

IRAN'S NUCLEAR PROPENSITY: THE PROBABILITY OF NUCLEAR USE

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I. INTRODUCTION

Many experts would agree that Iran's nuclear programme appears more like a means than an end for the Iranian leadership in its quest for regional ascendancy and regime survival. While Iran would probably be more interested in having a nuclear option than a nuclear arsenal, it may well end up with assembled nuclear weapons sometime in the near future. Whether this happens by default, and not design, will not change the end result and its consequences.

All the actors involved, including Iran, would benefit if diplomatic negotiations on Iran's nuclear programme were successful (and the latest, positive developments are indeed most welcome). If not, it is quite possible that either Israel or the United States will try to neutralize the Iranian nuclear programme through the use of military force. However, if neither of the above happens and Iran somehow manages to acquire a nuclear capability, it would be extremely useful to try to understand the possible consequences for regional security and especially the probability of the use of nuclear weapons by Iran.

The crux of the horizontal nuclear proliferation problem has always been whether such proliferation might increase the probability of the use of nuclear weapons, although other consequences, such as the destabilization of specific regions through costly and risk-prone arms races, should not, of course, be underestimated.¹ Considerable disagreement has occurred between analysts on this issue for more than

SUMMARY

If Iran somehow manages to acquire a nuclear capability, it would be extremely useful to try to understand the possible consequences for regional security and especially the probability of the use of nuclear weapons by Iran. This paper identifies and assesses six risks arising from assumed nuclear proliferation. In addition, a number of research questions are identified, issues of critical importance regarding Iran's nuclear propensity that need to be further examined and analysed by government agencies and research institutes as additional information is urgently required regarding the country's strategic culture.

Summarizing the speculative analysis presented, if nuclear weapons were to be used in the Middle East, this would most likely result from a miscalculation, an accidental detonation or launch of a nuclear device, or an act of desperation. However small the risk of each individual scenario may be, the cumulative risk of all the possible dangers arising from assumed nuclear proliferation should also be considered. Although Iran's nuclearization would not, at least initially, cause a substantial increase in the probability of nuclear use in the region, it would nevertheless remain an unwelcome development as it would probably intensify regional instability, multiply the number of nuclear decision-making centres and further complicate strategic calculations.

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¹ Krause, J., 'Proliferation des armes de destruction massive: risques pour l'Europe' [Proliferation of weapons of mass destruction: risks for Europe], *L'Europe et le Defi de la Proliferation*, Chaillot Papers no. 24 (European Union Institute for Security Studies: Paris, May 1996), p. 16.

four decades.² The proposed responses range from extremely optimistic—that nuclear proliferation will result in greater regional and even global stability—to extremely pessimistic—that such proliferation will bring the world closer to the brink of nuclear annihilation.

Kenneth Waltz, one of the icons of international relations theory, published a short essay suggesting that ‘A nuclear-armed Iran would . . . most likely restore stability to the Middle East’. The Waltz school of thought has argued that ‘Nations that have nuclear weapons have strong incentives to use them responsibly. Because they do, the measured spread of nuclear weapons is more to be welcomed than feared.’³ In response, British scholar Hedley Bull commented that, taken to its logical extreme, this argument implies the best way to keep death off the roads is to put a small amount of nitroglycerine on every car bumper. Everybody would drive infinitely more carefully, but accidents would occur—people being human and cars breaking down—and the results would be far nastier. Waltz replied that ‘If Iran goes nuclear, Israel and Iran will deter each other, as nuclear powers always have. There has never been a full scale war between two nuclear armed states’.⁴ However, this conclusion seems to ignore the Cuban missile crisis, when the Soviet Union and the United States apparently came close to a nuclear confrontation.⁵

At the heart of the views of the Waltz school is a simple extrapolation from the non-use of nuclear weapons in the Soviet–US context to the future non-use of those weapons in other regions. This analogy overlooks the unique combination of circumstances that has helped to ensure nuclear peace over the past decades. The non-use of nuclear weapons has rested on particular geopolitical and technical factors: cautious

leadership (despite the harsh rhetoric of both sides); the fact that neither national survival nor territorial integrity was immediately at stake and that neither power had ever been at war with the other; the lack of common borders, thereby lessening flashpoints for conflict and impeding escalation; and adequate technical means to prevent accidental detonation and the unauthorized use of nuclear weapons. Without these features, mere fear of nuclear destruction, although itself important, might not have sufficed to deter the use of nuclear weapons.

This author’s view is that, although a number of general principles apply, each potential nuclear weapon state (NWS) presents a distinct case and generalizing about potential nuclear proliferators without considering their particularities might be risky and misleading. The specific characteristics of each region and country, together with a large number of continuously changing variables, make any attempt to derive a norm extremely difficult and largely inaccurate. At least six major variables have been identified in the specialized literature: (a) the scope and extent of proliferation; (b) the quality or sufficiency of forces; (c) the nature and intensity of the regional rivalries; (d) the seriousness and awareness of decision makers; (e) the local criteria of unacceptable damage; and (f) the evolution of the international system. Indeed, it has been argued that the ‘proliferation of weapons of mass destruction, though morally disturbing (for developing and developed countries alike), has no definite or foreordained linear effects, but rather contains within it both stabilizing and destabilizing elements’. The present author largely agrees with the argument that it is the way in which these weapons are used and the political and military strategy they serve that defines the nature of the consequences of proliferation.⁶

Looking at the case of Iran, the key question is the impact of its acquisition of a nuclear weapon capability on international and regional security. At the global level, there should be little doubt that further proliferation would make the strategic chessboard more complex, while at the same time multiplying risks and complicating strategic decision making. Concern is growing that the open nuclearization of Iran could, in combination with other negative developments, deal a

² According to Wallace Thies, ‘despite years of research and a rousing scholarly controversy, a consensus on the question of whether proliferation increases the risk of war between new nuclear powers remains elusive. Disagreements between proliferation optimists and pessimists have proven so intractable that representatives of both schools have recently suggested that “it is time to advance beyond the ultimately irreconcilable ‘optimism vs. pessimism’ debate and into a series of inquiries explaining . . . the actual behaviour of states that develop nuclear weapons”’. Thies, W., ‘Proliferation and critical risk’, *Journal of Strategic Studies*, vol. 23, no. 4 (Dec. 2000), p. 51.

³ Waltz, K., *The Spread of Nuclear Weapons: More May Be Better*, Adelphi Papers no. 171 (International Institute for Strategic Studies: London, 1981).

⁴ Waltz, K. N., ‘Why Iran should get the bomb’, *Foreign Affairs*, vol. 91, no. 4 (2012), pp. 2–4.

⁵ Dokos, T., ‘Why Kenneth Waltz is both right and wrong’, *ELIAMEP Thesis*, Sep. 2012, p. 2.

⁶ King, J. K. (ed.), *International Political Effects of the Spread of Nuclear Weapons* (University Press of the Pacific: Honolulu, HI, 2002), pp. 47–48.

serious—even deadly, some analysts would argue—blow to the 1968 Non-Proliferation Treaty (NPT) regime.⁷ The probability of a nuclear ‘domino effect’ has often been emphasized, whereby the presence of nuclear weapons in Iran may well motivate other countries in the region, such as Egypt, Saudi Arabia, or even Turkey (arguably a more remote possibility), to try to develop their own nuclear weapon capability. Mark Fitzpatrick has argued that although not inevitable or automatic, Iran’s nuclear arming would significantly increase the prospects of a nuclear arms race in the region.⁸ Christoph Bertram has pointed out, however, that ‘anyone seeing in an Iranian bomb a key factor which might prompt Saudi Arabia, Egypt or other countries to obtain one as well needs to explain why for 40 years the Israeli bomb has not had that effect’.⁹ Waltz has agreed that ‘If an atomic Israel did not trigger an arms race then, there is no reason a nuclear Iran should now’ (a rather controversial statement in view of his conviction that the real cause of the Middle Eastern crisis has been the Israeli nuclear monopoly).¹⁰

Although it is possible that key states in the region could learn to live with this outcome, especially if the Israeli posture of ‘nuclear weapons in the basement’ were to be adopted by Iran, and if the circumstances allow for a degree of ‘nuclear socialization’, the concern has been expressed that a nuclear Iran could serve as a ‘tipping point’ for some states in other regions in their thinking about acquiring a nuclear capability. Some experts even predict that a cascade of weapons of mass destruction (WMD) proliferation, especially regarding nuclear weapons, could lead to a strong incentive for prominent non-nuclear countries, such as Germany and Japan, to ‘go nuclear’. It is possible to speculate whether Iran’s nuclearization would be the ‘straw that broke the camel’s back’.

At the regional level, experts differ over the seriousness of the Iranian threat for the Middle East and even beyond. According to a rather alarmist view expressed by Therese Delpech, and shared by several Arab, European, Israeli and US analysts and officials, Iran’s acquisition of nuclear weapons and long-range missile delivery systems is likely to strengthen the more

radical elements in Iran and to affect its behaviour in the region. Shahram Chubin expects drastic changes should Iran acquire nuclear weapon status: such a development would tilt the regional balance away from the Sunni Arab states, challenge and complicate US hegemony, and sow doubts as to the advisability of over-reliance on the USA in the region.¹¹ Bertram has asserted that Iran’s nuclearization would ‘introduce a further element of insecurity and uncertainty into a part of the world where stability is already fragile, the potential for conflict high and which sits on a wealth of fossil energy sources that make it a theatre of strategic rivalry’.¹²

The history of the nuclear age clearly supports the view that nuclear weapons can serve as an effective deterrent against nuclear or conventional security challenges, but their usefulness as tools of intimidation or coercion has been rather limited. It is possible, however, that being able to quickly produce a nuclear weapon may not only increase Iran’s self-confidence, but also its propensity for brinkmanship and risk taking. Chubin has made an interesting point along those lines, arguing that

while Iran may not be deliberately confrontational, it tends to pursue strategies and tactics that are apt to make miscalculation and confrontation more likely. Some of these are cultural and some regime-specific. The result is a mixed record of pragmatism and opportunism, often associated with different factions within the regime. In a nuclear environment this dualism will be more dangerous. Establishing stable deterrence will therefore be difficult to achieve . . . ‘freelance’ initiatives within the government are not uncommon and may further increase the unpredictability of the regime.¹³

The critical question is, as Ephraim Kam put it, whether Iran’s obtaining a nuclear capacity creates an intolerable threat for Israel, Iran’s neighbours and the West, or instead presents a security problem that can be accommodated. Is it conceivable that under certain circumstances Iran’s leaders might decide to threaten to or even use nuclear weapons?

⁷ Treaty on the Non-Proliferation of Nuclear Weapons, opened for signature 1 July 1968, entered into force 5 Mar. 1970.

⁸ Fitzpatrick, M., ‘Assessing Iran’s nuclear programme’, *Survival*, vol. 48, no. 3 (autumn 2006), p. 21.

⁹ Bertram, C., *Rethinking Iran: From Confrontation to Cooperation*, Chaillot Papers no. 110 (European Union Institute for Security Studies: Paris, Aug. 2008), p. 22.

¹⁰ Waltz (note 4), p. 4.

¹¹ Chubin, S., *Iran’s Nuclear Ambitions* (Carnegie Endowment for International Peace: Washington, DC, 2006), p. 128.

¹² Bertram (note 9), p. 22.

¹³ Chubin (note 11), pp. 9–10.

This paper assesses Iran's 'nuclear propensity', in other words, the possible impact of Iran's nuclearization on the probability of nuclear use against Israel or any other adversary. In this context, it examines six risks arising from assumed nuclear proliferation: (a) the accidental use of nuclear weapons; (b) the probability of miscalculation during a crisis; (c) the rationality of the leadership; (d) the calculated use of nuclear weapons; (e) the threat of nuclear terrorism; and (f) the threat of unidentified nuclear strikes. Not all these risks are equally plausible and, therefore, they are not examined at the same length or level of detail.¹⁴

II. THE ACCIDENTAL USE OF NUCLEAR WEAPONS

One of the major concerns presented by horizontal nuclear proliferation is the accidental use of nuclear weapons. Accidental war can be defined as war that results from a malfunction of a weapon system or from human error, not including errors in judgement. Russian and US (and most likely other 'established' or 'old') nuclear forces are safeguarded from accidental firing of a weapon by a considerable array of features built into both the chain of command and the weapons themselves.¹⁵ It is not certain that a potential NWS would be able to deploy these costly and complex safety mechanisms.¹⁶ Moreover, such a state might find it

¹⁴ For a detailed assessment see Dokos, T., *Countering the Proliferation of Weapons of Mass Destruction: NATO and EU Options in the Mediterranean and the Middle East* (Routledge: London, 2008), pp. 27–58.

¹⁵ For the USA these features include the 'two-man' concept whereby no single individual has the capability to fire nuclear weapons; a control system by which each individual with nuclear weapon responsibility is certified under the Human Reliability Program; the use of secure, split-handed codes (i.e. whereby no single person has access to the full code); the employment of coded locking devices that prevent firing in the absence of specific signals from higher command (permissive action link, PAL); the sealed authenticator system (SAS); the emergency destruction devices and procedures; the use of environmental sensing devices that prevent firing in the absence of specific signals from higher command; and the use of environmental firing devices that prevent unwanted detonation through the operation of switches that do not respond to acceleration, declaration, altitude, spin, gravity and thermal forces.

¹⁶ Frei, D., *Risks of Unintentional Nuclear War* (United Nations Institute for Disarmament Research (UNIDIR): Geneva, 1982), pp. 161–62. According to the International Institute for Strategic Studies (IISS), Pakistan has yet to develop command and control, support, operational security, situational awareness and force protection infrastructure for tactical nuclear weapons, although it has most of these systems for its main nuclear forces. International Institute for Strategic Studies (IISS), *Strategic Survey 2013: The Annual Review of World Affairs* (Routledge: Abingdon, 2013), p. 39.

necessary to dispense with certain safeguards in the interest of preventing pre-emption (see the discussion in section III below). The prospect of a nuclear accident would, therefore, be relatively higher in a 'proliferated' world.

The lack of common borders between Iran and Israel, and the probable non-deployment of Iranian nuclear weapons outside Iran's territory would significantly reduce the probability of Israel misinterpreting an accidental detonation of an Iranian nuclear weapon as an Iranian attack. The question needs to be asked whether such an accidental detonation could be interpreted by Iran itself as a nuclear attack or as an act of sabotage by Israel or the USA that, thus, might lead to nuclear 'retaliation' by the Iranian leadership (see the following discussion).

Such a chain of events could be avoided if, first, strategic stability were to be assured and, second, no launch-on-warning (LOW) or pre-delegation policies were to be adopted. Strategic stability can be defined as the existence of invulnerable strategic forces such that, if attacked with nuclear weapons, neither side could destroy the other's ability to retaliate with a devastating blow. Thus, strategic stability is closely connected with the survivability of forces designated for retaliation. Every potential NWS would lack secure second-strike forces for many years. The first condition for avoiding an accidental war is therefore unlikely to be met.

Regarding the second condition (no LOW or pre-delegation), in order to acquire a quick reaction nuclear force that could be fielded as soon as possible, a new nuclear power would have a powerful incentive to turn to automatic or nearly automatic systems of nuclear retaliation, which are not 'encumbered' by complex and costly command and control checks. Some new nuclear weapon states might have a greater number of national decision makers who would be properly authorized to use nuclear weapons because, first, the country's early-warning networks would unlikely be totally reliable, and, second, the lines of communication and command would make it difficult to ensure that retaliation orders would reach field commanders following a first-strike attack. Hence, a new NWS might be apt to pre-delegate launch authority to selected field commanders. Such LOW strategies would increase the probability of all forms of unauthorized nuclear use, especially if that NWS were to possess battlefield nuclear weapons. The most destabilizing aspect of the latter scenario is the

likelihood of early launch delegation and the 'use them or lose them' conundrum.¹⁷

In contrast, the chief of state of a politically unstable new NWS might not have great confidence in his subordinates and view them as 'irresponsible' or even capable of finding ways to turn the weapons against him. However, if only the chief of state were authorized to launch nuclear weapons, the state could be subject to nuclear decapitation. One bomb (or one 'silver bullet') directed not at the state's nuclear forces, but at the leader, would suffice. Given the leader's dilemma, the control of retaliation, so necessary for stable and credible deterrence, would not be assured.¹⁸

It is difficult to predict which of these two command postures would be more probable.¹⁹ Some potential new nuclear weapon states might be affected by such a dilemma (North Korea and Pakistan), while others might have less difficulty in delegating launch authority (India). It is not clear in which category Iran would fall. However, the conditions under which an accidental use of nuclear weapons could be interpreted as a nuclear attack do exist, at least in theory. In such a scenario, pressure to escalate in a last-ditch attempt to destroy the remaining nuclear weapons of the opponent before they, too, are fired would become intense. Similarly, a technical malfunction of a radar warning system or a human error in interpreting an ambiguous warning might trigger a nuclear reaction. Admittedly, the probability would be extremely low, but not zero.²⁰

¹⁷ Grants of release authority could lead to a number of weapons in the hands of field commanders. Nuclear artillery batteries or other battlefield nuclear weapons that would be under attack and in danger of being overrun could launch their weapons, perhaps in the erroneous belief that a nuclear war had already begun. One weapon fired in this manner might be enough to start a full-scale nuclear war, because of the obvious difficulty of controlling a nuclear war under combat circumstances. A field commander might not be able to communicate with his headquarters, and, therefore, would have to decide himself whether to use nuclear weapons. If one did, most—if not all—might follow.

¹⁸ Russett, B., 'Away from nuclear mythology', eds D. Brito, M. D. Intriligator and A. E. Wick, *Strategies for Managing Nuclear Proliferation: Economic and Political Issues* (Lexington Books: Lexington, MA, 1983), p. 152.

¹⁹ Information remains highly limited concerning the procedures and processes for the command and control of nuclear, biological and chemical (NBC) weapons. The information that does exist, however, suggests a strong preference for assertive, centralized command and control in most new NBC powers. Dunn, L. A., Lavoy, P. R. and Sagan, S. D., 'Conclusions: planning the unthinkable', eds P. Lavoy, S. Sagan and J. Wirtz, *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological and Chemical Weapons* (Cornell University Press: Ithaca, NY, 2000), p. 242.

²⁰ Bracken, P., *The Command and Control of Nuclear Weapons* (Yale University Press: New Haven, CT, 1983), p. 122.

Unauthorized first-strike use of nuclear weapons by the military is also a possibility, however small. For example, faced with imminent conventional military defeat and believing there was little left to lose, a few members of Pakistan's military establishment might attempt to launch a nuclear strike against India to damage that country as much as possible. These officers' emotional commitment to a self-ordained higher mission would overwhelm any fear of adverse personal or national consequences.²¹ Aside from the initial destruction, such unauthorized use could provoke a full-scale nuclear conflict between hostile countries.²² Both the regular and irregular (Islamic Revolutionary Guards Corps, IRGC, also called the Pasdaran) armed forces of Iran are under the command of the Supreme Leader. There should be relatively limited concern about the reliability of the regular armed forces. It is not clear, however, and is certainly an issue that needs to be further studied by experts and interested parties, whether the control of the Iranian 'central' leadership over the IRGC is as firm. Other circles of power may control small factions among the irregular security forces. Should they exist, during a nuclear crisis such factions could, in principle, act without the explicit orders of the Supreme Leader and the legitimate government.

It has been suggested that there may be merit in the established nuclear powers sharing their technology to control nuclear weapons with the new nuclear weapon states. Such policies, which have the effect of lowering the probability of accidental war and could significantly offset the potentially destabilizing effects of nuclear proliferation but might be perceived by a potential NWS as a sign of acceptance, or at least tolerance, of nuclear proliferation and may constitute a violation of the NPT.²³ Such an approach should only be considered

²¹ According to the International Institute for Strategic Studies, Pakistan's prospective introduction of tactical nuclear weapons increases the chance that a nuclear exchange will occur if a conflict breaks out, perhaps sparked by an act of terrorism. Pakistan seeks to deter a conventional attack by lowering the threshold for the use of nuclear weapons and by developing short-range rockets that could carry nuclear warheads. It is also argued that the 'dangers posed by misunderstanding and a lack of communication are exacerbated by the ambiguity of Pakistan's and India's dual-use systems, which make it very difficult to discriminate between incoming nuclear and conventional attacks'. IISS (note 16), pp. 35, 37.

²² Posen, B. R., 'Nuclear instability in South Asia', eds K. N. Waltz and R. J. Art, *The Use of Force: Military Power and International Politics* (Rowman & Littlefield: New York, 2003), p. 603.

²³ Intriligator, D. L. and Brito, M. D., 'Nuclear proliferation and the probability of war: a cardinality theorem', *Journal of Conflict Resolution*, vol. 40, no. 1 (Mar. 1996), pp. 11–12.

if, and only if, a state actually acquires nuclear weapons and it should then be implemented in a covert fashion.

III. THE PROBABILITY OF MISCALCULATION DURING A CRISIS

In the event of further horizontal proliferation of nuclear weapons, the quality of crisis management may significantly affect the probability of their use. Even if it is assumed that the deliberate use of nuclear weapons is unlikely, mainly because of mutual assured destruction (MAD), the probability exists that during a crisis, when all restrictions and safeguards are progressively lifted, nuclear weapons might be used as a result of miscalculation. The validity of this argument is examined below on the basis of the history of the superpowers' crisis management during the cold war.

A [nuclear] crisis may be defined as a threshold situation in which governments at peace suddenly begin thinking about a transition into war, either because they see opportunities to launch an attack, or because they fear being attacked. The single most important characteristic of a crisis is the limited time for response to the perceived external threat.²⁴ One definition of crisis management is the ability of one of the parties to deter its adversary from escalation and to produce a crisis de-escalation outcome in accord with its interests, through the use of credible escalation threats. This does not mean, however, that a crisis ends only when the adversary capitulates or backs away. A crisis may also be resolved through a process in which both contestants exercise restraint and seek a face-saving path of mutual retreat or by a compromise that transforms the situation without being incompatible with the vital interests of either. In this context, the most important elements of crisis management are the processes of escalation and de-escalation.²⁵

Crisis escalation is a two-edged sword: it raises the risk of war in the hope of preventing it. By demonstrating willingness to wage war, leaders attempt to impress an adversary with their resolve and thereby encourage the adversary's leaders to moderate their behaviour. However, escalation often makes a crisis more difficult to resolve because it increases for both sides the political costs of backing down. Miscalculated escalation refers to steps up the

political-military escalation ladder in a crisis—steps taken to moderate adversarial behaviour that instead provoke further escalation by the adversary. It can thus lead to war by loss of control.

Richard Lebow and Paul Bracken have maintained that during most of the cold war there was a remarkable degree of ignorance in the USA about war plans and crisis management. One effect of this ignorance was that many top officials give evidence that they conceived of crisis management in terms of their stereotyped understanding of the 'Cuban missile crisis'. Other have shown that they saw crisis management as controllable and reversible steps up a ladder of escalation, steps taken to moderate an adversary's behaviour by demonstrating resolve. Worse yet, some believe that demonstration of resolve requires readiness to threaten the use of nuclear weapons, and even to deliver on the threat 'if necessary'.²⁶

One more concept needs to be defined. For the purpose of this paper, an unintentional war is defined as a war resulting from failure to foresee the consequences of military actions or accumulation of irreversible threats in the heat of crisis; a war initiated on the basis of the belief that war has already started or has become inevitable; or a war initiated independently of any explicit decision by the legitimate authorities.²⁷ For unintentional war to happen, two conditions are necessary: first, a general predisposition of the system of nuclear deterrence, which may have a lower or higher propensity for unintentional nuclear war; and second, an event triggering such a war at a specific moment (i.e. an acute international crisis).

The crucial factor affecting the propensity of a system to produce unintentional war is the urgency with which a decision must be made. This, in turn, depends on the vulnerability of both the nuclear forces and the communication and command systems. As noted above, the nuclear forces and the command and control systems of most potential new nuclear weapon states are likely to be vulnerable to a first-strike attack. The risk of unintentional nuclear war greatly increases as a function of the intensity and frequency of causes that may trigger the potential instability inherent in a strategic situation. There is reason to fear that, in times of mounting political crisis, vulnerable

²⁴ Quester, G., 'Some Pakistani problems and a nuclear non-solution', *Journal of Strategic Studies*, vol. 8, no. 4 (Dec. 1985), p. 103.

²⁵ Dougherty, J. and Pfaltzgraff, R., *Contending Theories of International Relations* (Harper & Row: New York, 1981), pp. 497–98.

²⁶ Lebow, R. N., *Nuclear Crisis Management: A Dangerous Illusion* (Cornell University Press: Ithaca, NY, 1987), pp. 163–64; see also Bracken (note 20).

²⁷ Frei, D., *Risks of Unintentional Nuclear War* (Rowman & Littlefield: New York, 1983), p. 4.

weapon systems might provoke their own first use—to avoid the risk of being destroyed. In addition, the degree of tension involved in all crisis situations tends to generate a variety of interaction processes that involve considerable risks of misinterpretation, misunderstanding and miscalculation and also of organizational failure sufficient to overthrow the potentially unstable strategic system.²⁸

Loss of control can take a variety of forms and can have diverse causes. Theoretically, it can result from fragmented political authority, domestic pressures that leaders are powerless to resist, or an institutional breakdown or malfunction. It can also be the inadvertent and unanticipated outcome of military preparations made to protect a country in a crisis, or to convey resolve to an adversary. It is the latter that seems most plausible. The risk, moreover, is likely to be made more acute by the kind of measures that would be taken in a war-threatening crisis to ensure retaliation and by the special characteristics of a new NWS (close proximity, inexperience, doctrines positing assured retaliation and the like). This would almost certainly not be the case for Israel. A serious problem is presented by the contradiction between the measures necessary to prevent an accidental or unauthorized firing of a nuclear weapon and those required to guarantee a country's ability to retaliate promptly after being attacked. The dilemma becomes particularly acute at high levels of alert, where it constitutes the single more serious cause of potential instability.²⁹

The time constraints associated with quick launch procedures require that the decision to retaliate be made nearly instantaneously on warning of attack. A LOW posture would, in the worst case, delegate the decision to go to war to a radar signal or other kind of warning—which might be correct, ambivalent or completely false. To dramatize the implications of pre-delegation, Bracken has invoked the metaphor of a revolver. A revolver has two control mechanisms: a safety catch and a trigger. As long as the safety catch is locked, the trigger cannot fire the gun. Once the catch is released, the trigger gains full control of the weapon. A nuclear arsenal can be compared to a revolver with one safety catch and many triggers. When negative control is in effect, the safety catch is engaged; none of the triggers can fire a nuclear weapon. The vulnerability of command centres to

attack, however, requires that arrangements be made to pre-delegate launch authority, either in advance of an attack or in response to indications that one has started. Presumably, the more acute the crisis and the perceptions of vulnerability, the further down the chain of command would launch authority be pre-delegated. If and when the system is shifted to positive control, any one of these triggers could fire the nuclear gun.³⁰

The following discussion addresses other risks related to nuclear crisis management, drawing on the US experience. Most US presidents (and there is no reason not to assume that this is a more general phenomenon) have not familiarized themselves with nuclear crisis management procedures. Successful crisis management requires knowledge that cannot readily be assimilated in the course of a confrontation. Leaders who have not previously involved themselves with the details and the procedures of crisis management are not likely to be sufficiently aware of the danger of loss of control that is associated with high alert levels. They are also more likely to become captives of pre-packaged military options that bear little relationship to their political needs at the time. Finally, they are likely to be affected adversely by the stress of the crisis.³¹

Another factor for bad decision making is what Irving Janis has called 'group think', a concurrence-seeking tendency among moderately or highly cohesive groups, and the deterioration of mental efficiency, reality testing and moral judgement that results from in-group pressures. Such possibilities are all the more dangerous because it is during crises that policy makers need to be at their most efficient.³² When this tendency dominates, the members use their collective cognitive resources to develop rationalizations in line with shared illusions about the invulnerability of their organization or nation and display other symptoms of concurrence-seeking ('group think' syndrome). In all group think-dominated groups, strong internal pressures towards uniformity exist that incline the members to avoid raising controversial issues, even in their own minds, or calling a halt to soft-headed thinking, even when they are keenly aware that the group is moving

³⁰ Bracken (note 20), p. 86.

³¹ Lebow (note 26), p. 142.

³² Baylis, J. et al., *Contemporary Strategy: Theories and Concepts* (Holmes & Meier: London, 1975), pp. 164–66; see also Janis, I. L., *Victims of Groupthink: A Psychological Study of Foreign-Policy Decisions and Fiascoes* (Cengage Learning: Boston, MA, 1982).

²⁸ Frei (note 27), p. 8.

²⁹ Lebow (note 26), p. 80.

toward an ill-conceived course of action.³³ The human factor, therefore, constitutes an important strategic vulnerability and is a possible cause of loss of control in crisis. Indeed, the human factor is the most significant strategic frontier remaining to be explored. Much more ought to be known about the limits and potentialities of people subjected to complex problems and acute stress.³⁴

The most frequently cited example of crisis management is the Cuban missile crisis. Had there been a different man at the helm in either the USA or the Soviet Union, had the choice of the air-strike option instead of the blockade been employed, had yet another act of insubordination by either military establishment taken place, a change in any of 100 conditions could have led to a different outcome. According to Graham Allison, Robert Kennedy and Theodore Sorensen believed that the USA came perilously close to the brink of a nuclear war as a U-2 reconnaissance aeroplane strayed into Soviet airspace, as US fighter aircraft attempted to rendezvous with the errant aeroplane, as the Soviets ships continued to steam towards Cuba, and as the US Air Force prepared to destroy the Soviet surface-to-air-missiles (SAMs) in Cuba. If any one of 6 of the 14 members of the Executive Committee of the National Security Council had been president instead of his brother, Robert Kennedy believed that bombers would have been sent on their way to destroy the Soviet missiles in Cuba.³⁵

Another way in which events may get out of hand is through impetuous actions or reactions. An escalatory move by one side, for example, might lead to an automatic reaction by the opponent. The possibility of this occurring is heightened by the problems that beset the decision-making process during crises, not least that policy makers have to act under considerable stress. The short time available for formulating a response, the element of surprise, and the high level of tension all contribute to this. So does the fatigue that is inevitable if the crisis continues for any length of time. It has been argued quite persuasively that although a moderate level of stress can be beneficial, at higher levels it disrupts decision-making processes. Although both the Soviet and the US governments strongly

wished to avoid (nuclear) hostilities, it is clear that their control of the crisis was far from satisfactory.

Fortunately, the 14 people involved in the US Executive Committee did not succumb to 'group-think'. The crucial fact is that, despite the immense stress placed on the two leaders and their advisers, the US President, John F. Kennedy, refrained from the act that could have triggered irreversible escalation (bombing the SAMs of the Soviet intermediate-range ballistic missiles) and helped the Soviet First Secretary, Nikita Khrushchev, retreat from the brink of confrontation by undertaking pledging to withdraw US missiles from Turkey. Thus, the idea of pre-emptive war was never seriously examined.

What conclusions can be drawn? It cannot be denied that loss of control during a crisis between two nuclear weapon states may lead to the use of military force and eventually escalate into nuclear war, that this risk is heightened by the removal of all peacetime safety procedures and mechanisms, and that the possibility of unauthorized acts by field commanders exists, but in the one clear-cut case on record, this did not happen. The probability of nuclear war by miscalculation, however, is higher if the nuclear weapon states do not have a sophisticated command, control, communications and computers (C⁴) capability, are contiguous, have a record of recent hostilities, and do not possess a secure second-strike capability. The moral and psychological constraints and the technical factors that would exist in such cases should not be underestimated, as well as the mitigating effects of confidence-building (or war-avoidance) measures, such as a hotline between, for example, New Delhi and Islamabad or Tel Aviv and Tehran.

IV. THE RATIONALITY OF THE LEADERSHIP

A key question is the extent to which nations in the Middle East, South and North East Asia would operate according to rational norms, as generally understood, with respect to the use or threatened use of nuclear weapons. Would the rules of cold war nuclear deterrence apply in the emotional circumstances of the Middle East conflict (or the Indo-Pakistani rivalry)? According to Dagobert Brito and Michael Intriligator, the reason for concern is simple: the larger the number of countries with nuclear weapons, the greater the likelihood that at least one of them may be governed by someone who is not adequately 'stable' or 'rational'. If countries possess nuclear weapons,

³³ White, R. K. (ed.), *Psychology and the Prevention of Nuclear War: A Book of Readings* (New York University Press: New York, 1986), p. 187.

³⁴ Lebow (note 26), p. 187.

³⁵ Allison, G., *Essence of Decision: Explaining the Cuban Missile Crisis* (Little Brown: Boston, MA, 1971), pp. 141, 185.

nuclear peace thus comes to depend on the emotional stability or rationality of the leaders of all of them, and it is threatened by the weakest link in the chain. As the chain gets longer, the threat in the category of psychological stability becomes greater.³⁶

Opinions on this question differ. At one extreme, some believe that the question can be reduced to whether heads of state have the ability to accurately assess the costs and benefits of the use of military force with care and accuracy. Others assert the possibility that individual leaders or elites could act on a basis that might appear irrational to those in the West while being quite comprehensible in terms of an individual political culture, or that they could be carried away by emotions of the moment to make what could be termed irrational choices about nuclear war.³⁷

A number of scholars studying non-Western cultures warn that assumptions should not be made that other people and other cultures have the same values and think in the same way as those in the West. For the purposes of this paper, however, the leaders of a potential NWS in the Middle East, South Asia and other parts of the world (with the possible exception of North Korea), are assumed to be rational and sensitive to the costs of the use of nuclear weapons.³⁸ As Martin van Creveld has argued, there seems to be no 'factual basis for the claims that regional leaders do not understand the nature and implications of nuclear weapons; or that their attitudes to those weapons are governed by some peculiar cultural biases which make them incapable of rational thought; or that they are more adventurous and less responsible in handling them than anybody else'.³⁹

³⁶ Intriligator and Brito (note 23), pp. 11–12.

³⁷ Jones, R. W. (ed.), *Small Nuclear Forces and U.S. Security and Policy: Threats and Potential Conflicts in the Middle East and South Asia* (Lexington Books: Lexington, MA, 1984), p. 67.

³⁸ Rotblat, J. and D'Ambrosio, U. (eds), *World Peace and the Developing Countries: Annals of Pugwash 1985* (MacMillan Press: London, 1986), pp. 37–38.

³⁹ Van Creveld has argued that an 'even more critical reason why regional leaders tend to be at least as careful in handling nuclear weapons as those of the superpowers is the fact that many of the countries in question are quite small, adjacent to each other, and not separated by any clear natural borders; often they share the same local weather systems and draw their water from the same river basin. Hence the question of how escalation, radiation and contamination may be avoided appears even more baffling in their case than in that of the U.S. and the former USSR, which used to be located on different hemispheres and which for decades prepared to fight each other on terrain belonging to third parties.' Van Creveld, M., *Nuclear Proliferation and the Future of Conflict* (Free Press: New York, 1993), pp. 122–23.

According to van Creveld, the international (i.e. Western) literature on proliferation appears to be distorted, ethnocentric and self-serving. It operates on the principle of *beati sunt possedentes* (blessed are those who are in possession); like the various international treaties and regimes to which it has given rise, its real objective is to perpetuate the oligopoly of the 'old' nuclear powers. To this end, regional powers and their leaders have been described as unstable, culturally biased and irresponsible. Weapons and technologies that used to be presented as stabilizing when they were in the hands of the great powers are suddenly described as destabilizing when they spread to other countries.⁴⁰

In the Iranian case study, the key question remains, of course, whether it is conceivable that under certain circumstances Iran's leaders might decide to threaten or even use nuclear weapons, or will deterrence be sufficient to ensure restraint in the case of Iran? Waltz, and many others, have argued that Iranian policy is made not by 'mad mullahs' but by perfectly sane ayatollahs who want to survive, just like any other leaders, and that 'Once Iran crosses the nuclear threshold, deterrence will apply even if the Iranian arsenal is relatively small.'⁴¹ Richard Haass's question on whether Iran is an imperial power or a revolutionary state is highly pertinent here. Two schools of thought have emerged on these issues. On the one hand, several long-time students of the Iranian strategic culture have cautiously suggested that Iran's strategic goals are limited to self-defence and regime survival. According to a Chatham House report, 'Iranian regional foreign policy, which is often portrayed as mischievous and destabilizing, is in fact remarkably pragmatic on the whole and generally aims to avoid major upheaval or confrontation.'⁴² According to Vali Nasr, the 'record of the past three decades shows that as objectionable and problematic as Iran's behavior has been, it is still driven by the cold calculations of regime survival and national interests'.⁴³ On the other hand, there are those who regard Iran as an inherently revolutionary state (even using the neo-conservative term 'Islamofascist

⁴⁰ Van Creveld (note 39), pp. 123–24. See also eds Lavoy, Sagan and Wirtz (note 19), pp. 5, 7, 10, 16.

⁴¹ Waltz (note 4), p. 3.

⁴² Lowe, R. and Spencer, C. (eds), *Iran, its Neighbours and the Regional Crises* (Chatham House: London, 2006), p. 24. See also Davis, L. E. et al., *Iran's Nuclear Future: Critical U.S. Policy Choices* (RAND Corporation: Santa Monica, CA, 2011).

⁴³ Griffiths, R. (ed.), *Can the World Tolerate an Iran with Nuclear Weapons? The Munk Debate on Iran* (House of Anansi Press: Toronto, 2013), p. 12.

revolutionaries'), and deterrence, from this perspective, is little more than wishful thinking.⁴⁴

In this author's view, although Iran is in many ways a special case and has often caused problems for its neighbours and beyond, there should be little doubt about its rationality in the foreign policy and security realm, and its understanding of the concept of deterrence. Scenarios regarding the probability of nuclear strikes against Europe or any of Iran's neighbours do not appear especially convincing. This does not imply, of course, that Iran's nuclearization would be risk-free or stabilizing for the region. It is possible that the acquisition of a nuclear weapon capability may increase not only Iran's self-confidence, but also its propensity for brinkmanship and risk-taking. Iranian official rhetoric, often bombastic in style, will not help in this context.

An interesting study edited by Ephraim Kam focused on 'the day after' Iran's nuclearization and examined issues of potential concern, including the checks and balances on the deployment and use of nuclear weapons, the socialization of the Iranian leadership and senior officials with 'nuclear facts of life', and the common understanding of red lines. The lack of common borders between Iran and Israel alleviates to an extent the possibility of military crisis escalation, a conventional war and loss of control during a crisis.⁴⁵ Also, neither country constitutes an existential threat for the other side (although many Israelis would take issue with that statement). However, lack of regular channels of communication between Iran and Israel complicate the situation.

V. THE CALCULATED USE OF NUCLEAR WEAPONS

Despite the small number of threshold nuclear states that exist today, the horizontal proliferation of nuclear weapons (as well as of chemical and biological weapons and ballistic and cruise missiles) remains a serious threat to regional and international security. The Middle East is an extraordinarily complex political system, composed of an unstable mixture of religion,

natural resources and raw military power.⁴⁶ Some of the most 'interesting' characteristics of the Middle East are:

1. It is a region riddled with protracted conflicts. In addition to the Arab-Israeli conflict, other conflict situations of a varied nature exist in the Gulf area, Syria, Lebanon, the Maghreb and North Africa, and the Horn of Africa.

2. These conflicts have led to a number of armed conflicts in the (recent) past, as well as to a number of arms races in the region.

3. Ballistic missiles have been used in two major armed conflicts: the 1980–88 Iran–Iraq War (where chemical weapons were also used by Iraq) and the 1990–91 Gulf War.

4. Because a number of regional conflicts overlap, and proliferation issues across geographic regions are often interconnected, an escalation in the arms race could possibly transfer from one area of tension to another.⁴⁷

5. Other factors of instability include the existence of many conflicts with multiple sources, and multiple threat perceptions, which further complicate the security environment.

6. New regional nuclear weapon states will lack highly sophisticated command and control systems for their new strategic forces and will have little time to learn how to manage the complexities of (non-conventional) military brinkmanship.

On the other hand, most of those countries have bitter experience of armed conflict and could be expected to be very careful in such matters.⁴⁸

The current situation in the Middle East is that of an established nuclear power state versus a state in the early stages of a nuclear weapon development programme: Israel versus Iran (or perhaps an Arab adversary in the future). Since Israel can be considered to be a mature NWS, this is a reasonable scenario to

⁴⁶ Freedman, L., 'The Gulf War and the new world order', *Survival*, May 1991, p. 204.

⁴⁷ Nolan, J. and Wheelon, A., 'Third World ballistic missiles', *Scientific American*, Aug. 1990, p. 34.

⁴⁸ According to Sami Hajjar, 'various dynamics link the subregions and problems of the area to one another. A myriad of historical, cultural, social, political and economic factors accounts for the centripetal forces connecting North Africa, the Nile Valley, the Levant, and the Gulf region'. Hajjar, S., 'Regional perspectives on the causes of proliferation of weapons of mass destruction in the Middle East', *Comparative Strategy*, vol. 19, no. 1 (Jan.-Mar. 2000), pp. 35, 38.

⁴⁴ Podhoretz, N., 'Stopping Iran: why the case for military action still stands', *commentarymagazine.com*, 2 Jan. 2008, <<http://www.commentarymagazine.com/article/stopping-iran-why-the-case-for-military-action-still-stands/>>.

⁴⁵ Kam, E. (ed.), *Israel and a Nuclear Iran: Implications for Arms Control, Deterrence and Defense*, Memorandum no. 94 (Institute for National Security Studies: Tel Aviv, 2008), p. 54.

examine. The probability of a (conventional) preventive attack by Israel would be rather high in this case.

On 7 June 1981 Israel carried out a preventive strike against a nuclear facility when Israeli aircraft flew some 1000 kilometres over Arab territory and destroyed Iraq's newly constructed Osiris-type nuclear reactor. In the 9 June 1981 announcement of the destruction of the Osiraq reactor, the Israeli Government stated its belief that, had Iraq's leader acquired nuclear weapons, 'he would have not hesitated to drop them on Israel's cities and population centres'. The assessment was viewed as also applicable to other leaders among Israel's opponents. Hence, the general pre-emptive thesis: 'Under no circumstances would we allow the enemy to develop weapons of mass destruction against our nation; we will defend Israel's citizens with all the means at our disposal.' The thesis was soon enshrined as a doctrine. Although Israeli officials have not publicly referred to this doctrine after 1982, the 'Begin doctrine' probably remains the official policy of Israel, as the 2007 strike against a Syrian plutonium-production reactor demonstrated. Due to the redundancy of the Iranian nuclear programme, the underground nature of key facilities and the distance that Israeli aircraft would have to fly, a pre-emptive attack would be far more difficult than the Osiraq attack, but this is a different matter.⁴⁹

Although an Israeli or US pre-emptive strike is the most plausible scenario, another scenario, admittedly of lower probability, is examined in the following discussion that matches Israel, a NWS, with Iran, a country with a more primitive nuclear capability. In a broader context, the scenario pits a relatively advanced nuclear nation against one that is a more recent and modest entrant. In this scenario, Iran has managed to acquire nuclear weapons because Israel or the USA has not attempted or has failed to destroy Iran's nuclear programme. It is the opinion of this author that the probability of a calculated nuclear attack by either Iran or Israel would be low. Israel's indisputable nuclear superiority would give it a credible capacity to

⁴⁹ It is argued that Israel probably could degrade or delay parts of Iran's nuclear programme but could not eliminate them. *The Strategic Implications of a Nuclear-Armed Iran*, McNair Paper no. 64 (Institute for National Strategic Studies: Washington, DC, 2001), p. 53; and Cordesman, A. and Al-Rodhan, K., *Iran's WMD: The Real and Potential Threat* (CSIS Press: Washington, DC, 2006), p. 7. The possibility cannot be ignored that Iran has already secretly constructed additional nuclear facilities that have not yet been identified. Kam, E., Jaffee Center for Strategic Studies, 'Curbing the Iranian nuclear threat: the military option', *Strategic Assessment*, vol. 7, no. 3 (Dec. 2004), pp. 5–6.

deter a nuclear attack by a regional adversary. Israel would also have both the ability to strike back and little, if anything, to lose if it had already absorbed a nuclear first strike.⁵⁰ Its deterrent capability would be reinforced by other factors: the impact on Muslim populations in the occupied territories and the possible effects of fallout on cities in neighbouring Muslim countries. Israel's most important disadvantages would be that its population is highly concentrated and vulnerable to massive damage from even a few nuclear weapons and its territory is very small.⁵¹

By any combination of delivery modes, an Israeli strike force armed with a few nuclear weapons of modest yield could threaten damage adequate to deter any rational Middle Eastern adversary.⁵² Furthermore, Iran's nuclear weapons would indeed be vulnerable to a pre-emptive nuclear strike as is not expected to have, at least for several years after crossing the threshold, a sizeable stockpile of nuclear weapons (the number would probably be in the single digit range), nor sufficient delivery vehicles of various types (e.g. missiles, bombers, submarines, and so on.). Its arsenal's mobility would be limited (unless it manages to build nuclear warheads for its road-mobile launchers), especially if they are protected in hardened underground facilities, and its early warning and C⁴ and intelligence (C⁴I) systems would not be highly

⁵⁰ Cameron Brown has argued, however, that the main problem with Israel's deterrent strategy is that it has failed to build reinforced silos for its missile force, and has instead sufficed with storing both its Jericho-2 missiles and nuclear weapons (both warheads and gravity bombs) in limestone caves that cannot be reinforced. Since the missile site covers an area smaller than 24 square km, it is possible that just a few nuclear-tipped missiles could neutralize Israel's missile threat and damage the nearby bunkers holding the air force's nuclear gravity bombs. While Israel has most likely found this step unnecessary until today, with Iran on the verge of gaining nuclear weapon capability, Israel may have to reconsider the decision not to build reinforced silos. Brown, C., 'Israel and the WMD threat: lessons for Europe', *MERIA Journal*, vol. 8, no. 3 (Sep. 2004), p. 7. It should be added, however, that Israel has a submarine-launched cruise missile capability.

⁵¹ The International Institute for Strategic Studies has emphasized the point that the concentration of three quarters of Israel's population on a narrow strip of coastline from Ashkelon to Haifa makes it extremely vulnerable to nuclear strikes. Israel's presumed second-strike capability might severely damage its attacker, but there would be no Israeli state left to take satisfaction. Israelis are not the first to notice this asymmetry. Former Iranian president Ali Akbar Hashemi Rafsanjani remarked 5 years ago that 'the use of even one nuclear bomb inside Israel will destroy everything. However, it will only harm the Islamic world. It is not irrational to contemplate such an eventuality.' 'Israeli military calculations towards Iran', *IJSS Strategic Comments*, vol. 12, no. 9 (Nov. 2006). See also Brown (note 50), pp. 2, 32.

⁵² Feldman, S., *Israeli Nuclear Deterrence* (Columbia University Press: New York, 1982), p. 84.

sophisticated.⁵³ Iran would also make every effort to keep its nuclear weapons adequately dispersed and concealed.

On the other hand, even if Israel could destroy its adversaries' nuclear forces without great fear of retaliation, it is highly unlikely that it would use nuclear weapons even if it could not fully achieve its objectives by a conventional strike. There is no objective, other than national survival, that would justify any use of nuclear weapons. The consequences would be disastrous (international involvement, world public opinion's outcry, fallout, and the like). As mentioned above, there would also be the possibility that some Iranian nuclear weapons might escape destruction and be launched against Israel. Even one or two weapons could kill a substantial percentage of Israel's population and contaminate a significant portion of its territory.

Although the 'Israel in extremis' scenario currently lacks plausibility, the 'Iran in extremis' scenario needs to be examined. In principle, this is a rather unlikely scenario because its adversaries would refrain from pushing a nuclear Iran to the brink of decisive defeat or regime change. Since, in the desperation of defeat, extreme measures may be taken, the least desirable alternative is to make a nuclear power feel mortally threatened. This argument would be perfectly valid if complete rationality is assumed. But in the confusion of war, how easy it is to draw the line of desperation? When a state's threshold is not known to the other side, it may be unintentionally crossed. Additionally, if no clear commitments have been made, an adversary might cross the other's threshold in the false expectation that the action would be tolerated.⁵⁴

⁵³ See International Institute for Strategic Studies, *Iran's Ballistic Missile Capabilities: A Net Assessment* (IISS: London, 2010), p. 117.

⁵⁴ Another concern that needs to be addressed is that new nuclear states will necessarily go through a precarious transition phase during which each of their small nuclear forces will be vulnerable. At some point during this transition process, 2 states are likely to be caught in what might be called the 'dilemma of infinite regress'. Each will be sorely tempted to attack the other before it is itself attacked because it will be afraid that the other side would attack first. When the USA and the Soviet Union went through the initial phase of nuclearization, missiles were not as accurate as they are now, so the fear that a first strike would actually hit small targets was not so acute and an air strike would have little chance of success, mainly because of the distances involved. Now, with more accurate missiles available, the temptation to launch a first strike might become almost irresistible. The flaw in this argument is to assume that the development of the 2 sides' nuclear forces would be almost parallel. This is clearly not the case in the Middle East. Israel has a time advantage of at least 40 years over its adversaries. If and when, these states were to acquire nuclear weapons, Israel would

VI. THE THREAT OF NUCLEAR TERRORISM

Another scenario linked with nuclear proliferation is the provision of a nuclear weapon by a state, a group or an individual to a terrorist group.⁵⁵ One view among experts is that terrorist groups operating with state support are likely to have a greater capability and fewer inhibitions than groups operating without state support.⁵⁶ However, the transfer of a device to a terrorist group from a sympathetic government, almost certainly on a covert basis to avoid retaliation, would not be a simple matter. Such a state would have to consider that there would be some probability of [Western] intelligence penetration somewhere along the chain between it and the terrorist group, with the risk that the source of the nuclear device would be discovered and, thus, might attract lethal retaliation.⁵⁷ In fact, a state supporting terrorism should consider that it might attract an Israeli or US strike even if the weapon's source were not discovered with absolute certainty. In addition, it would also have to consider the

long be a mature nuclear weapon state with a secure second-strike capability. Therefore, the so-called 'dilemma of infinite regress' is not applicable in the Middle East.

⁵⁵ State-sponsored nuclear terrorism has been a serious concern. According to this scenario, a state provides terrorists with a nuclear weapon that they can use, or threaten to use, against an opposing state, allowing the patron to thereby avoid direct responsibility and the risk of retaliation. However, if discovered (and it is quite probable that it would be), the risks to the sponsoring state would be enormous. Jenkins, B., 'Will terrorists go nuclear: a reappraisal', ed. H. Kushner, *The Future of Terrorism* (Sage Publications: London, 1997), p. 241.

⁵⁶ State sponsorship has a 'force multiplying' effect on terrorist groups. It places greater resources in the hands of terrorists, thereby enhancing planning, intelligence, logistical capabilities, training, finances and sophistication. Lesser, I. et al., *Countering the New Terrorism* (RAND Corporation: Santa Monica, CA, 1999), p. 15.

⁵⁷ It might be useful to draw on existing experiences from a closely related field. To date, there are no known cases of state-sponsored chemical and biological warfare (CBW) terrorism (at least in the public domain), probably because of the likelihood of severe retaliation against the sponsoring government if its involvement were to become known. Still, a state sponsor that believed it could shield its identity through proxies or intermediaries might take the risk, particularly in a crisis situation or wartime. In addition, an ad hoc or 'transnational' terrorist organization may be only loosely affiliated with a state sponsor and hence less constrained to act on its behalf. Terrorists with sufficient financial resources might also seek to acquire technical expertise from freelance weapon scientists formerly employed by countries with advanced CBW programmes, such as the former Soviet Union, South Africa or Iraq. Tucker, J., *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons*, BCSSIA Studies in International Security (MIT Press: Boston, MA, 2000), pp. 267–68.

possibility, however low, that the terrorists might turn on it and use the nuclear device to blackmail the state.⁵⁸

While it is not uncommon for terrorist organizations to be sponsored by states, there is no evidence that even 'rogue' states have been prepared to supply WMD to such groups and it appears plausible that this would only be contemplated in extreme situations, for example, involving a regime's survival.⁵⁹ Gavin Cameron has agreed with that assessment but has argued that 'more likely than state sponsorship is the possibility that military or scientific elites in some states might be willing, for ideological or financial reasons, to provide nuclear weapons, materiel or expertise to terrorist organizations'.⁶⁰ The possibility of an Iranian version of the A. Q. Khan network transferring nuclear weapons to terrorist groups may not be a high probability scenario but can also not be dismissed.⁶¹

There is no record or proof so far of any NWS providing nuclear weapons to non-state actors. Would Iran transfer nuclear weapons to terrorist organizations? If Iran is a rational actor and aware of the possible consequences for its own security should the weapon be traced to it (while having no full control over its use), it is unlikely that its leadership

⁵⁸ Feldman (note 52), p. 169; and Pajak, R., *Nuclear Status and Policies in the Middle East: Implications for the Superpowers* (National Defense University Press: Washington, DC, 1982), pp. 94–95.

⁵⁹ The only known exception might be of North Korea. According to the International Institute for Strategic Studies (IISS), 'In April 2003, during talks with the US and China, a North Korean negotiator threatened vaguely but ominously that Pyongyang might transfer nuclear weapons. Although North Korean spokesmen have also made reassuring statements to the contrary, in 2005 Vice Minister Kim Kye-gwan told a US reporter that the USA 'should consider the danger that we could transfer nuclear weapons to terrorists'. IISS Dossiers, *North Korean Security Challenges* (IISS: London, July 2011), p. 173. States usually lack confidence in the terrorists they sponsor. Falkenrath, R., Newman, R. and Thayer, B., *America's Achilles Heel: NBC Terrorism and Covert Attack* (MIT Press: Cambridge, MA, 1998), p. 94. There are a number of conceivable scenarios in which desperate leaders in these states might release NBC weapons to terrorist groups to further their goals, particularly if their regime was threatened and they wanted to exact final revenge against their enemies. But, in general, it could be concluded that an act of state-sponsored terrorism would be such an extreme act that it would be an option of last resort for any of these states. Gurr, N. and Cole, B., *The New Face of Terrorism: Threats from Weapons of Mass Destruction* (I. B. Tauris: London, 2002), p. 208.

⁶⁰ Cameron, G., 'Nuclear terrorism: weapons for sale or theft', eJournal USA, 28 July 2008, <<http://iipdigital.usembassy.gov/st/english/publication/2008/08/20080815122156xjyrrep0.8970606.html#axzz2th6cumfl>>.

⁶¹ Council on Foreign Relations, 'Negotiating with a troubled Iran', Interview of Mark Fitzpatrick by Bernard Gwertzman, 20 July 2009, <<http://www.cfr.org/iran/negotiating-troubled-iran/p19876>>.

would contemplate the transfer of nuclear weapons to a terrorist organization.⁶² Of course, there are no absolute certainties in such matters, but the probability would be extremely low.

Two caveats: first, the major weakness of the above assessment on both deterrence and weapon transfers to terrorists is that it assumes that there is a central decision-making authority in Iran (or in other nuclear weapon states).⁶³ This may not be the case as Iran's domestic political scene is extremely complex, and the actors have multiple agendas. Several centres of power are involved in the design and execution of Iranian foreign and military policy, while consensual style and the opaque nature of the decision-making process complicate the situation even further. Second, even a limited degree of certainty—however inaccurate or unfounded—that such an act would go undetected or unpunished might change the calculus of decision makers.

VII. THE THREAT OF UNIDENTIFIED NUCLEAR STRIKES

The possibility of an unidentified nuclear strike would be very low, mainly because with a small number of nuclear weapon states and sophisticated national technical capabilities for missile tracking and identification (at least in the case of Israel and the USA), the source of the attack would be obvious and would almost certainly result in retaliation.⁶⁴

⁶² According to an interesting analysis by Erica D. Borghard and Mira Rapp-Hooper, 'while a nuclear-armed Iran may increase its support of proxies, it may also find that the costs of providing greater assistance to Hizbullah outweigh the benefits. In particular, a nuclear armed Iran could find that the proxies are no longer as necessary to achieving its goals... Alongside a nuclear capability that makes Hizbullah less integral to Iran's overall posture of deterrence against Israel, Tehran's fears of entrapment could make the state less reliant on the group'. Borghard, E. D. and Rapp-Hooper, M., 'Hizbullah and the Iranian nuclear programme', *Survival*, vol. 55 no 4 (Aug./Sep. 2013), pp. 86, 96.

⁶³ But even if there is a central decision-making authority, the possibility cannot be ruled out of a lone Iranian official or IRGC group with control over an element of the nuclear programme taking it on themselves to share or sell it to a non-state actor. The question of internal safeguards then becomes extremely important.

⁶⁴ Stephen Rosen was, however, much more sceptical, and argued that 'if a nuclear-armed ballistic missile were launched while conventional fighting involving non-nuclear armed ballistic missiles was going on in the region, how confident would any government be that it could identify the party responsible? The difficulty would be greater still if an airplane or a cruise missile were used to deliver the nuclear weapon.' Rosen, S., 'After proliferation', *Foreign Affairs*, Sep./Oct. 2006, p. 10.

Assessment should also be made of the probability of an unidentified strike by a non-state actor with state support or by a state using terrorist methods of delivery (such as a boat on a suicide mission or a truck). In theory, even if the attack could not initially be attributed to a certain country, the nuclear weapon's unique characteristics would almost certainly allow Israel or the USA (the most likely targets) to identify the culprit (whether such evidence would convince other countries and international public opinion is a different matter). However, experts are divided on the degree to which nuclear forensics can assign certainty. A relevant example is the case of the uranium hexafluoride (UF₆) that the A. Q. Khan network sold to Libya. Not having a sample of North Korean enriched uranium against which to compare the transferred UF₆, US experts could conclude that it must have come from North Korea only through a process of elimination.

VIII. CONCLUSIONS: ASSESSING THE RISK OF NUCLEAR WAR

This paper examines the relationship between horizontal nuclear proliferation and the probability of nuclear war and identifies six risks arising from assumed nuclear proliferation.

The possibility of an accidental detonation or launch of a nuclear weapon would be greater in a new NWS because, in most cases, such a state would lack most of the safeguards that existing nuclear weapon states have deployed. Since it is possible that a potential NWS might adopt LOW postures, the risk that an accidental detonation or launch of a nuclear weapon would be perceived by another state as an attack and lead to retaliation cannot be dismissed. Although the transfer of accident control technology might violate the letter of the NPT, it should be seriously contemplated after a country crosses the nuclear threshold (US assistance to Pakistan in order to develop its own permissive action link systems might be relevant here).

The probability of the use of nuclear weapons as a result of miscalculation or loss of control during a crisis (as opposed to an accidental launch) cannot be dismissed.⁶⁵ The lack of secure second-strike forces

⁶⁵ George Quester has observed that if a 'war breaks out between two opposing nuclear powers, such as today's India and Pakistan, or between some other nuclear dyad of the future, this might be the result of a brinkmanship in which neither side backed down, bluffs got called, and the worst that was threatened became an awful reality.' Quester, G., *Nuclear First Strike: Consequences of a Broken Taboo* (Johns Hopkins

in some of the newer nuclear weapon states, with the possible adoption of LOW postures as a consequence, could result in strategic instability and could increase the probability of the use of nuclear weapons due to miscalculation.

The probability that an irrational leader could gain control of nuclear weapons would theoretically increase with their further spread. While most existing threshold states have a rather good historical record in this respect, there is no assurance that this will continue to be the case in the future.⁶⁶ Of course, there is no evidence to the contrary either.

The deliberate use of nuclear weapons by a rival or hostile new NWS is unlikely today.⁶⁷ As the above analysis of Middle Eastern scenarios illustrates, a preventive strike (should one be made) would almost certainly be conventional. The only conceivable deliberate use of nuclear weapons would be as a weapon of last resort, in the face of a conventional defeat. In all scenarios, the acquisition of battlefield nuclear weapons would be a destabilizing development because of the likelihood of early launch delegation and the 'use them or lose them' conundrum. Should release authority be granted to field commanders, negative developments in the battlefield and the fear of being overrun, lack of communication with headquarters, or any other miscalculation caused by 'friction' or the 'fog of war' could conceivably lead to the use of nuclear weapons without a decision by the country's leadership.

Nuclear terrorism, in its various forms, should not be discounted or dismissed. It should be seen as a low probability event with very high consequences, and as a real threat to stability and peace. If Iran is indeed a rational actor and aware of the possible consequences for its own security should a nuclear weapon be traced to it, it is unlikely that the country's leadership would contemplate the transfer of nuclear weapons to a terrorist organization. Additionally, Iran would no longer have full control of the use of the weapons. This

University Press: Baltimore, MD, 2005), p. 5. He also presented a number of nuclear escalation scenarios. Quester, pp. 24–25.

⁶⁶ As George Quester put it, 'the rationality of decision processes in the Middle East has not been reassuring to the outside world.' Quester (note 65), p. 7. Islamic extremism may be the chief disturbing factor in this context.

⁶⁷ Michael May has argued that 'while neither nuclear nor any other kind of deterrence is foolproof, or applies with equal effectiveness in all regions at all times, deterrence, especially nuclear deterrence, will continue to induce caution in nuclear-armed power projectors as they pursue rival goals.' May, M., *Rivalries Between Nuclear Power Projectors: Why the Lines Will Be Drawn Again* (Stanford University, Center for International Security and Arms Control: Stanford, CA, May 1996), p. 39.

assessment is based on the assumption that individuals or groups would have a limited ability to decide on their own to transfer nuclear assets to non-state actors. This may not be the case as Iran's domestic political scene is extremely complex, and the actors have multiple agendas.

An unidentified strike would be theoretically possible but the probability would be low. With a small number of nuclear weapon states and sophisticated national technical capabilities for missile tracking and identification (at least in the case of Israel and the USA), the source of the attack would be obvious and almost certain to result in retaliation.

This paper identifies a number of research questions, issues of critical importance regarding Iran's nuclear propensity, that need to be further examined and analysed by government agencies and research institutes as additional information is urgently required regarding the country's strategic culture. Those questions include the following: Iran's potential nuclear command and control system, and especially the delegation of launch authority (on the assumption that Iran might cross the nuclear threshold); the rationality of leadership; the relationship of various actors and centres of power inside the Iranian political system with terrorist organizations; and the expected degree and pace of nuclear socialization.

Two early policy recommendations can be suggested (a) should efforts to prevent Iran's nuclearization fail, the country should at least be discouraged from developing tactical and battlefield nuclear weapons; and (b) Iran's opponents should avoid references to regime change in a nuclear Middle East. Indeed, Steven David has considered regime survival to be a key concern for the Iranian leadership and a possible risk.⁶⁸ He has argued that 'it is easy to imagine a situation in which, following massive domestic unrest, the Iranian leadership found itself on the brink of being toppled from within. Facing the end of their rule, and possibly their lives, Iranian leaders, fully rational but with nothing to lose, might choose to lash out against Israel in a parting shot for posterity'.⁶⁹ However far-fetched such a scenario may be, and no matter how little sympathy the current Iranian regime merits, external intervention is not the best way to bring about change,

as many in the USA have painfully (for the USA itself, the people directly involved and the whole region) learned in Iraq, and probably in Afghanistan and Libya.

Summarizing the speculative analysis presented here, if nuclear weapons were to be used in the Middle East, this would most likely result from a miscalculation, an accidental detonation or launch of a nuclear device, or an act of desperation. However small the risk of each individual scenario may be, the cumulative risk of all the possible dangers arising from assumed nuclear proliferation should also be considered. Although Iran's nuclearization would not, at least initially, cause a substantial increase in the probability of nuclear use in the region, it would nevertheless remain an unwelcome development as it would probably increase regional instability, increase the number of nuclear decision-making centres and further complicate strategic calculations. The world would be better off without additional 'fingers on the nuclear button'.

ABBREVIATIONS

C ⁴	Command, control, communications and computers
C ⁴ I	Command, control, communications, computers and intelligence
IRGC	Islamic Revolutionary Guards Corps
km	Kilometre
LOW	Launch on warning
MAD	Mutual assured destruction
NPT	Non-Proliferation Treaty
NWS	Nuclear weapon state
SAM	Surface-to-air missile
UF ₆	Uranium hexafluoride
WMD	Weapons of mass destruction

⁶⁸ According to the US Department of Defense, Iran's primary motivation for nuclear armament is the survival of the regime while its secondary goal is to be 'the most influential country in the Middle East'. Borghard and Rapp-Hooper (note 62), p. 90.

⁶⁹ *BESA Bulletin*, no. 30 (Oct. 2013), p. 7.

A EUROPEAN NETWORK

In July 2010 the Council of the European Union decided to create a network bringing together foreign policy institutions and research centres from across the EU to encourage political and security-related dialogue and the long-term discussion of measures to combat the proliferation of weapons of mass destruction (WMD) and their delivery systems.

STRUCTURE

The EU Non-Proliferation Consortium is managed jointly by four institutes entrusted with the project, in close cooperation with the representative of the High Representative of the Union for Foreign Affairs and Security Policy. The four institutes are the Fondation pour la recherche stratégique (FRS) in Paris, the Peace Research Institute in Frankfurt (PRIF), the International Institute for Strategic Studies (IISS) in London, and Stockholm International Peace Research Institute (SIPRI). The Consortium began its work in January 2011 and forms the core of a wider network of European non-proliferation think tanks and research centres which will be closely associated with the activities of the Consortium.

MISSION

The main aim of the network of independent non-proliferation think tanks is to encourage discussion of measures to combat the proliferation of weapons of mass destruction and their delivery systems within civil society, particularly among experts, researchers and academics. The scope of activities shall also cover issues related to conventional weapons. The fruits of the network discussions can be submitted in the form of reports and recommendations to the responsible officials within the European Union.

It is expected that this network will support EU action to counter proliferation. To that end, the network can also establish cooperation with specialized institutions and research centres in third countries, in particular in those with which the EU is conducting specific non-proliferation dialogues.

<http://www.nonproliferation.eu>



FOUNDATION FOR STRATEGIC RESEARCH

FRS is an independent research centre and the leading French think tank on defence and security issues. Its team of experts in a variety of fields contributes to the strategic debate in France and abroad, and provides unique expertise across the board of defence and security studies.

<http://www.frstrategie.org>



PEACE RESEARCH INSTITUTE IN FRANKFURT

PRIF is the largest as well as the oldest peace research institute in Germany. PRIF's work is directed towards carrying out research on peace and conflict, with a special emphasis on issues of arms control, non-proliferation and disarmament.

<http://www.hsfk.de>



INTERNATIONAL INSTITUTE FOR STRATEGIC STUDIES

IISS is an independent centre for research, information and debate on the problems of conflict, however caused, that have, or potentially have, an important military content. It aims to provide the best possible analysis on strategic trends and to facilitate contacts.

<http://www.iiss.org/>



STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE

SIPRI is an independent international institute dedicated to research into conflict, armaments, arms control and disarmament. Established in 1966, SIPRI provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.

<http://www.sipri.org/>