



Security Nexus Perspectives

SYSTEM PERSPECTIVE

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The views expressed here are of the author and do not in any way represent the position of the organization or government.

Abstract:

This paper argues that the complex interaction of multiple agents with various interests at different layers of the political governance system has engineered an emergence of a fragmented and weak security system in PNG. Therefore, this analysis strengthens the idea that PNG should develop a complex adaptive system that is versatile enough to read signals and respond to surprises from a complex and uncertain security environment.

1.0 INTRODUCTION

The current national security system in Papua New Guinea (PNG) is fragmented and more susceptible to existing and potential threats. The emerging threats of climate change, increasing transnational crimes, and exposure to bio-security threats such as the intrusion of Covid-19, to name a few, cogently demonstrated not only the porousness but state preparedness in managing security threats in today's complex, interconnected, and uncertain world.

The purpose of this paper is to analyze PNG's national security through complexity science theory (CST). CST has recently gained momentum in the national security space in light of the 2007-2008 global financial crisis and the 9/11 Terror Attack in the US. Analyzing national security from a CST perspective is important to understand the whole security system from a bird's eye view and how it evolves, adapts, and responds to threats in a fast-changing environment.

This paper is an attempt to respond to this central question: how vulnerable is the PNG national security system in a changing environment? In order to explore and gain some insights into this question, it employs a qualitative approach that involves a content analysis of the existing literature on national security based on critical cases.

This paper is divided into four parts. The first part focuses on key definitions. Following on from the first part is a brief literature review on CST. The third part is an analysis of PNG's national security through the lens of CST. The last part concludes the paper.

Let us now turn to key definitions which will be used throughout this analysis.

2.0 DEFINITIONS

This section defines security and links it to systems and CST.

2.1 Security

In the field of security studies, various definitions are found because security is a comprehensive concept that not only refers to the traditional meaning of war and peace but has been expanded after the Cold War to include non-traditional security concepts that encompass migration, human rights, bio-weapons, cybersecurity, climate change, and poverty (Mesjasz 2010). Hence, the concept of security has increasingly become more multi-faceted and complex (Stone 2009). Despite various definitions of security, UNDP's (1994) definition will be used throughout the paper.

This definition is more relevant in this paper because it gives primacy to human beings and their complex social and economic interactions in society. The human security dimension of national security is a shift away from state security to individual security. It basically captures individuals as the main subject with an end goal to protect them from traditional threats (military intervention) and non-traditional threats such as poverty and disease (Catian 2020). But this does not mean that the state is replaced as the central security guarantor. At some point the state may not necessarily guarantee social security, for instance, political corruption can affect the economy which sustains and

provides a social safety net for vulnerable people in the informal economy. Hence, human security complements state security in this respect.

This notion of a human-centered security approach has expanded the definition to include threats from political, economic, strategic/military, social, environmental, and technology (Buzan 1991a, Buzan et al 1998b). The Covid-19 pandemic is a good example of social security. The Government of Papua New Guinea (GoPNG) declared it as a national health security, however, as it became a declared pandemic by the World Health Organisation (WHO) it then elevated its status from a health security issue to a national security issue. This process, according to Buzan, et al. (1998b), is the securitization of policy agendas.

The other definition intrinsically linked to security is system as defined below.

2.2 System

A system is referred to as a structure of independent interacting units that can remain stable, or suddenly change unpredictably at some critical points. At this point, the system might disintegrate into a form where no pattern is observed (chaos) or may transform into an ordered pattern (Eppel 2009).

A system is a subsystem in itself (Wahl, 2019). Moreover, a system can be abstract or concrete; elementary or composite; linear or nonlinear; simple or complicated; complex or chaotic (Rickles et al 2007). A complex system in this case is any system with more than three interacting variables (Wahl 2019). This complexity has been theorized as complexity science as briefly explained below.

3.0 Complexity Science Theory (CST)

CST is rooted in physical sciences, in particular, energy, matter, and the physical universe. The understanding of matter based on the Newtonian theory of linear casualty does not always hold true. As scientifically proven, matter is sometimes unpredictable, can change, and generate new patterns without some kind of intervention from the external environment. This non-linearity behavior has implications for understanding complex systems within which certain things occur or behave (Eppel 2009).

A chaotic system is a disintegrated system with some order, which can self-organize and emerge as a new ordered pattern without external intervention (Lewin, 1993). That is the interaction of a few units that lead from order to disorder in a system, especially, a complex system – this interaction produces intricate dynamics. The ‘butterfly effect’ is an underlying principle of chaos, where a small difference can lead to a big difference. Chaos occurs naturally in areas such as climate change, or artificially as in the stock market, for instance (Rickles et al 2007). This has been seen in the case of Covid-19 when it suddenly emerged in Wuhan Province in China and spread globally in an unprecedented manner.

Complex systems such as biological systems, human systems, and social systems exhibit non-linearity behavior. In the self-organizing biological system, an organism or community of organisms evolve and adapt to changing environment. The environment is open where feedback (both positive and negative) plays a critical role to influence an organism to mutate or replicate and multiply within the environment it coexists. The human system shares a similar evolutionary process but is responsive to external and internal environments. Humans respond to biological changes such as temperature and social changes such as information. The human system has made social systems even more complex with various and multiple factors influencing changes in society (Eppel 2009). This has implications for public policy such as national security.

The question that one would pose is, is CST relevant to national security? This leads to the conceptualization of national security in CST.

3.1 Conceptualizing national security in complexity science

In conceptualizing national security, simple yet important building blocks (characteristics) of CST proposed by Brown (2019) are used here. These are systems, agents, interdependence, and feedback as tabulated in the matrix below.

Terms	Characteristics
Systems	<ul style="list-style-type: none"> • Network of independent actors • Governed by rules • Subject to no authority • Can be open or closed • Open systems are vulnerable to outside influence • Complex systems are always almost open
Agents	<ul style="list-style-type: none"> • Complex actors within a system • Self-organising • Agents interact with each other and produce emergence or hierarchies • Preferential attachment – through self-organizing governed by law of power where agents that interact more are more likely to attract more actors to increase interaction
Interdependence	<ul style="list-style-type: none"> • Degree of interaction between actors within a system in a network fashion • Complex network of interaction
Feedback	<ul style="list-style-type: none"> • Act as stimuli that can cause an agent to take action or change behavior

Complexity science is complex because it is an interdisciplinary subject that involves mixed (both quantitative and qualitative) methodologies to interpret complex system behavior. The above CST building blocks are relevant for non-mathematicians, hence, this qualitative analysis.

As stated elsewhere, the national security system is complex, interdependent, and uncertain due to multiple agents with various interests socially interacting purposively in an open environment. A stable security environment may be interrupted by feedback in the form of a natural or artificial intervention at a certain point in time. This opens a window of opportunity for the environment to shape agents' behavior within the security system. As more agents interact it attracts even more agents to increase interaction in a dynamic fashion, thereby producing unintended behavior. Information plays a critical role as feedback to attract more agents to interact collectively and influence certain outcomes. Three examples below demonstrate how agents interact in a dynamic way based on feedback within a complex system to produce certain outcomes.

The first example relates to UN intervention in war-torn countries such as Sudan or Rwanda, to name a few, where a powerful member country can politically influence the UN Security Council (UNSC) to declare war on them. Ideally, information about genocide committed by warlords in war-torn countries legitimizes UNSC intervention. Here, information as feedback causes agents to interact in the UN system and influence a decision that positively stabilized the conflict.

Another example is on how speculation (driven by information) can distort markets in the economy. The 1997 Asian financial crisis has been attributed to speculation of weak liquidities in the financial markets. They incurred a significant amount of liquid liabilities not insured by liquid assets. This practically signaled a panic to the point where it affected the East Asian Economies (Moreno 1998). Speculation on financial markets based on information as feedback caused agents in the regional market system to interact and produce a negative effect.

The last example is the 2007-2008 global financial crisis associated with the housing bubble which affected the global economy. This crisis was caused by a bubble when the prices of real estate reached a peak point and diminished financial institutions' ability to repay the loans they borrowed from other financial institutions to lend to consumers (borrowers) of real estate. As real estate prices dropped it affected the borrowers' financial capacity to repay the loan. The deregulation policy of financial institutions introduced by the US in the 1970s enabled a vulnerable environment – there was less policy oversight of financial institutions. As a result, the shadow banking system lacked the financial cushion to absorb large loans and respond to shifts in prices in real estate (US Financial Crisis Inquiry Commission 2011). Apparently, the US' sophisticated financial system could not predict the outcome generated by the complexity of the interactions. Here, the interaction of agents in the financial system based on information as feedback negatively affected the US economy.

These cases illustrate two things that are relevant for military, economic security, and social security. First, information and policy (feedback) interventions at a certain point had caused a significant impact on the global economic system. Second, feedback attracted more agents to interact in the real estate industry and UNSC and constructed a hierarchy of winners in the beginning and losers at the end.

3.2 The Relevance of CST and national security

CST is relevant and important to national security given the increasingly complex and uncertain security environment. It is increasingly replacing the linear model of interpreting and explaining complex security issues in an interconnected world. Security issues are complex because they intricately affect other policy issues in the system. These issues are intertwined and depend on each other. Given the openness of the system sudden events from internal or external environments tend to affect the interaction of agents that often lead to some kind of unintended outcomes. The degree of this relationship exhibits a national security environment that is more uncertain and quite difficult to predict using linear-causality approaches. A small policy issue such as an economic recession could transform into a complex national security issue. An example of this can be seen in the well-known 2010 Arab Spring protests.

Complexity science is a cross-disciplinary subject that encompasses elements of physics, biology, information sciences, and sociology. Hence, it appears to be a promising analytical framework that can be applied by policymakers to interpret complex security issues holistically.

This leads to the next section which focuses on analyzing PNG's national security system through CST.

4. PNG National Security: modern security challenges

This section describes the national security system in PNG and then analyzes critical security cases based on CST building blocks.

4.1 National security governance arrangement

Governance of national security in any political system should reflect the globalization of security in the 21st century and PNG is no exception. The world is changing rapidly with globalization resulting in the emergence of sophisticated interdependence in transportation, trade, and technological advancement. In essence, interdependence has significantly intensified the migration of people, financial transactions, technology and knowledge transfer, and cultural spread (John et al 1997).

The magnitude of globalization, in many ways, has significantly transformed the international security landscape since the end of the Cold War. There has been a major shift from traditional security to modern security, which is systemically linked to other non-security complexes that concerns humanity. This involves natural and man-made 'wicked'¹ issues such as climate change, energy poverty, human rights, health epidemics and pandemics, food security, financial shocks, energy

¹ Refers to complex policy problems which are intertwined – solving one problem may lead to an unpredictable effect on others, hence, creating uncertainty.

security, the geopolitics of resources, governance and corruption, transnational crime, intra-state wars, and cybercrime.

The current international and regional security architecture have considered these changes in the global fight against threats that affect humanity in terms of ‘freedom from fear’ and ‘freedom from want’ (UNDP 1994). This does not diminish the relevance of traditional security (military). Protection of sovereignty by military invasion in the age of technology remains yet a major function of all states. States have and will continue to compete for global power and resources, thus increasing the tendency for tension and conflict.

PNG’s national security system has not experienced a major transformation to respond to modern security challenges in the new security architecture, despite a recent policy shift (Kabuni, 2021). The system is as old as the Australian colonial administration. It is loosely linked to other sub-systems in a fragmented fashion, hence, unable to respond to security threats (GoPNG 2013a, GoPNG 2013b).

At a political level, PNG has a Westminster parliamentary democracy system which consists of a three-tier system of government governed by the national constitution: national government, provincial government, and local-level government. The national government consists of three arms of government: Executive, Legislature, and Judiciary.

The Executive is a political decision-making institution of the government represented by the National Executive Council (NEC). The NEC is made up of appointed cabinet ministers of the ruling party and its coalition parties. The NEC’s decisions are legally binding and implemented by the bureaucracy at the three levels of government. The bureaucracy constitutes public sector agencies which are categorized into various sectors such as health and education, to name a few. National security is situated within in the Law and Justice Sector (GoPNG 2020d).

The legislature is a law-making institution where all elected members of parliament (MP) congregate to debate and pass laws on matters of national interest. The judiciary interprets these laws. The police force and correctional service agencies in the public sector enforce these laws.

At a strategic level, PNG’s national security is characterized by three forms: military security, internal security, and situational security (Laki 2005). The first focuses on minimizing or neutralizing any attempt by an enemy to destroy a country through armed invasion, for instance, a potential invasion by Indonesian armed forces. The second form deals with subversive elements that are intent on destroying statehood within the sovereign framework of the state. Some examples of this kind of threat include civil war, tribal/ethnic war, terrorism, or transnational crimes, to name only some. The last form focuses on long-term threats to a state’s social, economic, demographic, and political status, which may reduce its ability to independently co-exist in the world. A good example is a financial crisis with the potential to affect the national economy.

The PNGDF protects national sovereignty from military invasion or intrusion including supporting the Royal Papua New Guinea Constabulary (RPNGC) in internal security and civic responsibilities in nation-building while the Police Force enforces the rule of law to maintain law and order in society.

Other security agencies such as the National Intelligence Organisation (NIO), Customs, and the Office of Immigration, to name a few, respond to situational threats.

From a system perspective, the three arms of government are subsystems of the political system. These internal systems also interact with other external systems, in particular, the regional and international security systems on security issues. For instance, the government interacts with foreign governments or multinational organizations (MNCs) to pursue strategic foreign policy at the international level. This shows the complexity of governing national security.

Having described PNG's national security as a complex system, I now move on to analyze and discuss critical security cases in detail.

4.3 Analysis and Discussion

In this part, I critically analyze and discuss the vulnerability of the national security system based on CST's main building blocks: system, agents, self-organizing, interdependence, and emergence.

One of the most pressing policy challenges in PNG is the vulnerability of the national security system to respond to existing and potential or emerging threats from internal and external environments. There is an increasing concern that the current political system remains, to some extent, quite weak in governing national security interests due to a complex interaction of multiple agents with various interests at different levels of decision-making. This observation could be attributed to some internal and external factors.

Internal environment:

First, a possible explanation for this might be that at the national level, political agents tend to influence certain outcomes that often appear contrary to the national interest. Over the years, it has been observed that a good range of public policies and legislation have been proposed as positive feedback to the government for improving national security in the areas of defense, intelligence, biosecurity, food security, energy security, and governance. To date, less has been done in these areas simply because political agents often do not consider national security as a means for maximizing political capital, or what economists call incentives that help build and sustain their grip on power.

The evidence of this can be clearly seen in the implementation of the National Security Policy 2013 (NSP) and Defence White Paper 2013 (DWP). Since the launching of these strategic policies, there has been less investment in implementing many of the important priorities and actions which if implemented would have a significant impact at the system level.

A huge amount of money, both from national and donor agencies, has been spent on social and economic areas such as health, education, infrastructures, and extractive sector based on preferential attachment where multiple agents tend to interact more, for instance, K2.5b (a massive 39% increase in real terms on 2021 budgeted expenditure) (Leng and Howes, 2022). These areas seem to have attracted incentives for building political capital. For instance, the extractive sector appears to be the most attractive area where rents are symbiotically maximized for political gains as reported in the

media (Garnaut 2015). Despite a huge investment in social, economic, and extractive sectors there has been less improvement as evident in the human development indicators (HDI Report 2018). What remains to be seen is only a slight improvement in the level of literacy and maternity rates.

Second, one of the most significant pieces of legislation in combating the corruption issue, which is also one of the critical threats, has been the delay in the enactment of the Independent Commission Against Corruption (ICAC) Bill (GoPNG 2020d). This Bill could not be passed by the parliament for some time because some of the political agents may have other political interests. If this Bill is given the opportunity to be passed by the parliament it would have made a big difference in the whole system since corruption has affected national security at different layers of decision-making. Hence, it can be argued that there is a high tendency for political agents to interact and support policies or legislation that maximize their gains.

Third, another significant aspect of the reform in the national security space is the ineffectiveness of the intelligence community in providing timely and quality advice to the National Security Council (NSC) and NEC (May and Laki 2009). The NIO's capacity and capability were reduced under the Department of Prime Minister & National Executive Council (PMNEC) restructure in 2000. As a result, the intelligence community remains underfunded to execute its mandated functional responsibilities.

Lastly, in an attempt to reform the country in 2010, the Somare government introduced Vision 2050 outlining major policy reforms. National security is one of the seven pillars of reform (GoPNG 2009c). The main reason is that national security has not been considered in other policies and plans and that it needs critical attention. Vision 2050 has been seen by the government of PNG as positive feedback to transform the country.

This strategic policy direction incrementally affected the PNGNSP and DWP in transforming national security in the 21st century. Moreover, the O'Neil government picked up from the Somare government's reform and advanced the agenda to include Energy Policy, Food Security Policy, Cyber Crime Act, Social Protection Act, and Human Rights Act (GoPNG 2020d). These new policies and pieces of legislation were introduced in response to the effects of energy price fluctuation, climate change, natural disasters, and social media propaganda against the ruling government respectively.

In February 2020, the Marape government introduced the Social Law and Order Sector (SLOS) Plan (GoPNG 2020d), after much criticism on the approach the O'Neil government used to govern the country. The SLOS Plan emphasizes greatly on national security as a critical enabler for connecting economic and social systems with national security. It is strategically designed to align foreign policy, economic policy, defense policy, and social policy with national security.

These policies mentioned above (from Vision 2050 to SLOS Plan) have been partly realized because of changes in government in my own assessment.

External environment:

Evidence suggests that external agents have or may have some form of influence on the national security system through policy and monetary interventions which are seemingly negative feedbacks.

The first important observation was that the global community has been caught by Covid-19 as a surprise. Like other advanced countries and developing countries, GoPNG saw the signal from Wuhan Province in China with the first Covid case. It did not, however, prepare for covid-19 until it invaded its shore. A lockdown was declared for two weeks followed by a two-month State of Emergency 2020 (SOE) (Business Advantage PNG 2020).

Covid-19 has caused a systematic effect on the global community due to the fact that countries are interdependent. The cases in China caused what we call a 'butterfly effect' in the international system affecting other subsystems (countries) at different levels of impact. In PNG, an attempt to de-escalate the spread of the virus instead led to another problem. That is, given the vulnerability of our security system to respond to such a deadly virus, the strategic approach has, to some extent, affected other internal subsystems such as the informal sector which about 80 percent of self-employed people rely on for social security (PNG Loop 2020). The private sector could not function efficiently as small to medium enterprises (SMEs) remain closed and many staff were laid off (The National 2020). Therefore, the SOE affected the business cycle in generating revenues and sustaining the economy and livelihood of people.

The single most striking observation to emerge from the critical case comparison is that PNG, like other developing countries, did not record high numbers of cases and deaths (WHO 2020). Paradoxically, positive cases recovered quickly, and there were no accounts of transmission of coronavirus from positive cases to a normal person.

Interestingly, the coronavirus as a negative feedback from the external environment was observed to have agents self-organized and attracted complex interaction of more agents in the internal environment. The complexity of this interaction created an emergent of the "new normal." The "new normal" appeals that coronavirus is part of a family of viruses that must be socially accepted by everyone. Countries will have to adapt to the "new normal" in the changing environment.

Second, a possible explanation for this might be that external agents structurally consider PNG as an important strategic theatre for geopolitical competition in the Pacific region due to its strategic location and strategic assets (resources) (Canyon 2020). Another possible explanation for this might be that political agents have seen PNG as a geostrategic threat in the Pacific premised on the first point (Hualupmomi 2011). These geopolitical-geo-strategic-geo-economic reasons may have affected the governance of security.

In retrospect, the national security system has not undergone much transformation since 1975. The system began to slowly erode after the Bougainville crisis (May and Laki 2009). In fact, the security governance arrangement in the Bougainville crisis has triggered much criticism at the political level and within military ranks that led to the Sandline crisis in 1997. In early 2000, the PNG Defence Force (PNGDF) was downsized based on advice from the Government of Australia (GoA). And one of the

main reasons for this reform at that time was the threat of a military coup in light of the Sandline crisis (Dinnen et al 1999). The GoA believed that the crisis could potentially influence future military revolt against the state. As a result, PNGDF reduced the size of its manpower and capability. For instance, PNGDF personnel was reduced from about 5,000 to about 2,000 personnel to perform its constitutional duty. Ultimately, this has led to a dramatic decline in the morale of military personnel and the effectiveness of PNGDF operations in performing its civic role as well as conducting air and maritime surveillance along the borders.

Finally, a notable example of the reform in national security has been the controversial Police Enhancement Cooperation Program (ECP) funded by the GoA (Orere 2005). This program was supposedly structured in such a fashion as to have the Australian Federal Police (AFP) Personnel work within the Papua New Guinea Royal Constabulary (RPNGC) with full immunity. That is, these personnel would have to work outside of the PNG constitution. In the process, it created tensions among RPNGC personnel and a few politicians. The program was then ruled unconstitutional by the PNG Supreme Court when challenged by the former MP, Hon. Luther Wenge.

These observable cases suggest that reforms (both positive and negative feedback), in many ways, remain partly implemented and, to some extent, have greatly weakened the coordination of national security and morale and pride of the agencies and personnel in the PNG Defence Force, NIO, and Police Force.

Turning now to the implications of the evidence gathered from literature and critical cases.

5.0 Implications: practice and theory

This part presents some implications for practice and theory.

First, this analysis shows that national security is a complex system of multiple agents with various interests that are intricately linked. They interact in a dynamic way to produce certain outcomes that are quite difficult to predict at which juncture. For example, many of the past policies and plans were short-lived because they were punctuated by a political change at a period that is quite difficult to ascertain.

Second, the present findings indicate that both positive and negative feedback (policy reforms) caused agents to self-organize at different layers of the political governance system and strategically re-engineered the security system. The complexity of this interaction produced an emergent security system that is somewhat fragmented and weak to respond to security threats in a complex and uncertain changing security environment.

Third, the findings show that the more agents are attracted to certain stimuli (for instance, extractive industry) the more they interact and self-organize into an emergent weak governance system. Weak

governance attracts both positive² and negative feedback to open up a local pocket of order of emergent. In so doing, it destabilizes a system to function effectively as indicated in the analysis and discussion.

Fourth, the findings show that the national security system is dependent on internal and external systems in a complex way. If one part of the system is affected, it can affect the entire system or part of the system. This complexity makes it quite difficult to predict the outcome at which juncture it may occur. The case of Covid-19 clearly demonstrates this.

Fifth, the principal theoretical implication of this analysis is that complexity science best explains a non-linear behavior of systems in a complex and uncertain environment. The analysis of national security in PNG shows that security problems are complex because in solving one problem another problem is created. The problems are systematically linked in a complex way. Thus, creating an uncertain environment and predictability becomes quite difficult and challenging for policymakers. The insights gained from this analysis may be of interest to policymakers for national security planning and other policy areas.

Nevertheless, this study lays the groundwork for future research in national security and other policy areas. While this analysis is based on a qualitative approach, this can be extended by applying a quantitative approach or a combination of both approaches.

Finally, the analysis has important implications for strategic policy planning. Given the complex and uncertain environment in the 21st century, the findings suggest that policymakers should consider developing a complex adaptive system that is able to adapt and read the signal from the changing environment and respond to surprises. The case of Covid-19 demonstrates how weak PNG's national security system is. A notable example was a positive case inside the Covid-19 Task Force Command Center. This in itself demonstrates that the security system is weak.

6.0 Conclusion

This paper sets out to explain PNG national security from a complexity science perspective. The relevance of complexity science in explaining national security is supported by the current observation that the complex interaction of multiple agents with various interests at different layers of the political governance system has engineered an emergence of a fragmented and weak security system in PNG.

² Positive feedbacks may also turn into negative feedbacks in the process of reform as shown in the case of policy advice provided by external political agents to reform police and defence.

Overall, this analysis strengthens the idea that PNG should develop a complex adaptive system that is versatile enough to read signals and respond to surprises from a complex and uncertain security environment.

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