TRENCH GASCOIGNE ESSAY

Building the Bomb

Nuclear Proliferation in Authoritarian States

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The assumption underlying much of the debate about nuclear proliferation is that future threats proliferation emanate primarily from states outside the democratic community. Ben Challis, however, argues that this assumption is mistaken. Instead, he points to a number of common characteristics among authoritarian states that hinder their ability to pursue nuclear weapons, providing more flexibility and time in which the international community can respond. In contrast, many democratic states have the capacity to build nuclear weapons quickly and face growing incentives to do so – suggesting a reassessment of counter-proliferation efforts is required.

Despite the relative availability of the knowledge and materials needed to produce nuclear weapons, aspiring proliferators from authoritarian states have struggled to achieve success in building them.[1] In the course of the past few decades, regimes in Libya, Iran, Iraq, Syria and Brazil pursued weapons for a number of years but have ultimately been unable to obtain a nuclear arsenal. In North Korea, progress was slow and marred by a catalogue of failures.[2] In contrast, many democratic countries are believed to be capable of producing weapons quickly and easily, should they take the political decision to do so.[3] In reaching this position, they have already overcome many of the technical hurdles at which authoritarian countries have fallen, most importantly in the production of sufficient weapons-usable fissile material.[4] As the global security environment becomes increasingly uncertain, experts say that many states are likely to face growing incentives to pursue nuclear weapons.[5] In this context, some have warned that democratic states may well become the main drivers of future proliferation.[6] Japan is an illustrative example; it possesses the capacity to produce nuclear weapons quickly and easily, and, in a deteriorating security environment, will face strong incentives to do so.[7] This asymmetry in the *ability* to proliferate raises important issues regarding the way in which the threat of future proliferation will unfold.

It should be noted at the outset that any discussion of 'authoritarian states' is a generalisation which masks important and substantial differences in the political structures present in the countries the category attempts to capture. Juan Linz is just one author who has explored these nuances and their consequences in terms of approach to governance in greater detail than is permissible here, but which can nevertheless be useful for heuristic purposes.[8] For the purposes of this article, however, an authoritarian state is characterised as one in which the political leadership is not accountable to public opinion through more or less transparent institutions, and in which a relatively autonomous ruling elite exercises a high degree of control over the public activities of other societal actors in order to prevent effective challenges to their authority.[9]

There are characteristics inherent to such countries with authoritarian political systems

which inhibit their ability to produce nuclear weapons. First, the impact of regime type on a country's international relations makes it significantly more challenging for authoritarian states to acquire the equipment and expertise needed to pursue nuclear weapons. Secondly, authoritarian states tend to isolate their domestic constituencies from international networks, thus impeding the capacity of key actors to work effectively. Finally, restrictions on the autonomy of the domestic community, and a tendency to use clientelistic recruitment practices, mean these programmes tend to be 'dysfunctional'.[10] Despite this, the assumption underlying much of the narrative on nuclear proliferation is that the threat of future proliferation primarily comes from states outside the democratic community.[11] It may be suggested that the relative concern with these states is justified as their possession of nuclear weapons is inherently more dangerous;[12] yet, this argument is unconvincing and any further nuclear proliferation is a cause for concern.[13] However, with the relative risks of proliferation and the reasons why states may seek nuclear arsenals having been covered extensively elsewhere,[14] it is instead important to further an understanding of the particular challenges faced by authoritarian regimes *after* the decision to seek nuclear weapons.

It is widely understood that a state's domestic political structure affects the ways in which it interacts with the international community. Perhaps the most widely cited example of this relationship is the democratic peace theory, which holds that liberal democracies do not go to war with one another.[15] This alone may have implications for authoritarian states seeking nuclear weapons. As Michael Doyle observes, the pacification of relations between liberal states 'only seems to work in the liberals' relations with other liberals', with democracies having on various occasions demonstrated a willingness to use force against authoritarian states.[16] Such force may be used in an attempt to prevent an aspiring proliferator from obtaining nuclear weapons. A prominent example of such 'counter-proliferation strikes' is the Israeli strike on Iraqi production facilities in 1981.[17] Such strikes, however, cannot be considered a significant obstacle to an authoritarian state that seeks to obtain nuclear weapons and do not explain what has become a consistent failure on the part of authoritarian countries to produce them. They are both rare and ineffectual.[18] Whilst they may place an additional burden on resources, a determined proliferator can succeed even when resources are scarce, as recently demonstrated by impoverished North Korea, which is thought to be capable of delivering a miniaturised nuclear warhead using domestic launch capacity, according to the commander of US Forces Korea, General Curtis Scaparrotti.[19] Moreover, these 'surgical strikes' may actually *assist* regimes in overcoming many of the challenges which are peculiar to authoritarian countries by arousing 'nationalist fervor'.[20]

The primary impact of international relations relates instead to the acquisition of the equipment and expertise needed to build nuclear weapons. In order to create a weapons programme, states must seek sensitive equipment, materials and knowledge, the transfer of which is highly regulated by the international community. In some cases, another country may make these transfers in order to deliberately aid the recipient in their pursuit of nuclear weapons. Proliferation in both Pakistan and Israel occurred as a result of such transfers, from China and France respectively.[21] More commonly, however, states may exploit the dual-use nature of nuclear technology by seeking ostensibly civilian nuclear assistance while diverting these resources for military uses. Limitations regarding access to such technology are enshrined in the Nuclear Non-Proliferation Treaty (NPT), under which 'supplier states' are responsible for providing such transfers and ensuring that

resources are not used for weapons programmes.[22]

This assistance is 'critical' for an aspiring proliferator, according to Matthew Kroenig.[23] Indeed, since 1955 no state has even attempted to acquire nuclear weapons 'without first receiving civilian assistance'.[24] As Bluth observes, very few recipients of assistance have then gone on to pursue nuclear weapons.[25] Given that the focus in this article is the *ability* of a state to do so, however, the likelihood of receiving such transfers is an important consideration.

For a number of reasons authoritarian countries face greater difficulties in obtaining nuclear assistance from the international community. This argument is corroborated empirically by Matthew Fuhrmann, who shows that the recipients of nuclear assistance in the period 1945–2000 were overwhelmingly democratic states.[26] It is impossible to conclude that they received assistance *because* they were democracies. Nevertheless, causal mechanisms which make it *more likely* that democracies receive assistance *vis-à-vis* authoritarian countries are identifiable. Under the conditions of the NPT, in order to provide assistance, the supplier must be confident that the recipient does not intend to renege on their promise to forgo nuclear weapons. The fear that others states will break prior commitments is 'predominant' in the conduct of international relations, but in general, democratic states are considered less likely to do so.[27]

Indeed, international commitments made by democracies are afforded greater credibility for two reasons. First, democratic political culture is thought to embody respect for the rule of law which 'percolates into foreign policy', likely increasing respect of the country in question for international treaties.[28] Second, the existence of democratic political institutions means that political leaders must be mindful of public opinion when making foreign-policy decisions. Reneging on prior international commitments is likely to make political leaders appear untrustworthy to domestic audiences. Michael Tomz has conducted experimental research demonstrating that this 'audience cost' creates strong incentives for democratic leaders to honour international agreements.[29] Moreover, when treaties are representative of public opinion, breaking them would run counter to the logic of democratic accountability.[30] Given the obligation of suppliers of nuclear assistance to ensure that the recipients have no intention of reneging on their commitments under the NPT, this means that authoritarian regimes are less likely to receive assistance *vis-à-vis* democratic states.[31]

In addition, democratic states are far more likely to possess the capacity to provide nuclear assistance; indeed, most of the leading suppliers are democracies.[32] For two reasons, this means that authoritarian regimes will find it relatively difficult to acquire nuclear assistance – the first of which is that congruence in the security concerns of democracies makes it prudent for democratic states to strengthen each other's positions,[33] against which the existence of non-democratic states is often construed as a threat .[34] As such, democratic states are less likely to take action which may strengthen the position of non-democratic states, including through the provision of nuclear assistance.[35] Research by Shannon Blanton has confirmed this bias, suggesting that democracies are more likely than non-democracies to receive conventional arms transfers from the United States, for example.[36] This pattern existed even during the Cold War, when the likelihood of a strategic alliance with non-democratic states was, arguably, far greater.[37]

The second reason why authoritarian states will find it relatively difficult to acquire

assistance in developing a nuclear capability is that such assistance is 'routinely' used by states as a means to improve bilateral relations.[38] This was, for instance, a key motivation behind Canadian assistance to India, which was ultimately essential in facilitating that country's weapons programme.[39] States are more likely to pursue positive relations with those they consider to be a part of their 'international in-group' and domestic political structure is a key determinant of this group's membership.[40] Consequently, while democracies continue to dominate the means to supply nuclear assistance, non-democracies will face disadvantages in obtaining it. A note of caution is needed, however: just as democracies are likely to support each other, non-democracies have an incentive to strengthen other non-democratic states. Indeed, studies have found that this tendency is even stronger in pairs of non-democracies than in pairs of democracies.[41] Therefore, the difficulty in obtaining assistance is likely to diminish as more authoritarian states develop nuclear capacities, as is arguably indicated by North Korea's co-operation with Iranian scientists.[42] For the time being, however, non-democracies face greater difficulty obtaining the building blocks of a nuclear-weapons programme due to their status in the international community.

Nor is it only the nature of inter-state relations that damages the prospects for proliferation in authoritarian countries. The desire of these regimes to isolate domestic constituencies from transnational networks is an important factor in explaining the ineffectiveness of their nuclear-weapons programmes. International networks can be dangerous for authoritarian regimes. Exposure to them can spread democratic ideals, creates channels by which abuses are more readily communicated to external actors and provides avenues through which opposition groups can find support.[43] Moreover, they lead to a 'blurring [of] the distinction between the international and the domestic', which weakens the capacity of the state to control their societies.[44] The logic of isolationism has been most dramatically borne out in North Korea, where the ability of the regime to limit interactions between its citizens and the outside world has been instrumental in ensuring regime stability.[45] It is further illustrated by the widespread nature of Internet censorship in authoritarian countries, in which access is reserved for elites and unconstrained access for individuals is rare.[46]

This isolationism has important implications for the capability of these states to build nuclear weapons. Access to transnational scientific networks is indispensable for the effectiveness of research; as Yuri Ovchinnikov, vice president of the Soviet Academy of Sciences, argued in the 1970s, 'contemporary science cannot be successfully developed if it is *locked in the boundaries of one country*'.[47] Allowing scientists to participate in transnational networks provides access to the knowledge and skills needed to build nuclear weapons. Participation in academic exchanges is especially important in this regard; the training of young scientists in Europe and North America was critical to the success of programmes in South Africa, India and Pakistan, for example.[48] If young Pakistani scientists had not been able to participate in academic exchanges, then Islamabad would 'not have known what to do with the technology and materials it acquired from abroad' and it 'could not have obtained the requisite expertise solely through indigenous means'.[49] Indeed, this is exactly the problem that plagued Libyan attempts to develop nuclear weapons.[50] In most authoritarian countries state intervention seeks to control 'incoming and outgoing … human resources, knowledge, ideas, research and equipment'.[51] This interventionism leads to restrictions on a broad array of behaviours which 'deprive' scientists of the means to carry out projects effectively, including nuclear-weapons programmes.[52] Moreover, by denying access to these networks, authoritarian regimes 'blunt the *motivating* force of broad professional recognition'.[53] Scientists' motivation is thought to be a key determinant of the

efficacy of nuclear programmes.[54] Contrastingly, in democratic countries scientific communities are characterised by an almost unparalleled degree of global interconnectedness and transnational exchange. This 'strengthens the scientific community'.[55] By isolating scientists from international networks, authoritarian countries restrict the ability of scientists to construct the weapons which their leaders may seek. The future importance of this effect will be contingent on the continuing ability of authoritarian regimes to isolate themselves, as the spread of the Internet increases both the incentives to do so and the challenges involved.[56]

Furthermore, the performance of the bureaucracy and the scientific community– and the relationship between the two – is central to determining the success of nuclear-weapons programmes.[57] For the scientific community, performance is dependent on both a high degree of autonomy and a 'spirit' of co-operation with the state.[58] Differing political structures give rise to an array of 'deliberate and unintended mechanisms of social control' which alter the relationship between the state and its scientists.[59] In authoritarian countries this relationship 'undermine[s] the performance of… nuclear scientists, engineers and technicians'.[60] State-science relations are autocratic and scientists have little influence over 'the formulation, distribution or choice of methods appropriate to the tasks undertaken'.[61] Such a relationship undermines co-operation by creating tension between the state and scientists and confrontation can become 'ritual'.[62] Brazil, for example, is believed to have pursued nuclear weapons from the early 1950s until the 1990s, whilst the country was under the control of a military dictatorship.[63] Here, the relationship between states and scientists deteriorated to the extent that open hostility existed between them.[64] Indeed, during this time, 'political accountability replaced any vestige of scientific autonomy'.[65] It is unsurprising, therefore, that its leadership expressed 'frustration' with the lack of progress in its nuclear programme.[66] There is also danger inherent to policies that may help to repair the relationship between scientists and ruling elites by focusing on a common enemy, stoking nationalist sentiments and renewing commitment to the cause.[67] As Argentina was increasingly identified as a major threat to Brazil's national security, progress in the Brazilian nuclear programme accelerated.[68] Thankfully, the democratisation of both countries during the 1980s contributed to a reduction in the perception of threat, which led in turn to the curtailment of nuclear ambitions.[69] However, it is notable that in a deteriorating security environment, democratic Brazil is today believed to be interested once again in a nuclear arsenal.[70]

Perhaps the most obvious challenge to the idea that authoritarian states are uniquely ineffective at producing nuclear weapons is the Soviet Union, which became the second country to obtain them and went on to create the largest known nuclear explosion. Interestingly, however, Soviet scientists enjoyed a 'privileged relationship with the state' and 'possessed unique sources of autonomy' compared to others in Soviet society.[71] Scientists were responsible for electing their own leadership and were given flexibility in responding to state directives.[72] This was particularly true for physicists, many of whom worked in nuclear science. Indeed, the physics community was singled out as an area in which the Communist party was 'exerting insufficient influence on the deployment of personnel … [and] the conduct of research'.[73] Tellingly, efforts to increase the influence of the state in 1971 led to 'conflict, duplication and confusion' in scientific projects.[74] These characteristics are common consequences of the relationship between authoritarian governments and scientists,[75] often proving devastating to the state's ability to produce nuclear weapons.

Both the scientific community and bureaucracy in authoritarian states are likely to be highly politicised, undermining their effective operation. Among scientists, the additional burden of undertaking political activities detracts from the resources available for scientific projects.[76] Furthermore, it often results in the promotion of less competent scientists to leadership positions and the underachievement of more able scientists, as ability ceases to be the main criterion for progression.[77] The use of political criteria to determine appointments is not unusual in authoritarian states. Indeed, clientelism provides illegitimate regimes with a means of rewarding supporters and suborning potential opponents.[78] The practice leads to inefficiency and ineptitude, posing an almost insurmountable challenge to the objective of creating efficient and effective weapons programmes, due to their inherent requirement for highly skilled specialists.[79] Iraq is a good example in this regard; in the 1980s, Hussein Kamel Al-Majid, the half-brother of the country's dictator Saddam Hussein, was given control of Iraq's nuclear-weapons programme. His leadership 'ravaged' its progress, as a lack of technical knowledge led him to impose unrealistic deadlines which demotivated scientists.[80] His management style also undermined co-operation, leading to mistrust between scientists working on the same project and to the duplication of work.[81]

It is unrealistic, however, to suggest that all authoritarian states are similar in this regard. In particular, development-focused regimes are characterised by an 'unusual degree of bureaucratic autonomy' and normally retain meritocratic recruitment practices.[82] South Korea was ruled by military dictatorship for over thirty years until its transition to democracy in the early 1990s. Despite exercising extensive control over the country, the regime emphasised the importance of maintaining meritocratic recruitment practices and took measures to ensure that recruitment and progression in the public sector were dependent on performance.[83] The country's nuclear programme was also relatively successful. In 1975, the US Embassy in Seoul warned the State Department that it had underestimated South Korea's ability to produce nuclear weapons and it could feasibly possess an arsenal within a decade.[84] Indeed, it appears the country had overcome many of the technical hurdles to producing nuclear weapons by the late 1970s, including the production of substantial quantities of fissile material.[85] Although the South Korean regime abandoned its nuclear programme following intense opposition from the US, today, it remains one of the states most capable of producing nuclear weapons within a short timeframe.[86] Similarly, despite oscillating between outright military rule and quasi-democratic government during the period of its nuclear development, Pakistan maintained a meritocratic structure within its bureaucracy and, has proven to be one of the only states to successfully build nuclear weapons whilst under authoritarian rule.[87] In general, however, the pursuit of regime survival in the absence of democratic legitimacy means that authoritarian regimes are more likely to rely on patronage and clientelism to maintain political stability, undermining the degree to which recruitment and promotion to public positions is a meritocratic process.[88] The degree to which they do so appears to be a good indicator of their ability to produce nuclear weapons.

Thus, a number of factors make it likely that nuclear-weapons programmes in authoritarian countries will be ineffective. Such states are less likely to elicit co-operation from democratic states which, by and large, are those with the capacity and expertise needed to create a nuclear arsenal. Furthermore, the tendency of authoritarian states to isolate and control scientists undermines the ability of this community to carry out its work effectively. Finally, the politicisation of appointments in the bureaucratic and scientific communities leads to mismanagement and incompetence. These factors do not

make it impossible for authoritarian countries to produce nuclear weapons; they do, however, make it considerably slower and more difficult. While North Korea has demonstrated that such challenges can be overcome, doing so takes time, and understanding this should provide policy-makers with broader time horizons in which to consider their decisions.

Moreover, highlighting the obstacles authoritarian regimes face in developing successful nuclear programmes draws attention to points of weakness which policy-makers can leverage to limit the chance of proliferation. This ought also to prompt a reprioritisation of proliferation concerns. While at the time of writing few democracies are known to be pursuing the acquisition of nuclear weapons, this situation is unlikely to continue in perpetuity. From Eastern Europe to East Asia, democratic states face deteriorating security situations and growing unease about the reliability of security guarantees from their allies – usually embodied by the US. Given their relative capacity to quickly and effectively proliferate, greater attention should be afforded to the risks posed by these states and to the steps required to reduce the uncertainty and insecurity which create the incentive for them to seek nuclear weapons. Thankfully, as with any examination of nuclear proliferation, the conclusions drawn here are limited by the relatively few cases of states which have sought nuclear weapons. Nevertheless, failing to address this issue is 'potentially catastrophic' and consequently, efforts to further the understanding of this important issue remain critically important.[89]

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Notes

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[14] For an excellent debate on the risks and merits of nuclear proliferation in different states see Sagan and Waltz (eds), *The Spread of Nuclear Weapons*. For an up-to-date and forward-looking evaluation of the incentives to proliferate, consider Campbell, Einhorn and Reiss, *The Nuclear Tipping Point*.
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[19] US Department of Defense, 'News Transcript: Commander, U.S. Forces Korea, General Curtis Scaparrotti and Rear Admiral John Kirby, Press Secretary', Washington DC, <http://www.defense.gov/Transcripts/Transcript.aspx?Transcriptid=5525>, accessed 3 February 2015.
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[21] Matthew Kroenig, *Exporting the Bomb: Technology Transfer and the Spread of Nuclear Weapons* (New York, NY: Cornell University Press, 2010), p. 67.
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[38] Fuhrmann, 'Taking a Walk on the Supply Side', p. 188.
[39] Fuhrmann, 'Spreading Temptation', p. 18.
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[47] Quoted in Peter Kneen, *Soviet Scientists and the State: An Examination of the Social and Political Aspects of Science in the USSR* (New York, NY: State University of New York Press, 1985), p. 100. Emphasis added.
[48] Fuhrmann, 'Spreading Temptation', pp. 16–22.
[49] *Ibid.*, p. 22.
[50] Hymans, 'Botching the Bomb', p. 51.
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[52] Kneen, *Soviet Scientists and the State*, p. 7.
[53] Solingen, 'Between Markets and the State', p. 43.
[54] Hymans, 'Botching the Bomb', p. 53.

[55] Solingen, 'Between Markets and the State', p. 40.
[56] Kalathil and Boas, *Open Networks, Closed Regimes.*
[57] Hymans, 'Botching the Bomb'.
[58] *Ibid*., p. 47.
[59] Solingen, 'Between Markets and the State', p. 35.
[60] Hymans, 'Botching the Bomb', p. 45.
[61] Kneen, *Soviet Scientists and the State*, p. 59.
[62] Solingen, 'Between Markets and the State', p. 43.
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