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Emerging Complexity of Nuclear South Asia

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Abstract

South Asia is a geo-political system which has its unique security characters. The emerging complex nature of a system could lead either to the security or insecurity of that system. India and Pakistan are the emerging nuclear powers of South Asia. The nuclear doctrines and behavior of India and Pakistan promote the advancement of their nuclear programs in both strategic and civil domains. Both countries desire stability, the balance of power and security through the possession of nuclear options. However, the author argues that South Asia's existing nuclear environment and its emerging complexity have produced insecurity and instability in the region at large. This paper is an attempt to identify the complexity of actors and behaviors and their emerging threats to the security of the region. There is also a lack of literature to portray the nuclear risk that the non-nuclear states face in South Asia. This paper tries to fill that gap as well.

Keywords

South Asia; nuclearizsation complexity; insecurity.

1. Introduction

Both Complex and Complexity in a system mean that they have interconnected parts. Regional security complexes constitute the case of the complex interdependence of the components of the system which could

also be considered as a key feature of complexity. The word "complex" in Regional Security Complex Theory (RSCT) is defined in terms of "durable patterns of amity and enmity taking the form of sub-global, geographically coherent patterns of security interdependence" (Buzan and Weaver, 2003, p. 45). The interconnectedness and interdependency of geographically close entities are the main features of this definition. However, complexity includes more than just interconnectedness or interdependency. Complexity has become an emerging field that has been used by researchers in multiple disciplines in the recent past. In this paper, the author would like to adopt the definition of complexity advocated by the New England Complex Systems Institute (NECSI) which is a world-renowned establishment on complexity research. According to the NECSI definition, any system with the behavior of complexity "should possess dispersed interactions, lack of global controller, cross-cutting hierarchical organizations, continual adaptation, continuous novelty and out-of-equilibrium dynamics" (Dodder and Dare, 2000, p. 14).

The interactions taking place among states and other actors in a close geographical area demonstrate the emergence of regular patterns. A region is a structure placed between state and global levels. In this paper, a region is described based on the operational nature of security in a specific geographic area. According to Waltz's (1979) structural realism, the structure of a system could be defined as the holistic arrangement of the parts of that system. The post-cold war security order has reflected the emergence of many security characteristics more applicable to identify as regional substructures. The theorists of the Regional Security Complex advocate that in an anarchically structured international system, regional security complexes constitute sub-structures.

> A region refers to the level where states or other units link together sufficiently closely that their securities cannot be considered separate from each other. The regional level is where the extremes of national and global security interplay and where most of the action occurs (Buzan and Weaver, 1998, p. 43).

The RSCT defines a regional security complex as "a group of states whose primary security concern links together sufficiently closely that their national securities cannot reasonably be considered apart from one

another" (Buzan and Weaver, 1998, p. 201). According to this definition, regions, such as South Asia, are security complex, possessisng unique security characters. Some may argue that since South Asia does not possess a regional organization with a security orientation, such as NATO for Europe and America, the theoretical applicability of RSCT in South Asia's case is a redundancy. However, there is no hard and fast rule to understand the complexity factor of a region based on the coherent arrangement of states only in the form of regional organizations. There could well be regional security interests functioning even without a structural arrangement. On the other hand, the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) and the Indian Ocean Rim Association (IORA) are mandated with some security interests such as countering terrorism and maintaining economic security. The absence of regional structure - in addressing the emerging issues of security - increased the level of complexity of the regional security of South Asia.

IR theorists such as L. B. Krause and Joseph Nye argued that "neither economists nor political scientists have paid enough attention to the complexity of the concept of security" (Krause and Nye, 1975, p. 329). Barry Buzan and Ole Weaver, the forefront theorists of RSCT further argue that "studies of regional security generally take place without any coherent theoretical framework because other than a few basic notions about the balance of power (BoP) and interdependence borrowed from the systemic level none has been available" (Buzan and Weaver, 1998, p. 41). Despite the theoretical incoherence, traditionally these regional developments used to be examined by using the neorealist (structural realists), globalist or regionalist theories (Buzan and Weaver, 2003). These theories promote studying specific regional structures which are located between state and global levels that possess their unique strategic conditions.

The Cold War South Asian Security in the context of Indo Pakistani rivalry was not complex as it appears today. The Chinese security influence in the region and US's repulsive Chinese activism were the other security concerns. According to Buzan and Weaver (2003), the case of Indian and Pakistan emerged as a political rivalry between the two states based on religion. They further argue that the nature of securitization of issues was revolving around Muslim claims for politico-cultural autonomy. The other minor states were intertwined with India for many cultural and geographical reasons. India stands as an extra-large member of the regional

subsystem. Even the total weight of minor states could not match the Indian power. In this backdrop, Pakistan was pushed towards producing nuclear weapons to deter the massive Indian military might. In this context, the Sino-Pakistani alliance and Sino Indian rivalry are studied.

Neither India nor Pakistan was successful in attracting exceptional support from a regional ally whilst the Indian strategy was to maintain regional relationships based on bilateralism. The post-colonial conditions which, created Pakistan, later paved the way for Pakistan to worsen its relations with India. It also created a "strategic schism" or disunion over delivering an agreeable security consensus for the region (Gojree, 2015). Both countries feared the outside interference to help the rival may create domestic instabilities. Pakistan was in a fear of a revival of Indian imperial political culture and India was nervous about the "Homeland for Muslims" concept (Buzan and Weaver, 2003). In this backdrop, there were three limited wars fought between two powers and many other near-war situations took place. After the independence, the securitization process of South Asia was fueled by the territorial disputes over Kashmir between India and Pakistan. From time to time, it had heightened the heat of the relations between two states.

From 1945–1991, foreign relations of South Asian states did not reflect a strong sense of Cold War politics. Rather, it was emerging as a separate region that reflected its character in security matters. Pakistan joined Southeast Asia Treaty Organization (SEATO) and Central Treaty Organization (CENTO) with the objective of getting the assistance of the West in increasing the military power (Rehman, 2006). India entered into a friendship treaty with Russia in 1971 with the intention to neutralize China in a possible war with Pakistan (Kundu, 2016).

China's emergence as a powerful neighbor altered South Asia's security outlook to a great extent. China was able to trigger the security competition of South Asia during the cold war period. The nuclearization of India took place as a result of the Sino-Indian security competition. This new emerging autonomous trend in regional security rivalries was calibrated as dangerous by many. In this setting, the post-Cold War South Asia has drawn the attention of the world's major powers such as the USA. Former US president - Bill Clinton - saw post-Cold War South Asia as the "most dangerous place on Earth" (Wooldridge, 2000). Above the conventional arms race, South Asia is deeply involved in the nuclear arms race. Despite the robust

nuclearization taking place between India and Pakistan, Clinton was alarmed about the presence of asymmetric actors who have the potential to transform the situation more dangerous and complex.

2. Complexity

In the past few years, complex models were used to describe the organizational change and they were instrumental in capturing the dynamism of emerging systems than the traditional IR models such as polarity. The organizational environment of the South Asian civilian nuclear system could be investigated by the means of these new models. The title of this study portrays South Asia as a complex security environment. "Complex systems have always been a field that transcends the usual academic boundaries" (Miller, 2015, p. 15). These complex structures are non-reductive and indeterminate making them easier to study under the notions of complexity as well.

There were many examples of the South Asian nuclear environment being studied in reduced frameworks. They were either reduced (segmented) to understand the nuclear weapons proliferation and strategic conduct of states or to grasp the evolving of the civil nuclear environment. The researcher argues that the complex character here is emerging partially due to the mutual reinforcement of both civil and strategic nuclear spheres. Perhaps this reinforcement is unintentionally taking place. Even though the strategic and civil nuclear environments seem to be restricted to their territories on the surface, they mutually import energy from each other's domains and transform that energy into a complex internal structuration.

Evolution is another key feature of complex systems. The Stimson Center paperback titled *Investigating crisis: South Asia's Lessons Evolving Dynamics and Trajectories* is one of the recent publications on the South Asian nuclear environment in both strategic and civil nuclear spheres for the past 30 years (1998–2018). The data investigated in that volume intends to explore five major themes. The first and fifth[1] ones are more relevant to investigate the complexity of South Asia. The first element is the "detection of behavioral patterns and early warning of a crisis". The fifth one is "how evolving environments might reshape future crises differently from conventional

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[1] The other three are: (2) The domestic strategies and process for crisis management, (3) The role of receptivity towards a third-party intervention, (4) The lessons distilled from multiple crisis over two decades.

templates" (Lalwani and Haegeland, 2018, p. 14). The nature of the problem addressed by these two is about the evolving properties of the South Asian nuclear environment.

Geographic systems gradually transform into Complex Adaptive Systems (CAS). A perfect understanding of the individual parts of the system does not present a clear picture of the behavior of the whole system. CAS is also an entity that possesses many diverse and autonomous components or agents that are interdependent but behave as an integrated whole. "Co-evolution is one of the major mechanisms for generating nonlinear interactions between CAS agents. "Arms races", be they between countries or organisms, provide a simple example" (Holland, 2014, p. 69). We can also observe that the part of the strategic atmosphere of the nuclear environment in South Asia is mainly guided by the nuclear command philosophies of India and Pakistan. The involving Chinese nuclear command and control systems also have a bearing on South Asia's strategic decision-making in the nuclear sphere. One who closely observes the functional aspects of these philosophies could notice that their development is taking place in a more evolutionary pattern rather than a single cause and effect relationship.

3. Deterrence

Nuclear Deterrence is the principal theory of Strategic Studies. "Deterrence was first explicitly formulated as a strategic concept during the Cold War because defense against nuclear weapons appeared futile" (Gartzke and Lindsay, 2014, p. 1). Even during the Cold War, the Soviet Union and the USA had mutually worked to develop a diplomatic tradition or ground rules to prevent war. It was purely a state-to-state equation during that era. However, the arrival of the non-state actors into the deterrence equation has transformed the nature of the post-Cold War security environment more complex and uncertain.

"Complexity generates uncertainty, undermining both the simple logic of earlier deterrence frameworks and the credibility of policies founded in them" (The Policy Committee, 1995). When the present-day global nuclear forces are examined, one could observe the strong element of uncertainty - created by the asymmetric nuclear forces between states - act as a strong factor of BoP between states. That is why small nuclear power, such as North Korea, was able to successfully deter the superpower United States

even though their power parities are vastly disproportionate. However, the USA and USSR traditionally deterred each other by means of proportionality of their destructive powers. In the past, the state of interactivity by opposing equal forces determine whether the system is a stable equilibrium or a near equilibrium. Presently, equilibriums are often set by the means of manipulation of the risks and the risk never results in a stable equilibrium. In such a context, states may need to be creative in using their tools to obtain effective equilibriums. The fragile and shaky nature of strategic relations within the South Asian region suggests that it is closer to a system with a near-equilibrium than a stable and effective BoP position. In spite of all these uncertainties, a state-to-state deterrence equation could be exploited by a terrorist organization. These situations also suggest that deterrence is not a simple bilateral function between state parties anymore. The robust development of the capabilities of non-state actors and dynamic networks in multiple contexts made deterrence contexts more complex to understand through a traditional lens.

4. Strategic Externalities

The third-party security implications or the negative externalities of the nuclearization of the South Asian states are also an important area of this study. In international relations, there are spillover effects or externalities from the state activism and these spillovers do not entail corresponding loss to the home state (Connolly, 1970). Any scholar will find it difficult to apply proper terminology to accurately explain the spillover effects of the complicated nuclear bilateralism in a geographical region such as South Asia. However, the researcher has sought the aid of the term "Security Trilemma" to describe the complexity of this issue. The focal character of a Trilemma is overlapping bilateralism (Koblentz, 2014). According to Brooks and Rapp-Hooper (2013) Trilemma is an "actions taken by one state to defend against another state which will have the effect of making a third state feel insecure" (pp. 292–293). When a Trilemma occurs, the third tier of states will also suffer an indirect impact. Unlike the concept of dilemma, Security Trilemma shows similarities with the concept of externality or third-party effects. According to this research, the third-party effects of nuclear bilateralism between India and Pakistan or India and China fall into this category. Security Trilemma describes the unintended security

effects of the actions between two state parties on a third state such as minor states in South Asia. The security dilemma between nuclearized India and Pakistan or Indian and China will be extended as a trilemma which could also bear a negative effect on the other non-nuclear states such as Sri Lanka.

5. Organizational Failure

Nuclear organizations play a key role in the security of both civil and strategic nuclear environments. However, studying strategic nuclear facilities will be difficult due to national interest sensitivities. Scott Sagan (1994) wrote

> Complex organizations commonly have multiple conflicting goals and the process in which objectives are chosen and pursued is intensely political. From such a political perspective, irrational behaviors are seen as serving the narrow interests of some units within the organization even if the action appears "Systematically Stupid" from the leadership's overall perspective…. In military organizations, weapon-system operators often have different interests than their commanders, units in the fields have different interest than command Head Quarters, a particular service having different interest than joint chief of staff (p. 6).

The matters on organizational structures and human performances of the civil nuclear facilities will have a direct bearing on the nuclear security of the region. The issues here are mainly connected to the management of civil nuclear facilities. The concept of Defense in Depth could be utilized to better understand the emerging complexity in the areas of administrative physical and technical safety of civil nuclear facilities. According to popular safety manuals (OSHA, n.d), Nuclear safety encompasses "the technical and the organizational measures taken at every stage of nuclear facility design, construction, operation and waste extraction and disposal of fuel to shut-down". Safety culture encompasses the "core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure the protection of people and the environment" (USNRC, 2018, para 01). In the South Asian context, the

security of power plants and nuclear security safety and safeguards environments should be looked through this lens.

The power plant design is a core aspect of Defence in Depth. According to Meserve (2009), aging of Nuclear Power plants is another problem related to the performance of the nuclear industry. There is considerable experience and knowledge that nuclear states have gathered during the past by handling nuclear research reactors. The global safety regime should encourage the idea of sharing knowledge with the other non-nuclear countries since the threat emerging is transnational. According to Meserve (2009), there are problems associated with power reactor designs in South Asia such as releasing toxic water into the environment. If people consume this water in a direct or indirect manner, it would lead to various health hazards. If this radioactive water is released to the sea, the fishing resource will get contaminated and when people consume such spoiled fish, they will get long-term health effects. Problems of releasing of radioactive water into the environment was reported in Kaiga, Kalpakkam and Narora plants in India, (Aswin Kumar and Ramana, 2010). Some power plants had serious issues such as the collapse of the dorm due to a faulty design.

6. A Crude Look at the Whole

A bird view or a crude look at the whole is needed to understand the environment. The civil nuclear domain has a strong influence on empowering nuclear weapons proliferation. Such transcending elements had hardly been noticed by any previous study due to the fact that proliferation analysis has been confined only to the single territory of strategic nuclear domains. The author - deviating from the traditional approach - successfully noticed the synergetic dynamics of the two domains. The research has also found that the simplest parts of the system can have a bearing on the system as a whole. In such a case, the transcending elements of the civil and strategic nuclear domains have an indirect bearing on deciding the regional security outlook of whole South Asia.

There was a strong element of mutual causality[2] in the South Asian nuclear system. The relationships of such a system are mutually empowering

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[2]Every cause is also an effect and every effect is also a cause.

and the decisions made by the security elites of such a system are heavily influenced by tensions and patterns. A Causal-Loop Diagram (CLD) (Fig. 1) is utilized to encapsulate the finding related to the complex nature of the South Asian nuclear Environment. CLDs are generally used to explain the complexity in complex relationships of a system in a holistic manner. It maps how the variables, factors, issues, and processes influence each other's domains. Causal loops also reveal the unseen feedback structures that could not be captured in a bilateral linear relationship of a system. CLDs have nodes and edges. The variables are represented by nodes and the relationship between two variables is represented by the edges. It also has the strength of driving the study towards more realistic expectations and portrays the possibilities of transformation of the total system. The connections highlighted by the loops have positive and negative feedbacks and the interconnectedness among them. At the end of each loop, there is an arrow marked by a plus (+) or minus (−) sign. The plus signs are representing the reinforcing such as the increase of one variable will lead to an increase of the
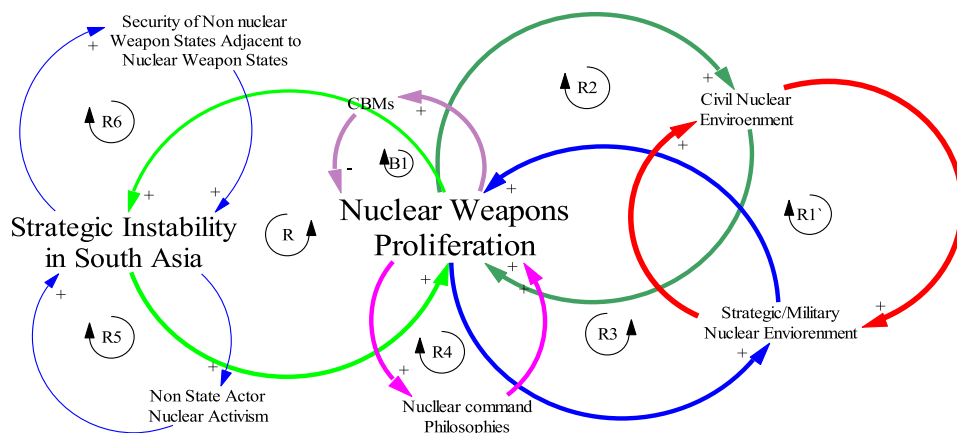

Fig. 1. Regional Security Complex of South Asia.

Source: Author
R = Reinforcing Loops
B = Balancing Loops
R-Nuclear Weapons and Strategic Instability Loop
R1-Civil Nuclear Domain and Strategic Nuclear Domain Loop
R2-Civil Nuclear Environment and Nuclear Weapons Proliferation Loop
R3-Strategic Nuclear Environment and Nuclear Weapons Proliferation Loop
R4-Nuclear Command Philosophies and Nuclear Weapons Proliferation Loop
R5-Non-State Actor Activism and Strategic Instability Loop
B1-Confidence Building Measures and Weapons Proliferations Loop
R6-Security of non-nuclear weapons states adjacent to nuclear states and Instability Loop

other. The minus signs represent balancing loops with inverse relationships as an increase of one variable that will lead to a decrease of the other. In the case of the South Asian total nuclear environment, the existing complexity could be framed as follows:

The strategic instability produced by the nuclear environment in South Asia is reflected by the causal loop diagram. When the strategic instability prevails, the security of states becomes unpredictable and uncontrollable to a greater extent. The research reveals that this condition emerges because of the uncertainty or the weak functioning of rational deterrence in the South Asian BoP environment. Rational deterrence is a reasonable basis for responsible states to embark on their respective nuclear weapons programs. It also provides a flavor of predictability in the state's nuclear relationships. However, in the case of South Asia, this predictability has become very foggy due to many out of equilibrium factors such as non-state parties that cannot be understood only with the aid of the traditional BoP matrix.

The common objective of any civil-nuclear program is to use nuclear facilities for the peaceful purposes of states. On the other side, the strategic or military nuclear programs function with the aid of nuclear weapons to maintain rational deterrence against the enemy. Even though their objectives are contrary to each other, both domains should ideally desire stability and peace ultimately. It is found that these two ends of a nuclear environment do covertly support each other's existence. According to the diagram, the "loop-R" portrays how weapons proliferation leads to strategic instability. The "R1 loop" makes a reinforcing relationship by connecting the Civil and Strategic nuclear domains. "R2" and "R3 loops" also connect the civil and strategic variables with the nuclear weapons proliferation variable. The argument of mutual reinforcement was built based on the causality of R1, R2 and R3 loops.

It is a common knowledge that nuclear weapons programs in India and Pakistan were initiated outside the Nuclear Non-proliferation Treaty (NPT). Neither India nor Pakistan gets their nuclear materials supplied by the Nuclear Suppliers Group (NSG). Both Programs are illegal attempts in the eyes of the international legal system. In such a backdrop, it is restricted for India or Pakistan to purchase nuclear material from the international market. On the other hand, India or Pakistan do not possess an abundance of nuclear material within their domestic resource pool to continue their weapons production. When states are involved in an arms race, they need to ensure the continuous supply of nuclear material such as Uranium and

Plutonium. It is obvious that the nuclear waste produced by the civil domain being used to produce more nuclear weapons for India and Pakistan. The breeder reactors stand as one of the most viable solutions for the scarcity of weapons-usable nuclear material for India and Pakistan since they generate more fissile material. Due to the arms races taking place between two states, there is a tendency to initiate more fast-breeder reactors in the future. This kind of production should be subjected to the verifications of the International Atomic Energy Agency (IAEA). However, the civil nuclear programs in India or Pakistan do not prefer any external interference and not strictly bound by any major international verification regime. Even now, some reactors are operated outside the verification and control of the IAEA since they want to ensure the smooth supply of more weapons-grade nuclear material for the production of weapons.

The R3 loop which discussed the South Asia's strategic environment reflects that the region show less stability as the nuclear proliferation process progressed. This is an odd situation against the theory of deterrence. Deterrent theorists argue that the huge danger of nuclear weapons encourages nuclear states to prevent stepping into conventional conflicts since they are aware that such a step can easily escalate into a nuclear war. However, in the case of India and Pakistan there is a clear positive correlation existing between nuclear proliferation and stepping into conventional military action. According to the research produced by Kapur (2007), as nuclear weapons production increases, the militarized responses between two states increased by five times more. It reflects that nuclear weapons had not resulted in the desired stability for the region and the danger of a nuclear war prevails. In such an environment, there should ideally be a strong global controller to stop the possible apocalypse. However, the South Asian nuclear program could be identified as a nuclear program without an effective global controller since the international community has shown a lethargic attitude over Indo-Pakistan nuclearization. It is obvious that the world powers have not excreted pressure on India or Pakistan to stop their weapons proliferation like they put pressure on North Korea and Iran. This lack of a central controller is a characteristic of a system of complexity.

The loop which discussed the nexus between the strategic and civil nuclear domains (R1 loop) found that political-military and scientific sectors are the main horizontal segments of a nuclear program. However, the

persons of each segment are not restricted to operate outside their respective sectors. Neither the vertical representations such as the civilian and strategic nuclear domains have a hard line to separate their workforce. Even though the two working environments are theoretically divided, almost all the top scientists who operate in both domains harness the research benefits from each other. For example, Late Abdul Kalam contributed towards political, scientific and military sectors as well as the civilian and strategic domains. In such a scenario, each sphere or domain getting benefitted from the other is unstoppable and leads to more weapons proliferation. The representation in all these vertical and horizontal spheres can be labeled as a cross-cutting feature of a hierarchical organization that reflects emerging complexity.

The R2 nuclear loop, i.e. – strategic nuclear environment – reveals that India and Pakistan are not alone in their Arms Race and BoP matrix. India cannot turn a blind eye to Chinese nuclear developments due to geographic proximity and ongoing border disputes. This was explained under the security trilemma or the third-party influence. China itself is in an arms race with the United States due to the global power competition, but China has not openly shown any interest in entering into an arms race with India. However, it was found that India is encouraged to match the level of Chinese nuclear capability as its nuclear benchmark if they want to be on the safe side from the threat emerging in the neighborhood. Since Pakistan is highly reactive to Indian nuclear developments, any increase in the Indian nuclear weapons stockpile will be immediately considered as a threat towards Pakistan. The adjacent nuclear powers such as China can induce weapons acceleration in South Asia even when they are not part of the South Asian BoP equilibrium. This is what explains in complexity as out of equilibrium actors. This feature was not seen during the Cold War nuclear politics.

According to loop R3 - the civil nuclear loop - the organizational culture and problems in Defence in-depth have made the region more vulnerable to possible human errors. India and Pakistan have not proven themselves in properly securing their nuclear substance. The world-renowned Nuclear Security Initiative Index has placed both countries just above the rogue state of North Korea. It will be difficult for India or Pakistan to continue to allow their civil nuclear programs to benefit the nuclear weapons programs in the long run by successfully avoiding all emerging nuclear dangers.

It was also found that there is a paradigm shift taking place in the nuclear command philosophies of India and Pakistan. India has a tendency to threat Pakistan by using her conventional military capability since it is superior in strength and resources. Pakistan is trying to counter it with the "Full Spectrum Retaliation" policy by posing a tactical nuclear threat. The Indian policy circles try to re-counter such measures by adjusting their basic policy of "No First Use" (NFU) since NFU does not give the strategic leverage for India to make quick decisions against Pakistan or China in a nuclear crisis. This new trend provides evidence for the continual adaptation and evolving properties of the complex South Asian nuclear command system which is another character defined by NECSI.

The R4 loop is portraying the nexus between nuclear command philosophies and nuclear weapons proliferation. The military involvement in Pakistani nuclear command structure is more prominent compared to India. Pakistan also possesses more tactical nuclear weapons than India. In recent times, even India revises the civil-military ratio in the command structure according to the strategic needs. The Indian nuclear command structure used to be controlled by the civilians from the very initial stages of nuclearization but in recent times there is a tendency to increase more military men in the structure. The rationale behind this move is to ensure that the command structure can address the issues of smooth and prompt operability if the nuclear assets needed to be employed in a battle plan. Only the military commanders know the practical use of these assets in a war situation. The increase of this trend could bring down the strategic value of nuclear weapons and encourage the production of more tactical nuclear weapons. As the battlefield friendliness of nuclear weapons is improved, it will lead to more tension escalation between two states. It is an unavoidable security risk emerging due to the gradual militarization of command philosophies. The trend evolves due to the arms race taking place between the two states and it is a clear sign of the evolution of systems which is another characteristic of complexity.

The existence of non-state actors has also been identified as an out of equilibrium dynamic. The data on the R 5 loop – the non-state actors - revealed that from time to time, the non-state actors have sabotaged the confidence-building process of India and Pakistan. It has also shown the vulnerability of nuclear installations to terrorist attacks due to the

widespread terrorist activities in the region. The number of terrorist attacks that occurred closer to nuclear power plants indicated the poor security conditions of the civil nuclear sector (Lalwani and Haegeland, 2018). The research has also found that there were quite a few instances of nuclear facilities targeted by terrorists. In some instances, the workers inside the civil nuclear facilities have become a threat. The overall terrorist presence and their widespread activities have made South Asia a very dangerous place on earth. It is found that both India and Pakistan are lacking in a cooperative relationship for working against terrorist interests in the region. Instead, there is a tendency of accusing each other of supporting terrorist organizations.

The Confidence Building Measures (CBMs) harmonize the enmity between the nuclear states. B1 loop is the only inverse loop that functions against nuclear weapons proliferation. It is obvious that nuclear CBMs initiated between India and Pakistan are not very effective due to the little importance placed on them by the states. Unlike the treaties signed between USA and USSR during the Cold War, CBMs were not seriously considered as an effective tool of arms control in South Asia. Therefore, South Asia does not have a strong arms control or disarmament program in place. There are no signs of such an effort emerging shortly as well. There was no extra effort taken by both the Indian and Pakistani governments to restore the communication channels when a crisis occurs. Rather the two governments show a tendency of ceasing the communication at the very beginning of conflict escalation. Even the long-due SAARC summit cannot be summoned due to the ongoing Indo-Pakistan communication deadlock. The role played by the printed and social media shows provocative signs instead of harmonizing the situation. The aggressive rhetoric and deliberately circulated misinformation can create ambiguity in the minds of the leaders so that they disturb the function of the CBMs. It was also revealed that at the same time, the states can switch into a mode of accelerating more nuclear weapons production to satisfy the ambiguities set forth due to the forecasted conflict escalation. In such a foggy backdrop, ambiguous statements about the state's second-strike capability also contribute to acceleration arms races in terms of increasing retaliatory capacities. These instances are examples of elements outside the traditional BoP matrix between states. They are manipulated by out of equilibrium actors such as terrorist organizations. Therefore, the weaknesses of CBMs rather than their strengths are prominent in South Asia.

7. Conclusion

This research revealed the complex nature of the regional nuclear environment of South Asia. The holistic approach enabled the author to understand the emergence of the security issues of the total nuclear system of South Asia. In this research, the author purely wanted to look at the subject matter from "the risky neighborhood" point of view to capture the emerging complexity and nuclear vulnerabilities in order to highlight the importance of mitigating future risks. There should be an intensified international intervention to bring India and Pakistan to the nuclear mainstream nuclear discourse. As long as these two states operate outside the nuclear loop, they will be engaged in a robust arms race which will detrimentally impact the nuclear weapons proliferation in South Asia. Meanwhile, the non-nuclear states of South Asia should start working very closely with the international nuclear security bodies such as the International Atomic Energy Agency (IAEA) to mitigate the emerging risks of the region. They should also consider working closely with the regional nuclear powers to obtain more information necessary to enhance more nuclear preparedness. It is advisable for the governments of non-nuclear states to enter into a special MoU with the Indian and Pakistani governments to act on early warning and collaborative disaster management.

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