The Concept of Nuclear Learning: Pakistan's Learning Experience

Brigadier General (Ret.) Naeem Salik

Salik is currently a PhD candidate at the Centre for Muslim States and Societies in the Political Science & International Relations Department at the University of Western Australia.

3 The Concept of Nuclear Learning: Pakistan's Learning Experience

Naeem Salik

Introduction

The concept of nuclear learning is not widely understood in the nuclear security literature, though many scholars have referred to it in their writings. Nuclear learning is basically a phenomenon through which nuclear armed states learn to manage their respective nuclear capabilities through the development of doctrines, command and control structures, safety and security mechanisms and an understanding of both the technological characteristics of these weapons as well as their politico-strategic ramifications.

Nuclear learning like any other form of learning occurs at different levels of analysis. However, there is not a consensus on this issue, and scholars disagree on which level of learning merits the most emphasis. Similarly, there are differing views regarding whether learning should be normative or value neutral. Due to the cognitive nature of learning, it is always a challenge to measure the degree of learning and all assessments are at best estimates. The only tangible manifestations of learning can be found in the form of new institutions, legislation, and other administrative measures specifically designed to facilitate the management of nuclear assets.

Due to their immensely destructive potential, nuclear weapons have had a profound effect on the way nations devise and pursue their security policies. A day after the first atomic bomb destroyed the Japanese city of Hiroshima, Bernard Brodie, one of the pioneers of nuclear strategy, having quickly glanced through newspaper reports of the event, turned to his wife and remarked that "everything I have written so far has become redundant."[1] In a renowned commentary, he later encapsulated the fundamental changes brought about in strategic thinking regarding the use of military instruments for policy objective achievement, stating that "thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other useful purpose."[2] The far-reaching impact of the advent of nuclear weapons on the international security landscape has been recognised by other scholars as well. Robert Jervis, for instance, captured the essence of the significance of nuclear weapons with the term "Nuclear Revolution."[3] The term referred to the enormity of the change brought about by the development of nuclear weapons and the need to absorb this reality. Elaborating on the point he said "the fact that nuclear weapons could destroy the world has changed the way people think and the way nations behave. I also believe that a better understanding of their role can make the world safer."[4] Brodie and Jervis's

*A modified version of this paper will form part of my PhD thesis. This draft is not for citation.

[1] Fred Kaplan, *The Wizards of Armageddon* (Stanford, California: Stanford University Press, 1991), 10.

[2] Bernard Brodie, et al., *The Absolute Weapon* (New York: Harcourt Brace, 1946), 76.

[3] Robert Jervis, *The Meaning of The Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, New York: Cornell University Press, 1989).

[4] Ibid., ix.

remarks make it abundantly clear that nations that acquire nuclear weapons also need to undergo a process of learning to be able to readjust their security policies and national objectives in accordance with the constraints imposed by said weapons.

The successful management of nuclear capabilities depends on the efficacy and speed of the learning process. To be able to better understand this movement along the nuclear learning curve by the nuclear weapons states it is imperative to understand nuclear learning and its various dimensions and manifestations. All the recognised nuclear powers underwent this learning experience in the past, and any new nuclear armed nations would also have to tread this path. The experiences of earlier nuclear powers can act as templates, but these cannot be simply superimposed on vastly different security environments. It is therefore imperative for new entrants into the nuclear club to adapt the available models to their own peculiar environments and learn their own lessons in time.

Michael Quinlan has surmised that in the absence of empirical data on the nature and consequences of a nuclear war, we have to depend on untested concepts and draw inferences about a wide range of possibilities. He also points out that the concepts related to nuclear warfare, though radically different from traditional concepts of war, are not too difficult to comprehend and do not need special expertise in any particular academic discipline. A large body of literature is now available on the theory of nuclear deterrence and concepts related to nuclear war fighting, on which nuclear policies can be based but one has to be careful in choosing the appropriate kind of concepts. If the choice of concepts is not sound and policies are based on wrong premises the consequences could be disastrous.[5]

Approaches to Nuclear Learning

Literature related to nuclear learning deals with learning about both the scientific attributes of nuclear weapons as well as their wider implications for national security and foreign policy. The common understanding of the concept of learning implies a positive outcome. Scholars who emphasize the normative aspect of learning believe that learning has to measure up to certain criteria and must advance the achievement of policy objectives.[6] This approach, however, is contrary to the traditional approach of social scientists, who usually objectively analyse empirical evidence without letting personal beliefs and values influence the conclusions. Scholars such as Jack Levy argue that learning should be devoid of any value judgements; and, in his view, any changes in understanding or perception—irrespective of their nature—should therefore be considered as learning.[7] There is a third line of argument, which considers any changes in understanding or perception as learning, as long as it helps in the achievement of policy objectives. Joseph Nye, for instance, believes that both negative

[5] Michael Quinlan, *Thinking About Nuclear Weapons: Principles, Problems, Prospects* (Oxford: Oxford University Press, 2009), 14-15.
[6] Jeffery W. Knopf, "The Concept of Nuclear Learning" *Nonproliferation Review* 19, no. 1 (March 2012).
[7] Jack S. Levy, "Learning and Foreign Policy: Sweeping a Conceptual Minefield," *International Organization* 48, no. 2 (Spring 1994).

as well as positive learning can take place.[8] In order to maintain objectivity and balance in analysing the process of learning, none of these approaches can be ignored and all must be taken into account.

In essence, learning could either mean recognition of the need to change the 'means' employed for the achievement of an 'end' or a realisation of the necessity to alter the end itself. These two variants of learning have been described in different ways by different analysts. Joseph Nye, for instance, has categorised these as simple and complex learning. According to Nye, *simple learning* entails a modification of the means being employed to achieve a particular objective without any attempt to modify the end itself, while *complex learning* involves a re-evaluation of the ends-means relationship that would cause a state to reconsider its basic policy objectives.[9] Others such as Ernst Haas make a distinction between real or genuine learning and simple adaptation in accordance with the changes in the existing environment.[10] Such a distinction, however, would never be easy to make and would generally be subjective in nature. Joseph Nye contends that "learning is to develop knowledge by study or experience" and that the availability of new information brings about changes in existing beliefs and perceptions. According to Nye, "learning often involves a shift from overly simple generalisations to complex integrated understandings grounded in realistic attention to detail."[11] Robert Jervis tends to agree with this notion and—basing his argument on research by psychologists—has stated that learning usually moves from simple to more complex learning.[12] Both these arguments, however, seem to imply that the process of learning follows a linear progression from simple learning to complex learning without taking into account the possibility that both simple as well as complex learning could also start simultaneously and progress along parallel paths, though the progress in each case may not be equal in magnitude.

Levels of Analysis and Nuclear Learning

Issues related to levels of analysis involved in the process of learning have also been subjected to discussion. Jeffery Knopf has identified five tiers at which learning takes place, starting with *individual learning* and going through to *institutional/organisational learning*, *governmental learning*, *state learning*, and finally *international learning*.[13] However, this classification would be difficult to sustain in many practical situations where the boundaries between institutional learning and governmental learning on the one hand and governmental learning and state learning on the other blur and overlap with each other. The choice of one or more levels of analysis will depend on the purpose for which the analysis is being carried out. If, for instance, the objective is to trace the physical and intellectual developments in a particular state for management of its nuclear capabilities, the institutional/organisational level of learning would be more important. However, if the purpose were to determine the state of strategic stability or the ability to manage crises between

[8] Joseph S. Nye, Jr., "Nuclear Learning and U.S.-Soviet Security Regimes," *International Organizations* 41, no. 3 (Summer 1987), 378.
[9] Ibid., 378.
[10] Ernst B. Haas, *Where Knowledge is Power: Three Models of Change in International Organizations* (Berkeley, University of California Press, 1990).
[11] Nye, "Nuclear Learning and U.S.-Soviet Security Regimes," 378.
[12] Robert Jervis, *Perceptions and Misperceptions in International Politics* (Princeton, New Jersey: Princeton University Press, 1976), 235.
[13] Knopf, "The Concept of Nuclear Learning."

two rival states, then international learning would be more important.[14] Additionally, if the purpose is to reassure the other side against the possibilities of theft, accidents, or unauthorised use of nuclear weapons, the focus would be greater on safety, security, and command and control aspects of learning.

There also seems to be no agreement on the issue of levels of analysis and different scholars have shown preferences for particular levels. Jack Levy has argued in favour of the individual level of analysis,[15] while Andrew Bennet and Amandeep Gill have shown their preference for organisational learning.[16] Joseph Nye, while acknowledging the importance of individual learning, considers it an insufficient basis for organisational learning. He also emphasises the significance of *institutional memory* and *procedures* for organisations since these provide guidelines for both the old hands and new entrants in the organisation.[17] James Rosenau has termed these as "pools of habits."[18] Robert Jervis has also elaborated on organisational learning, arguing that "when an event affects the perceptual predispositions of many members of an organisation, we can speak of organisational learning."[19] This, however, is a very complex phenomenon, which is not easy to quantify because learning amongst individual members of an organisation would neither be equal, nor would they necessarily learn the same kind of lessons. Learning by an organisation is not equal to the sum total of learning on the part of its individual members.

What Determines the Preferred Level of Analysis?

As pointed out earlier, the preferred level of analysis would ultimately be determined by the purpose of the study. The organisational level of analysis and, to some extent, the individual level of analysis, for instance, would be important if the objective is to study the phenomenon of nuclear learning within a state or within the various institutions of the state. However, if the purpose is to analyse issues related to strategic stability amongst states then international learning and the role of non-state actors will assume greater significance. Since it is not possible to adequately cover all levels of analysis within the scope of one study, the focus of this paper remains on the institutional/organisational level of learning. Bennet, Gill, Nye, and Jervis subscribe to the significance of organisational learning and Jervis has specifically related it to military organisations, stating that "Lessons become working assumptions and form the basis for future planning. In the military they involve not only strategic and tactical thinking but the conduct of manoeuvres, formal instructions and standing orders."[20] Scott Sagan, on the other hand, basing his arguments on

---

[14] Ibid. Also see Nye, "Nuclear Learning and U.S.-Soviet Security Regimes," 378.
[15] Levy, "Learning and Foreign Policy."
[16] Andrew Bennett, *Condemned to Repetition? The Rise, Fall, and Rerise of Soviet – Russian Military Interventionism, 1973-1996* (Cambridge, Massachusetts, MIT Press, 1999). Also see Amandeep S. Gill, "Nuclear Learning Revisited," (presentation, CISAC social science seminar, Stanford University, June 4, 2009), both quoted in Knopf, "The Concept of Nuclear Learning."
[17] Nye, "Nuclear Learning and U.S.-Soviet Security Regimes," 381.
[18] James N. Rosenau, "Learning in East-West Relations: The Superpowers as Habit-driven Actors," (Los Angeles, Institute for Transnational Studies, mimeo, 1986), quoted in Nye, "Nuclear Learning and U.S.-Soviet Security Regimes."
[19] Jervis, *Perceptions and Misperceptions in International Politics*, 238.
[20] Ibid.

organisational theory,[21] is very sceptical of the capacity of military organisations to behave in a rational manner. In his view, professional military organisations usually have rigid routines, professional biases, and vested group and sub-group interests, which inhibit their ability to act in a manner appropriate to, and required by, rational nuclear deterrence. Such proclivities on part of the military organisations can lead to deterrence failure. He also takes a dim view of the capacity of military organisations to learn the right kind of lessons from a given event due to *bounded rationality*.[22] He argues that large organizations—militaries included—focus more on coordinating actions amongst various units and sub-units for which they devise standing operating procedures, and rules, at the cost of well-reasoned decision making to deal with different situations.[23] It is widely known that militaries are conservative by nature and there is a well-worn out cliché that militaries train to fight the last war. For instance, Jervis has referred to the Royal Navy's obsession with the Battle of Jutland at the cost of ignoring the lessons from the 1917 U-boat campaign and its failure to take due cognisance of the value of air reconnaissance. He has also cited an incident from the Allied operations on the Italian Peninsula wherein the bitter memory of a recent event was applied to a very different situation.[24] These examples amply illustrate the tunnel vision often displayed by militaries. There is, however, a big question mark on the applicability by analogy of empirical evidence gained from conventional warfare to nuclear warfare for which no historical evidence exists. Another important difference in conventional and nuclear war strategies is the fact that right from the very early days the theorisation of nuclear strategies has been dominated by civilian scholars and analysts, though the custody and employment of weapons has been in the military domain.

Sagan's pessimistic assessment is based on his study entitled "Limits of Safety" wherein he traced instances where nuclear accidents actually happened in the U.S. military as well as examples of near misses.[25] He also employs Charles Perrow's *Normal Accidents Theory* in which Perrow has argued that large organisations have a limited ability to fully understand the complexities of highly technical systems and that "boundedly rational" organisations are bound to have accidents overtime due to "high interactive complexity" and "tight coupling" amongst their various components.[26] Sagan is a well-known proliferation pessimist and his views are coloured by a firm belief in the negative

---

[21] Scott D. Sagan, "The Perils of Proliferation, Organization Theory, Deterrence Theory, and the Spread of Nuclear Weapons," *International Security* 18, no. 4 (Spring 1994): 66-107.

[22] Ibid. According to Bryan D. Jones, "Like comprehensive rationality bounded rationality assumes that actors are goal-oriented, but bounded rationality takes into account the cognitive limitations of decision makers in attempting to achieve these goals…..The fundamental premise underlying organisational studies in political science is that behaviour of organisations mimics the bounded rationality of the actors that inhabit them. This correspondence is not simply an analogy among phenomenon at different levels; the relationship is causal. This premise characterised behavioural organisations theory generally, along with the insistence that organisational science be grounded in observation of behaviour in organisational settings. The most important components of the political theory of organisations were the concepts of limited attention spans, habituation and routine and organisational identification. Behavioural organisation theory unlike the subjective expected-utility approach, viewed uncertainty not as simple probabilities attached to specified outcomes, but as infecting the very specification of outcomes themselves." See Bryan D. Jones, "Bounded Rationality," *Annual Review of Political Science* 2 (1999).

[23] Sagan, "The Perils of Proliferation, Organization Theory, Deterrence Theory," 71.

[24] Jervis, *Perceptions and Misperceptions in International Politics*, 238.

[25] Scott D. Sagan, *The Limits of Safety: Organizations, Accidents and Nuclear Weapons* (Princeton, New Jersey: Princeton University Press, 1999).

[26] Sagan, "The Perils of Proliferation, Organization Theory, Deterrence Theory," 94-5.

repercussions of nuclear proliferation, which have been well-documented in the form of his long running debate with Kenneth Waltz.[27]

Sagan seems to have stretched the argument when he contends that weapon system crews often have different priorities than their commanders and field units have different priorities than command headquarters. Anyone with a modicum of experience in military service would find it very difficult to agree with his contention. However, his argument related to inter-services rivalries and varying interests of individual military services is borne out by the prevailing reality in many militaries across the world.[28] Sagan claims that new proliferants (mainly comprising third world countries) will undergo a much longer and more difficult transition compared with established nuclear powers in achieving a secure retaliatory capability, and thus will be more prone to temptations for preventive war and accidental nuclear weapons launch because of the dominant role of militaries in many of these countries. In this context he has given the specific example of Pakistan, where the military is known to have played a dominant role in security policy making related to conventional and nuclear forces. Waltz, however, disagrees with him on this account and believes that new nuclear powers will do everything to ensure the safety and security of their arsenals and will have strong incentives to avoid accidental nuclear war.[29]

Given the post 9/11 international security environment, and especially the prevailing situation in South Asia, a new but very critical factor has emerged regarding the level of analysis. This factor is commonly referred to as the non-state actor and does not seem to have been dealt with in the available studies and literature related to nuclear learning. Non-state actors, however, do not easily fit into any traditional level of analysis framework and will have to be reckoned with as an independent variable. It is important to take into account this factor due to its ability to trump any learning on the part of organisations, governments, or states. These non-state actors have already precipitated two serious crises between India and Pakistan and their ability to do so again cannot be underestimated—irrespective of the lessons that may have been learnt by the two countries from the previous crises.[30]

Cognitive Nature of Learning and its Implications

Learning by its very nature is a cognitive process. It may not sound logical to ascribe this trait to abstract and non-thinking entities such as institutions, governments, or states. Institutions, governments, and states, however, are nothing but a collection of individuals who drive cognitive thinking within organizations. To evaluate learning one has to rely mainly on a comparative analysis of the behaviour of individuals, performance of institutions, or conduct of states over a certain period of time. To achieve this purpose one has to improvise and develop certain benchmarks, criteria, or performance parameters to act as reference points or yardsticks for an evaluation of the levels of

[27] Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W Norton and Company, 2003).
[28] Sagan, "The Perils of Proliferation, Organization Theory, Deterrence Theory," 73.
[29] Ibid., 93.
[30] Terrorists belonging to Lashkar-i-Tayyeba and Jaish-i-Muhammad have been accused of carrying out attacks on the Indian Parliament in December 2001 and on targets in Mumbai in November 2008, which created serious military and political crises between India and Pakistan that could only be defused through diplomatic intervention by the United States and other major powers.

learning. Realistically speaking, however, the results of such an exercise will at best be estimates, which may be more or less accurate depending on the rigour of the analytical tools devised to measure the degree of learning.

Two types of learning take place that are specific to the nuclear realm. First, there is learning about the scientific and technical characteristics of nuclear weapons, called *factual learning*. Robert Jervis has used the term *productive learning*, which according to him encompasses the acquisition of knowledge about some general characteristics of an object and the methods involved,[31] but the terms factual and productive learning in essence denote the same concept. The second type is learning regarding the broader implications of nuclear weapons for the security policy of a state, which can be termed *inferential learning*.[32] Knopf argues that factual learning is important for the public as well as the ruling elite. For instance, a populace educated via print and electronic media as well as other means of public education such as academic institutions and think tanks serve a very useful purpose, especially during crises. If the masses are fully aware of the terrible consequences nuclear war entails they will not generate undesirable pressure on policymakers to take precipitate decisions in crisis situations. On the other hand, it is imperative that the leadership is not only cognizant of the destructive potential of nuclear weapons but also has a good grasp of the wider implications posed by them and their adversaries' possession of nuclear capabilities.[33]

Learning from History and the Effect of Perceptual Dispositions

Looking at the factors that affect the process of learning, the first and foremost is history but its lessons are not always straightforward. The real lessons of history are deeply ingrained, but there is a general tendency to more readily learn the superficial lessons. However, if one loses sight of the context of historical events and fails to appreciate the changed circumstances of the present, there is every possibility of drawing incorrect inferences and analogies from history. Robert Jervis opined that "some events like wars leave such an impression that equally dramatic developments are required to displace them."[34] This unduly strong influence of traumatic events makes decision makers "insensitive to incoming information,"[35] which hampers their ability to identify differences between the two situations and leads them to draw and apply inappropriate analogies to widely differing conditions.[36] According to Jervis, there is a direct linkage between the events, lessons learnt from these, and the future behaviour of the decision makers and sometimes this precludes the learning of what may appear to be very apparent lessons. In Pakistan's case, the traumatic experience of the 1971 war wherein it lost its eastern wing due to a combination of internal political strife and direct military intervention by India has weighed heavily on the way the Pakistani leadership perceives its national security. Pakistan learnt a few crucial lessons from this event. First, it learnt the limited utility of alliances and found out that none of the friendly powers would come to rescue it

[31] Jervis, *Perceptions and Misperceptions in International Politics*, 227.
[32] Knopf, "The Concept of Nuclear Learning."
[33] Ibid.
[34] Jervis, *Perceptions and Misperceptions in International Politics*, 218.
[35] Kenneth W. Thompson, *Political Realism and the Crisis of World Politics* (Princeton, New Jersey: Princeton University Press, 1960), 36, quoted in Jervis, *Perceptions and Misperceptions in International Politics*.
[36] Jervis, *Perceptions and Misperceptions in International Politics*, 220.

from a difficult situation, meaning it would have to learn to stand on its own feet and fend for itself in any future crisis. Second, it realised that in view of the ever widening gap in the military capabilities vis-à-vis India, it was in dire need of an equalizer. This latter realization, coupled with India's burgeoning nuclear program, led to the decision by Prime Minister Z.A. Bhutto to authorize the pursuit of a military nuclear option in early 1972. The impact of 1971 has not diminished and continues to influence Pakistani threat perceptions to this day.

An important factor which affects the ability of any actor to learn the right kind of lessons from past events is his perceptual disposition. Although it is not easy to objectively determine how much influence has been exerted by predispositions on an individual's perceptions. However, if the reading of the past is obviously largely inaccurate, it is likely influenced by the existing predilections of the individual concerned. According to Jervis, "decision makers usually fail to strip away from the past event those facets that depend on the ephemeral context. They often mistake things that are highly specific and situation bound for more general characteristics because they assume that the most salient aspects of the results were caused by the most salient aspects of the preceding situation;" more importantly, "people pay more attention to what has happened than why it has happened."[37] Joseph Nye, while cautioning that new information can sometimes be misleading or be used incorrectly, makes a somewhat similar argument saying that "new information affects prior beliefs, but its reception and interpretation are also affected by those prior beliefs. The extent and accuracy of learning depends upon the strength of the prior beliefs and quantity and quality of the new information."[38]

The studies by psychologists pertaining to the way people receive and convert available information into opinions suggest that these opinions are continuously modified in light of new information. Psychologists argue that our perceptions are subjective in nature and usually at variance with the objective reality. We, therefore, delude ourselves into seeing what we want to see rather than what exists in reality. Understanding this psychological phenomenon is important if we want to understand the decisions made by leaders in different situations because it is not the way the situation exists but the way they perceive it that affects their decision-making.[39]

Pakistan's nuclear weapons programme started in earnest in the mid-1970s after India conducted its so-called *peaceful nuclear explosion* in May 1974. As a consequence, the industrialised Western world started erecting barriers against the transfer of nuclear technology to would-be proliferators. Pakistan, therefore, like India, followed a surreptitious approach and adopted an official stance of denying any nuclear weapons effort. This policy of denial of any weapons-related activity and insistence on the peaceful nature of its nuclear research and development programme helped deflect international pressure and sanctions. However, the downside of this policy was that issues related to prospective nuclear doctrine and strategy, command and control, and safety and security could not be discussed in public. This emphasis on secrecy even discouraged in-house deliberations on these

[37] Ibid., 228.
[38] Jervis, *Perceptions and Misperceptions in International Politics*, 379.
[39] Robert O. Mathews, et al., *International Conflict and Conflict Management* (Scarborough, Ontario: Prentice Hall Canada Inc., 1989), 11.

issues in the military as well as civilian institutions. The nuclear programme was even considered a taboo subject for the media and academia. Therefore, in May 1998 after multiple nuclear tests, there was no institutional memory or pool of habits to fall back on and Pakistan was required to learn its nuclear lessons quickly in order to establish its credentials as a responsible nuclear power. While the specifics and the nature and extent of nuclear learning in Pakistan cannot be discussed within the scope of this study, it would suffice here to refer to a few academic works that deal with the subject.

Peter Lavoy has written that, before May 1998, "nuclear weapons had not been integrated into Pakistani military plans, the armed forces had no nuclear doctrine to speak of, and command and control over the nuclear arsenal and delivery systems was only vaguely defined and loosely organised."[40] He also points towards three critical developments within a few years of Pakistan's overt nuclearization, which on the one hand created severe complications for Pakistani decision-makers and accelerated the learning process on the other. He has cited 9/11, the 2001-2002 military stand-off with India, and the revelations of the activities of the AQ Khan proliferation network in this regard.[41]

However, well before these crises Pakistan had faced a serious military crisis with India in the Kargil region of the disputed state of Jammu and Kashmir in the summer of 1999. According to Hasan Askari Rizvi, Pakistan's response to the Kargil crisis was disjointed and dysfunctional, and there was a serious lack of coordination amongst various organs of the state. In his opinion, Pakistan plunged itself into the Kargil crisis because its national security decision-makers had not fully absorbed the implications of the 1998 nuclear tests. He goes on to suggest that Pakistan's conduct during the 2001-2002 crisis was better than in 1999, due to the fact that firstly, President Musharraf had both military and civilian institutions under his control and this unity of command facilitated better coordination, and secondly, the lessons learned during the Kargil crisis came in handy.[42]

Robert Jervis has argued that most of the available literature about crises is based on the Soviet-American interactions or the pre-World War I crises, making it difficult to relate these to differing strategic environments, different sets of actors, and particular national styles of the countries involved. However, he is convinced that since existing theories are not very precise or specific, these can be easily applied to these varying situations. The problem in his view is the lack of available evidence to determine whether India and Pakistan learnt from the Soviet-American experience by emulating them or if the demands of the situation compelled them to behave in a particular manner. Though, he contends that India's behaviour and indeed much of its rhetoric resembled that of the United States during the Cuban Missile Crisis of 1962.[43] He concludes with the observation that "It would be difficult but interesting to try to determine how Kargil influenced the crisis in 2002, and to

---

[40] Peter R. Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in *Pakistan's Nuclear Future: Worries Beyond War*, ed. Henry D. Sokolski (Carlisle, PA: Strategic Studies Institute, 2008), 129- 165.
[41] Ibid.
[42] Hasan-Askari Rizvi, "The Lessons of Kargil as Learned by Pakistan," in *Asymmetric Warfare in South Asia – The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge, UK: Cambridge University Press, 2009), 333-52.
[43] Robert Jervis, "Kargil, Deterrence and International Relations Theory," in *Asymmetric Warfare in South Asia*, ed. Lavoy, 377-96.

see if behaviour was more or less dangerous because of it."[44] This amply highlights both the difficulty of evaluating learning as well as the importance of learning for states and institutions.

Michael Wheeler believes that lessons from past events, even from a different setting, can be usefully applied to present or future situations and argues that the Cuban Missile Crisis had a salutary effect on the U.S. and Soviet behaviour and both India and Pakistan can learn some useful lessons from that and other Cold War experiences—which would enhance nuclear stability in South Asia.[45] Michael Quinlan has emphasised the importance of learning the nuclear jargon because employed terms have specific concepts behind them. Therefore, careful use of language is critical to get the right message across to the other side.[46] He is convinced that the lessons from the 1999 and 2001-2002 crises between India and Pakistan have imposed caution on them, comparing these crises to the Berlin Crisis of 1961 and the Cuban Missile Crisis of 1962.[47] He is also of the view that the Pakistani government found the AQ Khan episode very embarrassing and has since taken requisite measures not only to dismantle that network but to prevent similar activities in future.[48] Quinlan argues that in both India and Pakistan, strategic communities have enhanced their understanding about the management of their respective capabilities since the nuclear tests in 1998.[49]

Learning from Success

A very important aspect of learning regards the matter of how we look at past events and classify them as either a success or failure. An outcome is usually viewed as a success when the actor involved is perceived to be better off following the event. Once a policy is deemed to be successful, there is no incentive for a post-facto analysis of its pros and cons. No one pauses to think that alternative courses of action might have been more successful or that it was not the policy per se but a combination of other factors including sheer good luck that might have contributed to a successful outcome. Consequently, policies that are seen as having been efficacious would be more readily repeated in the future sometimes with disastrous outcomes. The other side of the coin is that, in the absence of a thorough analysis, policies that failed in the past would be avoided.[50] Jervis has very aptly turned around Santayana's maxim that "those who forget the past are condemned to make the same mistakes" into "those who remember the past are condemned to make the opposite mistakes."[51] He has also cited the commonly known cliché that, "nothing fails like success" to reinforce his argument.[52]

---

[44] Ibid.
[45] Michael O. Wheeler, "What was done to achieve Strategic Stability during the Cold War/ Lessons for South Asia," in *The India-Pakistan Military Standoff – Crisis and Escalation in South Asia*, ed. Zachary S. Davis, (New York: Palgrave Macmillan, 2011), 99-126.
[46] Quinlan, *Thinking About Nuclear Weapons*, 15.
[47] Ibid., 135.
[48] Ibid., 137.
[49] Ibid., 141.
[50] Jervis, *Perceptions and Misperceptions in International Politics*, 234-5.
[51] Ibid., 267.
[52] Ibid., 278.

In a recent study primarily related to the field of business management, Francesca Gino and Gary P. Pisano have made a similar argument. In an article with an evocative title, "Why Leaders Don't Learn From Success: Failures Get a Post-Mortem, Why not Triumphs?" they argue that success can breed failure by impeding the ability of both individuals and organisations to learn appropriate lessons.[53] They point out that individuals and institutions develop mechanisms for analysing failures with a view to learning from them, but no one bothers to create the capacity for a similar soul searching in the case of success. In their view, we have a tendency to assume that our skills and our existing strategies have resulted in success, without pausing to think that luck, chance, and extraneous factors may have been responsible for this outcome. This proclivity results in making what they call "fundamental attribution errors." The second obstacle to learning in their opinion is what they refer to as "overconfidence bias," which makes individuals believe that no change is required in the existing system. Third, is what they call "the failure to ask why syndrome," which prevents a systematic analysis of the reasons behind good performance.[54] They have amplified their arguments by citing the example of Alan Greenspan who was considered to be the most brilliant Federal Reserve Chairman in the U.S. history until the economy nearly crashed in 2008. It was evident that Greenspan and his team had been the victims of the over confidence bias and a belief in the infallibility of their economic models. Such overconfidence can afflict organisations, whether civilian or military, bureaucratic or commercial, resulting in their lack of receptivity to new and innovative ideas.[55] People in leadership positions also develop a tendency to keep away those who bring in the bad news.

Gino and Pisano have tried to build a simple model of learning while recognising the fact that learning is an extremely complex, cognitive and organisational process. They accept the fact that individuals and organisations have concepts, models, and rules of business that govern their conduct. These precepts are sometimes very refined and based on logic and long term experience while on other occasions these are superficial and followed through instinct. They argue that learning is nothing more than updating our concepts to understand why things happen in a particular way and why certain decisions yield certain types of results. They infer that "when we succeed, we just focus on applying what we already know to solving problems. We don't revise our theories or expand our knowledge of how our business works," and go on to advise that we should "celebrate success but examine it….when a win is achieved, the organisation needs to investigate what led to it with the same rigor and scrutiny it might apply to understanding the causes of failure."[56]

Interestingly, Gino and Pisano, unlike Scott Sagan, are appreciative of the military's practice of systematic debriefing of each combat mission or training exercise, irrespective of their success or failure, through what are termed after-action reviews (AARs), which produce useful information that can help improving future performance. These reviews raise some fundamental questions. What did

[53] Francesca Gino and Gary P. Pisano, "Why Leaders Don't Learn From Success – Failures Get a Postmortem, Why Not Triumphs?" *Harvard Business Review* (April 2011): 68-75.
[54] Ibid., 69.
[55] Ibid., 71.
[56] Gino and Pisano, "Why Leaders Don't Learn From Success," 72-3.

we set out to do? What actually happened? Why did it happen? What are we going to do next time?[57] Answers to these questions must be sought by all organisations in order to continue to succeed. The fact that these reviews are confidential in nature, are carried out within the organisation, and are not available in the public domain may explain the scepticism on part of scholars like Sagan who are critical of militaries' lack of transparency and tendency to paper over mistakes.

Learning from Failure

On the other side of the spectrum is learning from failure. Amy C. Edmondson argues that we are taught from very early on that failure is bad and that conviction hinders organisations from learning from their mistakes.[58] There is a general agreement about the value of learning from mistakes. However, in most cases it is not done in the right spirit and in the manner it should be done due to the stigma associated with failure. According to Edmondson, "every child learns at some point that admitting failure means taking the blame. That is why so few organisations have shifted to a culture of psychological safety in which the rewards of learning from failure can be fully realised."[59] Due to this fear, failures are not reported and obviously the lessons that could have been learnt, if these were highlighted, are also not utilised by making necessary course corrections. Again, minor routine failures are bound to occur in large and complex organizations, but these should be addressed in order to avoid systemic failures at some later stage.[60]

It is even more important to accept and learn from mistakes that are a consequence of experimentation with new ideas and cutting-edge technologies because of the significance of the information that can be gleaned from those. Such failures have been called "intelligent failures."[61] It is the responsibility of the leadership to inculcate a culture of reporting and learning from mistakes and failures within their organisations by encouraging and rewarding those members of their teams who display the courage to report failures instead of shooting the messenger that brings the bad news.[62] Once the mistakes are detected or reported, they should neither be brushed aside nor subjected to superficial investigation. A deeper and comprehensive inquiry should be undertaken, even if egos are hurt in the process, so as to discover the root causes of failure for the greater good and for the long term health of the organisation.[63]

Given the special characteristics of nuclear weapons, one could argue that failure in a nuclear organisation is simply unacceptable because the consequences of such a failure could be so disastrous that one may not live to learn any useful lessons from the episode. This is, however, an extreme view and all failures are not of disastrous proportions and do not necessarily lead to a systemic failure. There can be routine, minor failures that could be either procedural or technological

[57] Ibid., 73.
[58] Amy C. Edmondson, "Strategies for Learning From Failure," *Harvard Business Review* (April 2011).
[59] Ibid., 49.
[60] Ibid.
[61] The term "intelligent failure" has been coined by Duke University Professor of Management, Sim Sitkin.
[62] Edmondson, "Strategies for Learning From Failure," 51-2.
[63] Ibid., 54.

in nature. If such minor glitches can be identified and rectified in time, these can help in the prevention of major disasters.

Conclusion

It is evident from the foregoing discussion that the concept of nuclear learning is neither commonly understood nor is it easy to evaluate the amount of nuclear learning that might have taken place in a country with any degree of certainty. India and Pakistan are in the early part of their second decade of nuclear learning, which is not long enough a time period, given that historically, nations slowly learn and adapt to changes in their security environments. Unfortunately for the two countries, their respective processes of learning have faced serious distractions in the form of U.S. and NATO operations in Afghanistan and the impact of the growth of international terrorism, with its ability to precipitate warlike crisis between states. It is to the credit of the two South Asian countries that they have moved up the nuclear learning curve rather quickly compared with progress made by earlier nuclear powers at similar stages of evolution of their thinking about nuclear weapons. One can only hope that they will not only continue to learn at institutional and state levels, but will graduate to international learning in order to stabilize the strategic environment in the region and make it impervious to shocks that may be caused by the actions of misguided non-state actors.