined by a fifth field of inquiry that deserves equal status. Its subject is the internal governance of nuclear-armed and -arming states, the inquiry's necessity deriving from the now obvious dangers that its failures pose for human and international security. Our purpose has been to highlight and illuminate the problem of weakness in nuclear states and their governance and offer ideas on how it might be submitted to more systematic analysis.

Part of this inquiry has to involve the nature of state weakness and the risks attending it. The large extant literature on state weakness, failure, and collapse shows that they are complex, multifaceted phenomena that resist easy definition. Our insight is that, beyond the usual levels of state and society, attention needs to be given in the nuclear context to the "estates" and "policy executives" that are routinely constructed when nuclear weapons are acquired and deployed. We have identified two such estates—the operational and production—the latter being sub-divided into the material and warhead production estates. The function, character, regulation, and external relations of these estates differ markedly, as do the consequences of their fragility.

Questions about the risks for international security deriving from the weak nuclear state therefore have to encompass questions about the governance and resilience of its estates, and the quality and integrity of the policy executive that oversees them. How resilient are these estates and their governance to instability and conflict within the states and societies in which they are located? How can that resilience be assessed and tested when information is in short supply? *In extremis*, can the estates survive civil war, preventing the transmission of nuclear weapons, materials, and technologies to untrustworthy states or non-state actors even in that dire circumstance?

Pertinent to this question is our introduction, following Zartman, of the notion of a "hard weak state." Although profoundly weak by normal economic and social standards, a state and its agencies may be subject to tight autocratic control which may or may not be sustained. The stereotypical examples are the Soviet Union in its later stages and present-

day North Korea. However, the notion of hardness also applies to febrile states like Pakistan or even India. Can discipline and the quality and reliability of decision making be maintained within and over each of the nuclear estates despite the volatility of their surrounding societies and political structures? Our analysis suggests that, because the estates may retain internal strength, a nuclear state's internal weakness does not straightforwardly generate "present dangers" to international security.

These questions connect to another necessary part of any inquiry into the weak nuclear state. This concerns the importance of the framework of international society and its norms and institutions that, whilst historically marginalizing questions of internal governance, provides the normative context in which states must find effective and legitimate solutions to problems arising from state instability and even break up. Central here is the NPT, which establishes certain criteria for being a responsible sovereign in the nuclear domain, whether the state party is a nuclear or non-nuclear weapon state. But the quality of internal governance has not been one of those criteria. The NPT and other arms control treaties also establish certain requirements for transparency on the part of governments. However, these serve the verification of compliance with their particular rules rather than demonstrations of good governance. Yet, it is evident that strong internal governance, involving understandings of best practice, must become a *universal* criterion of responsible sovereignty if states and peoples are to be protected from the vicissitudes of state weakness in the nuclear context. The criterion of responsible and effective internal nuclear governance has to apply across states of all sizes, advancement, and complexion, including NWS and NNWS, and NPT and non-NPT state parties.

International standard-setting of this kind has begun in the shape of US-led cooperative efforts to strengthen international norms and practices regarding the internal governance of nuclear assets, high among them fissile materials, wherever they are located. Recent measures toward this end aim at promoting greater transparency and regulation, such as, *inter alia*, the Nuclear Security Summit process and UNSCR 1540. Nevertheless, many governments remain jealous of their sovereign prerogatives resulting in constraints on intrusion, oversight, and peer review. Furthermore, where nuclear deterrence is practiced, there is always pressure to limit foreign knowledge of nuclear capabilities and activities. In spite of these obstacles, however, the effort to socialize all states into a new understanding of what responsible nuclear sovereignty should entail, and to give institutional form to its realization, is becoming engrained even if there is much further work to be done. No state can afford to ignore these expectations of good conduct. Nevertheless, it is apparent that this move toward more demanding universal standards of nuclear governance cannot ensure complete immunity from risk.

States will always remain fragile entities, prone to failure in various regards in the short or long run, generating anxiety about their behavior and ability to retain control over assets, whatever governments may say about the security of their nuclear estates. If the number of nuclear-armed states increases and the diffusion of nuclear technology and expertise proceeds apace, the dangers can only increase, especially if nuclear weapons spread in regions of acute conflict such as the Middle East, where statehood is contested and radical movements display interest in perpetrating acts of extreme violence, and if

globalization and technical advances increasingly enable non-state actors to construct and deploy nuclear devices.

Given the extreme dangers associated with nuclear weapons, other states—especially the great powers—will find themselves driven to intervene in some way. We have identified three situations that have already demanded international action: the fragmenting nuclear-armed state, typified by the former Soviet Union; the proliferating "hard weak state," typified by North Korea; and the conflicted nuclear-armed state, typified by Pakistan. Responding to these situations draws governments into the vexed area of intervention and its coordination and legitimacy, channelled or not through the UN Security Council.

Amidst the many complexities of responding to these situations, four determinants of success or failure are apparent from our empirical observations. The first is the maintenance by policy executives of central authority over nuclear estates, come what may. The second, evident in so many contexts, is the need for agreement and coordination among great powers and their allies, particularly the permanent members of the UN Security Council. The third is the presence or absence of consent for intervention by the state in question, and by its political fragments following collapse. Where consent is present, remarkable progress can be achieved, as illustrated by the case of the former Soviet Union. Where absent, the result is usually conflict and frustration.

Last but not least, it is necessary that the international regulatory framework, rooted in but not restricted to the NPT, retains its vitality and that states are open to application of its norms, rules, and practices even when they sit outside the treaty. We have seen how the problem of the weak nuclear state has been complicated by the NPT's neglect of internal governance. Nevertheless, the NPT and the wider international societal framework's value as a legitimating guide to collective action when things go wrong should not be underappreciated. It contributed enormously to the handling of the Soviet Union's collapse, and would be critical to reducing risks when coping with any future North Korean disintegration and the Korean unification that might follow. The NPT's legitimating framework has been less important in the case of Pakistan, given its non-membership of the NPT, and given Article I of the treaty's constraint on the diffusion of knowledge relevant to nuclear weaponry. Even in this case, however, the framework of norms, rules, and practices and associated understandings of responsible nuclear sovereignty have encouraged (helped by strong US pressure and inducements) the raising of standards of internal nuclear governance.

The problem that we have discussed will exist so long as nuclear weapons exist. Their presence in the Westphalian state system is incompatible with safety and security if states cannot be trusted to exercise strong and responsible governance of their nuclear activities. That trust has to be earned and is hard to demonstrate without a level of transparency that is greater than is customarily allowed, especially when states are actively engaged in nuclear deterrence. A logical conclusion is that the problem will go away if nuclear weapons cease to exist—if the project of complete nuclear disarmament takes wing and abolition is finally achieved. It should be borne in mind, however, that high standards of governance of nuclear estates, as they shrink and are dismantled, would be essential to the achievement of a secure and enduring world without nuclear weapons.

With or without disarmament, raising everywhere the standards of governance of nuclear assets and activities, and raising expectations that states will comply and enforce them, is now central to the achievement of international order and security.

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