



# **A Strategic Adaptive Defence Planning Framework for State Polities in the 21<sup>st</sup> Century**

**Dr Andy Scollick**

## Abstract

Strategy and defence planning for national security must be fit for purpose and future-proof if Ireland and other European states are to meet the challenges and uncertainties of the 21<sup>st</sup> century. This paper proposes that the design of a multilevel adaptive architecture for defence planning can be usefully informed by complex adaptive systems thinking. Defence planning is the range of activities that constitute preparations for the defence of a state in an inherently uncertain future. Developing a durable defence planning system requires institutions and an architecture that are fundamentally contextual, visionary, reflexive, integrative, functional, multilevel and adaptive. A complex adaptive systems perspective serves as a foundation for the development of an adaptive planning approach; the purpose of which would be to transform defence planning into an integrated process that is responsive to the rapidly changing strategic landscape. Significantly, as a way of thinking, a strategic adaptive framework complements rather than replaces existing defence planning structures and processes. Achieving effective defence planning requires a paradigm shift in the pattern of thinking: away from the view that systems are largely predictable and controllable, toward a view that recognises their intrinsic complexity and dynamics, and that addresses deep uncertainties.

## Introduction

“Strategy is a system of expedients; it is more than a mere scholarly discipline. It is the translation of knowledge to practical life, the improvement of the original leading thought in accordance with continually changing situations. It is the art of acting under the pressure of the most difficult conditions.”<sup>1</sup>

Regardless of how we define strategy, Helmuth von Moltke the Elder’s 1871 description recognises that strategy is a system capable of learning and adapting in order to fit changing conditions. Lawrence Freedman describes strategy as a process of thinking about actions in advance, in light of our goals and capacities.<sup>2</sup> Strategy is about maintaining a balance between the desired objectives (ends) and the use of realistic methods (ways) and available resources (means) to achieve them. Freedman adds that a strategy is much more than a plan. A plan assumes a sequence of events that allows us to move in an orderly way with confidence from one state of affairs to another; whereas strategy “is required when others might frustrate one’s plans because they have different and possibly opposing interests and concerns.”<sup>3</sup> In Freedman’s view, strategy is necessarily adaptive due to the inherent unpredictability of human affairs. The process of moving toward a desired end state evolves through a series of intermediary states, each one different to what was anticipated at the start. This requires a reappraisal and modification of the original strategy, including the ultimate objectives themselves.<sup>4</sup>

Planning is the process of determining in advance what objectives should be achieved; and how. Planning also anticipates changes, problems and successes. To this we must add the monitoring of implementation actions, evaluation of results and the management feedbacks that modify

1 Field Marshal Helmuth von Moltke, Chief of the Prussian General Staff, “On Strategy” (essay, 1871), in Daniel J. Hughes (Ed.), *Moltke On the Art of War: Selected Writings* (New York, NY: Presidio Press, 1993), p. 124.

2 Lawrence Freedman, *Strategy: A History* (New York, NY: Oxford University Press, 2013), p. x.

3 Freedman, *Op. Cit.*, xi.

4 Freedman, *Op. Cit.*, xi.

not only the plan but also the planning process itself. Like strategy, planning is about learning and adapting; it is an iterative and reflexive process. In defence and other contexts, planning provides a basis for other management functions. Therefore, defence planning is the foundation for decision-making in defence organisations, an integral component of defence policy-making and the core defence management process.<sup>5</sup>

Strategy and defence planning must be fit for purpose and future-proof if state polities<sup>6</sup> such as Ireland are to meet the challenges and uncertainties of the 2020s and beyond. This paper proposes that the design of a multilevel framework for national defence planning can be guided by complex adaptive systems thinking. Following this introduction, the paper considers the nature of defence planning in the context of a state polity. It then outlines the key design elements of an architecture for defence planning. Next, the paper asserts that a complex adaptive systems perspective is essential for guiding the understanding of a multilevel adaptive defence planning architecture. It then suggests an approach to defence planning based on the concept of adaptability. Finally, the conclusion is presented as a basis for further discussions regarding the design and development of defence planning consistent with Ireland's 2015 White Paper on Defence and 2019 Update.

## Defence Planning

According to Colin Gray, defence planning is the range of activities that constitute preparations for the defence of a polity in the future.<sup>7</sup> All polities are obliged to plan (i.e. make systematic provision) for their security and defence in a future that probably will contain dangers. Defence planning, while predominantly focused on the military, also includes non-military thought and activities.<sup>8</sup> In Gray's view, defence planning relates to and covers the following activities, which need to be considered as continuous processes:

- Preparation of military advice relevant to the feasibility of options for political choice as policy;
- Selection and design of grand and military strategies;
- Design, making and administration of military programmes; preparation of military plans;
- Coordination with complementary social, economic and political/diplomatic programmes and activities;
- Gathering and assessment of intelligence bearing on possible risks and threats to the polity; and
- Cooperation with allies (and co-belligerents, if not necessarily friends).<sup>9</sup>

<sup>5</sup> See: Todor Tagarev, "Defence Planning – Core Processes in Defence Management," in *Defence Management: An Introduction*, eds. Hari Bucur-Marcu et al. (Geneva: Geneva Centre for the Democratic Control of Armed Forces, 2009).

<sup>6</sup> In this paper, the terms 'polity' and 'polities' are used in the sense of a coherent, politically-organised structure with a distinct identity, regardless of the context-specific form of governance (e.g. self, collaborative or hierarchical), institutional arrangements, and interactions between the governing system and the system-to-be-governed; Jan Kooiman et al., "Interactive governance and governability: an introduction," *The Journal of Transdisciplinary Environmental Studies* 7, no. 1 (2008), pp. 3-9. According to Ferguson and Mansbach, "A polity (or political authority) has a distinct identity; a capacity to mobilize persons and their resources for political purposes, that is, for value satisfaction; and a degree of institutionalization and hierarchy (leaders and constituents)"; Yale H. Ferguson and Richard W. Mansbach, *Polities: Authority, Identities, and Change*, (Columbia: University of South Carolina Press, 1996), p. 34. There are many types of polities, including state (e.g. Ireland) or non-state (e.g. Islamic State), supranational (e.g. the European Union) and multilevel (e.g. NATO).

<sup>7</sup> Colin S. Gray, *Strategy and Defence Planning: Meeting the Challenge of Uncertainty* (Oxford: Oxford University Press, 2014), p. 4.

<sup>8</sup> Colin S. Gray, *Op. Cit.*, p. 4.

<sup>9</sup> Colin S. Gray, *Op. Cit.*, p. 4.

As Gray emphasises, the purpose of strategy and defence planning for national security is to deal with the challenge of inherent uncertainty about the future.<sup>10</sup> Fundamentally, defence planning aims to limit the condition of uncertainty.<sup>11</sup> Therefore, defence planners must cope with and account for unavoidable uncertainties arising from variability, inadequate knowledge and ambiguity about the state of the world and human behaviour. However, many important planning problems faced by decision-makers are characterised by a high degree of uncertainty about the future that cannot be reduced by gathering more information or statistical analysis.<sup>12</sup> Decision-making under such situations of deep uncertainty<sup>13</sup> is a particular type of “wicked problem.”<sup>14</sup>

In the overall context of serving the political domain and defence policy, defence planning deals with not only the military domain but also the political-military interface. It may also address civil defence and other non-military policy considerations directly. In doing so, defence planning must consider the different nested levels of military (and broadly similar or equivalent levels of non-military) organisation and behaviour: technical, tactical, operational, strategic and cross-cutting institutional.<sup>15</sup> However, the main focus of defence planning is on providing guidance to decision-makers and preparing strategies, plans and programmes at the political, institutional, strategic and operational level. The challenge for military leaders at the strategic level<sup>16</sup> is to actualise defence policy by translating political guidance into strategic military objectives and generate, deploy and sustain a military force by applying the full range of national or multinational resources.<sup>17</sup>

Defence planning is tasked with determining what objectives should be achieved and how, by whom and at what cost. Defence strategy guides the building, arrangement and putting into operation of the diplomatic, economic and military instruments of national or multinational power to achieve governmental or intergovernmental policy objectives. In other words, strategy links planning to implementation. In turn, implementation processes are reflexively linked back through learning to planning. Overall, these processes form feedbacks both at and across different levels of organisation in the military domain (likewise in the parallel and interacting non-military civil defence domain). This set of feedbacks interacts with the political-military interface. Together, the dynamics of the defence planning system provide a kernel for the design of a multilevel framework for national defence planning.

10 Colin S. Gray, *Op. Cit.*, p. vii.

11 Henrik Breitenbauch and André K. Jakobsson, “Defence planning as strategic fact: introduction,” *Defence Studies* 18, no. 3 (2018), p. 255.

12 Vincent A.W.J. Marchau et al., “Introduction,” in *Decision Making under Deep Uncertainty: From Theory to Practice*, eds. Vincent A.W.J. Marchau et al. (Cham: Springer, 2019), p. 8.

13 Jan H. Kwakkel et al., “Coping with the Wickedness of Public Policy Problems: Approaches for Decision Making under Deep Uncertainty,” *Journal of Water Resources Planning and Management* 142, no. 3 (2016), p. 1.

14 Horst W.J. Rittel and Melvin M. Webber, “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4 (1973), p. 155-169.

15 Daniel Sukman, “The Institutional Level of War,” *The Strategy Bridge*, May 5, 2016, <https://thestrategybridge.org/the-bridge/2016/5/5/the-institutional-level-of-war>.

16 Strategy supports policy and decision making at the strategic level, which the UK Defence Doctrine defines as “the level at which national resources are allocated to achieve the government’s policy goals (set against a backdrop of both national and international imperatives).”; Ministry of Defence, *Joint Doctrine Publication 0-01: UK Defence Doctrine, 5th Edition* (Swindon: Development, Concepts and Doctrine Centre, Ministry of Defence Shrivenham, 2014), p. 7. NATO defines strategic level as ‘The level at which a nation or group of nations determines national or multinational security objectives and deploys national, including military, resources to achieve them’; NATO, *Allied Joint Publication-01, Allied Joint Doctrine, Edition E Version 1* (Brussels: NATO Standardization Office, 2017), LEX-8.

17 NATO, *Allied Joint Publication-01, Allied Joint Doctrine, Edition E Version 1* (Brussels: NATO Standardization Office, 2017), Ch 3-1.

## Designing Architecture for Defence Planning

Strategy and defence planning constitute a system or subsystem nested within the broader defence system of the polity. Developing a defence planning system that is suitable and enduring requires institutions (rules and arrangements) and an architecture (framework for processes) that are fundamentally contextual, visionary, reflexive, integrative, functional, multilevel and adaptive. The term ‘architecture’ is used to convey a coherent conceptual structure or framework that is carefully designed and constructed.

Many elements of defence planning are context-dependent and reflexive: the context shapes decision-making, which shapes the context. Planning is influenced by a variety of internal and external factors associated with specific circumstances, events, locations, and spatial and temporal scales. Vision (i.e. forethought or foresight) is central to strategy and defence planning. The reflexive aspect of architecture refers to defence planners continuously engaging in developing competencies, including through systemic deliberation and critical self-reflection regarding planning processes, possible alternatives, uncertainties and unintended consequences of previous attempts to steer defence. It also refers to multi-loop learning processes that modify goals, decision-making and learning itself in the light of experience.

Integration is at the forefront of contemporary military thinking.<sup>18</sup> The joint, multidomain and multinational action that characterises the military and other instruments of national power and their utility require a defence planning architecture that addresses integration.<sup>19</sup> In other words, an approach to systemic coherence that involves multi-actor collaboration to coordinate, integrate (combine) and reconcile disparate aspects of the defence organisation, defence planning system and their interactions. In order to be effective, architecture for defence planning must accommodate different types and degrees of integration processes. Integration entails harmonising the different dimensions and perspectives that make up the defence organisation and its planning component.

Strategy and defence planning depend on the performance of multiple overlapping and interacting functions by different actors at different levels of organisation across the defence system, and the coordination of their activities. Therefore, the design of architecture for defence planning needs to reflect and respond to a dynamic pattern of functionality across changing contexts. Such design is unlikely to be based on purely functional criteria. It will nearly always be subject to a variety of preconceived ideas, models, conventions, political realities and other constraints regarding what constitutes ideal structures, institutions and processes for defence planning.

In terms of authority and decision-making, ‘multilevel’ refers to arrangements and processes in which power, competencies and responsibilities are not monopolised by one level of actors and institutions. Instead, they are negotiated and shared between multiple interconnected and interdependent levels. A multilevel approach calls for three axes or directions of coordination and integration. First, the horizontal coordination and integration of policy, strategy and planning between, for example, the defence ministry and general staff of the armed forces of a state polity. Second, vertical coordination and integration between the political, strategic and

<sup>18</sup> See, for example, the speech by General Sir Patrick Sanders, Commander of the UK’s Strategic Command delivered to the *Chief of the Air Staff’s Air and Space Power Conference 2020* on 15 July 2020, <https://www.gov.uk/government/speeches/commander-strategic-command-general-sir-patrick-sanders-speech-at-the-air-and-space-power-conference>.

<sup>19</sup> As reflected in, for example, the UK Defence Doctrine; Ministry of Defence, *Joint Doctrine Publication 0-01: UK Defence Doctrine, 5th Edition* (Swindon: Development, Concepts and Doctrine Centre, Ministry of Defence Shrivenham, 2014).

nested operational, tactical and technical levels of the polity's overall defence system. Third, cross-cutting or external coordination and integration between, for example, an EU member state's defence organisation and the EU's various military committees and agencies.

A key design challenge in developing a multilevel architecture is how to match the various institutional arrangements and processes at each level to the levels both above and below. Each level has evolved its own characteristic structure, dynamics and functions; this is what makes it a distinct level in a nested hierarchy.<sup>20</sup> In order to facilitate the effective functioning of the defence system, it is essential to overcome mismatch between system components, processes or functions at one level of organisation and those at another level in the hierarchy.

The term 'adaptive' refers to a complex system's capacity to make small, incremental changes (adjustments) to its structures, behaviours and functions in response to or anticipation of changes in its environment.<sup>21</sup> 'Adaptive' is also a term applied to various approaches that aim to respond to and shape system dynamics. For example, adaptive governance, adaptive planning and adaptive management are approaches that aim to improve and develop policies, plans and practices in the face of changing circumstances and deep uncertainty. In order to make provision for a polity's security and defence, actors and institutions at every level of organisation need to adapt and work with rather than against the complexity and dynamics of the defence system. Therefore, a complex adaptive systems perspective is essential to understanding a multilevel adaptive defence planning framework.

## A Complex Adaptive Systems Perspective

Complex Adaptive Systems (CAS) are ubiquitous. Biological organisms, populations, ecosystems, the biosphere, human societies, corporations, business networks, economies, financial markets, political systems, governance systems, international affairs, defence organisations, the military, defence planning, Moltkean strategy and warfare itself<sup>22</sup> are all examples of CAS. Such systems improve their chances of persistence and success through continuous experimentation, learning and evolutionary processes.<sup>23</sup>

CAS are inherently capable of self-organisation: a process of reorganisation and pattern formation arising from interactions among component agents (referred to as 'actors' if they involve people), often in response to disturbances and other external factors. It occurs without any direction from a central or global controller, or external imposition. Self-organisation plays a crucial role in the emergence of complexity: collective behaviours, patterns such as multiple levels of organisation and structure (e.g. a hierarchy of nested subsystems), and other system-level properties. The emergent properties influence how the whole system functions and interacts with its external environment.

CAS are, of course, fundamentally adaptive. Adaptability, or adaptive capacity, is primarily a function of the agency and capacity<sup>24</sup> of actors in the system to prepare for, respond to, cope with,

20 Ahjond S. Garmestani *et al.*, "Panarchy: Discontinuities Reveal Similarities in the Dynamic System Structure of Ecological and Social Systems," *Ecology and Society* 14, no. 1 (2009), <http://www.ecologyandsociety.org/vol14/iss1/art15/>, accessed 27 July 2020.

21 See John H. Holland, *Hidden Order: How Adaptation Builds Complexity* (Reading, MA: Addison-Wesley, 1995).

22 Paul K. Davis, "Strategic Planning Amidst Massive Uncertainty in Complex Adaptive Systems: the Case of Defense Planning," in Ali Minai and Yaneer Bar-Yam (Eds.), *Unifying Themes in Complex Systems, New Research, Volume IIIB: Proceedings from the Third International Conference on Complex Systems*, (Cambridge, MA: Springer, 2006), p. 203.

23 Melanie Mitchell, *Complexity: A Guided Tour* (New York: Oxford University Press, 2009), p. 13.

24 Here, the term 'agency' refers to the power and ability of actors to act independently and to make their own free choices. The term 'capacity' refers to actors' power and ability to perform the choices they make.

create and shape change in an informed manner. Therefore, adaptability is ultimately about decision-making and the power and ability of individuals and groups to implement decisions. According to Chapin *et al.*, adaptability depends on four interrelated factors: diversity, which provides the building blocks for adaptive responses; capacity of actors to augment diversity by introducing novelty; actors' willingness to experiment and innovate in order to test new learning and to explore new approaches; and social capital (including networks and institutions), bridging organisations and leadership.<sup>25</sup>

Due to the processes of self-organisation and emergence, feedbacks, adaptability and the resulting nonlinear dynamics of the system, and depending on path dependence,<sup>26</sup> alternative development trajectories and multiple outcomes are possible. Therefore, CAS are endowed with intrinsic variability, unpredictability and persistent uncertainty. Based on this understanding, CAS theory and the concept of adaptability serve as a framework and foundation for the development of an adaptive planning approach.

## Adaptive Planning Approach

The purpose of adopting an adaptive planning approach would be to transform defence planning into an integrated process that is responsive to the rapidly changing strategic landscape and world events.<sup>27</sup> In the wake of the 2003 invasion of Iraq, the US Department of Defense (DoD) developed an Adaptive Planning (AP) approach<sup>28</sup> to address weaknesses in defence planning, including: low responsiveness; long, slow and inflexible contingency planning cycles; disconnect between contingency and crisis action planning; prevalence of 'off the shelf' plans based on outdated assessments; and feasibility analysis and interagency involvement only at late stages. Likewise, the input from senior-level leaders came late in the planning process, meaning that leaders were presented with a single military option: a *fait accompli* that bound political decision-making. As Robert Klein describes,<sup>29</sup> rapid planning and greater efficiency are achieved through combining the best characteristics of contingency and crisis action planning and execution into an integrated AP process that includes:

### Clear strategic guidance and iterative dialogue

The four-step AP process comprises strategic guidance, concept development, plan development and plan assessment. Though generally sequential, these steps may overlap in order to accelerate the overall process. Senior leaders are involved throughout by means of periodic reviews integrated into the process. Later-stage reviews are key to facilitating adaptation by creating opportunities to revisit, refine, modify or amend strategic guidance and other early-stage planning outcomes. Such reviews ensure that the plan remains relevant to the situation and responsive to the political and military leaderships. In effect, the integrated reviews create feedback loops that turn strategic guidance into approved plans via a continuous cycle of adaptive development and assessment.

25 F. Stuart Chapin, III *et al.*, "A Framework for Understanding Change," in F. Stuart Chapin, III *et al.* (Eds.), *Principles of Ecosystem Stewardship: Resilience-Based Natural Resource Management in a Changing World* (New York, NY: Springer, 2009), p. 23.

26 Path dependence is the phenomenon in which a system's state and its development depend on non-reversible events, disturbances, adaptations or decisions in the present and past. The idea that 'history matters.'

27 Kathleen H. Hicks, *Transitioning Defense Organizational Initiatives: An Assessment of Key 2001-2008 Defence Reforms* (Washington, D.C.: Center for Strategic and International Studies, 2008), pp. 16-17.

28 The first Adaptive Planning Roadmap was adopted by the DoD in 2005. A second roadmap was adopted in 2008 in order to develop the Adaptive Planning approach into a broader, overarching system known as the Adaptive Planning and Execution (APEX) enterprise.

29 Robert M. Klein, "Adaptive Planning: Not Your Great Grandfather's Schlieffen Plan," *Joint Force Quarterly* 45 (2007), pp. 86-88.

### **Integrated interagency and coalition planning**

AP recognises that interagency and coalition partners' considerations "are intrinsic rather than optional and need to be integrated early in the process rather than as an afterthought once the military plan is complete."<sup>30</sup>

### **Integrated intelligence planning**

In AP, the intelligence campaign planning process is directly linked to contingency planning to ensure that changes in the global strategic environment continually inform plan development and assessment.

### **Embedded options**

To make the design and development of plans more dynamic, AP features a number of embedded options each with branches and sequels (subsequent operations or phases) together with associated decision points and criteria. This 'menu of options' provides political and military leaderships with increased execution flexibility that anticipates and rapidly adapts.

### **Living plans**

The plan assessment step represents a 'living' environment in which plans are refined, adapted, terminated or executed. In the AP approach, such living plans are maintained within a collaborative, virtual environment and are updated routinely to reflect changes in intelligence assessments, force readiness and management, transportation availability, guidance, assumptions and the strategic environment. Living plans provide a dynamic foundation for seamless transition to time-sensitive crisis planning.

### **Parallel planning in a network-centric, collaborative environment**

Essentially, the AP approach employs information, information and communications technology, artificial intelligence and other emerging technologies to shorten the decision-making cycle and gain advantage. Plans, planning tools and databases are linked in a network-centric environment with an integrated architecture that enables parallel collaboration among geographically dispersed planners.

The evolution of the AP approach since 2005 has not been without issues or criticism. For example, a 2009 study of an experimental approach to incorporating interagency (State Department and USAID) perspectives into the development of strategic guidance for military planning at US European Command identified deficiencies including the lack of formal interagency collaboration and coordination mechanisms, and lack of codification of such practices in DoD planning doctrine and policy guidance. Moreover, the compressed planning timelines in the AP approach 'complicated the accommodation of inputs from the interagency partners'.<sup>31</sup> In another example, John Price describes the DoD's transformation toward AP as having 'failed by almost any measure' and 'slowly dying'.<sup>32</sup> He attributes this failure to the prevailing institutional culture: "Fixated on the virtues of planning, the military could not see that the desired outcomes depended on a revolution in strategic thinking, not strategic planning."<sup>33</sup> Price concludes that the objectives of the AP transformation effort are even more relevant today than they were when

<sup>30</sup> Klein, Op. Cit., p. 87.

<sup>31</sup> Caroline R. Earle, "Taking Stock: Interagency Integration in Stability Operations," *PRISM* 3, no. 2 (2012), p. 42.

<sup>32</sup> John F. Price Jr., "The Downfall of Adaptive Planning: Finding a New Approach after a Failed Revolution," *Air & Space Power Journal* 26, no.2 (2012), p. 118.

<sup>33</sup> Price Jr., Op. Cit., p. 118.



the AP programme began. '[B]ut we stand little chance of reaching them without significantly changing our approach.'<sup>34</sup>

Despite such drawbacks, RAND recently recommended that, in order to increase its likelihood of developing into a successful organisation, the US Space Force should adopt an adaptive planning approach to guide the service's future planning and implementation efforts.<sup>35</sup> Adaptive planning continues to be researched including, for example, in the field of cyber security.<sup>36</sup> Furthermore, in 2019 researchers from RAND found that although the DoD's defence planning process is "conceptually sound and normally capable of meeting the demands placed on it by senior leaders",<sup>37</sup> in its implementation, the current system is "insufficiently timely, flexible, adaptive, and robust."<sup>38</sup> It would appear, therefore, that much work has yet to be done, in the US and elsewhere, in order to develop and implement an adaptive planning approach to transform defence planning.

In an ideal situation, an adaptive planning approach would significantly shorten the time taken to produce high quality, multifunctional plans that could be regularly updated and rapidly adapted to speed up response times and increase flexibility. Such adaptive plans would present multiple options and support near-continuous collaboration, both in parallel (horizontally) and across multiple levels of organisation (vertically), using a common set of tools. Feedbacks from periodic assessments of plans and from interactions with political and military leaderships would enable 'learning by doing', adaptation, self-organisation and emergence and, therefore, continual development: an integrated process that provides a seamless transition between contingency and crisis action planning. Adaptive planning would generally proceed through arrangements that engage a diversity of stakeholders in processes of goal-setting, experimentation, implementation, monitoring, review, readjustment, revision and reorganisation. These processes are interdependent in the sense that the output from one step becomes the input for another. The next iteration of the same step is adjusted through feedbacks, changing the results. This may lead to a modified approach or to the development of alternative approaches based on learning.

Of course, the design for such a strategic adaptive framework for defence planning does not take place on a blank slate. A complex state of affairs already exists. A polity's defence organisation will always have some form of existing planning structure and processes. New architectures and approaches need to be negotiated, taking into account the realities of the political and military landscape, if they are to be implemented. In this sense, the existing planning landscape simultaneously constitutes a constraining and enabling environment. However, as a way of thinking, grounded in CAS theory and the concept of adaptability, a strategic adaptive framework complements rather than replaces existing defence planning structures and processes. With careful management, it would reflexively and incrementally adapt the defence planning system over time. A transformation rather than a revolution.

<sup>34</sup> Price Jr., Op. Cit., p. 130.

<sup>35</sup> Michael Spirtas et al., *A Separate Space: Creating a Military Service for Space* (Santa Monica, CA: RAND Corporation, 2020), p. 102.

<sup>36</sup> Jussi Tuovinen and Kimmo Frilander, *Militarizing Red Teaming – Agile and Scalable Process for Cyber Red Teaming Using Adaptive Planning and Execution Framework* (Jyväskylä: University of Jyväskylä, 2019), pp. 67-91.

<sup>37</sup> Michael J. Mazarr et al., *The U.S. Department of Defense's Planning Process: Components and Challenges* (Santa Monica, CA: RAND Corporation, 2019), p. 31.

<sup>38</sup> Mazarr et al., Op. Cit., p. 32.

## Conclusion

A failure to understand and deal with the fundamental properties of CAS can be detected as an underlying factor in the difficulties encountered during defence planning.<sup>39</sup> Real-world systems confront defence planners with so-called ‘wicked problems’ that are difficult to define, have no apparent solution and which tend to persist, posing a continual challenge and adding to deep uncertainty. To be effective, defence planning systems must somehow reflect the complexity, dynamics, scale and diversity of the systems they deal with, as well as respond to rapid changes in those systems. Therefore, achieving effective defence planning requires a cultural paradigm shift<sup>40</sup> in the predominant pattern of thinking: away from linear, reductionist, fragmentary and deterministic views of reality in which systems are viewed as largely predictable and controllable, toward a new pattern grounded in CAS thinking. Defence planning frameworks that are static, inflexible, siloed and unresponsive are mismatched with their *raison d’être*, which is to assist key decision-makers to make wise strategic choices by defining and linking the various strategic components and dimensions.<sup>41</sup> Instead, modern defence planning requires an architecture that is by design both multilevel and adaptive.

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39 See Heinrich Brauss, “The Future of Defence Planning – A NATO Perspective,” in Sven Biscop and Franco Algeri (Eds.), *The Lisbon Treaty and ESDP: Transformation and Integration*, Egmont Paper 24, (Gent: Academia Press, 2008), pp. 35-37; Prakash Menon, “The New Defence Planning Committee Needs to Overcome Structural Flaws to be Successful,” *Pragati*, 16 May 2018, <https://www.thinkpragati.com/opinion/4527/the-problems-of-defence-planning/>; Thomas-Durell Young, “The Failure of Defense Planning in European Post-Communist Defense Institutions: Ascertain Causation and Determining Solutions,” *Journal of Strategic Studies* 41, no. 7 (2018), p. 1052.

40 Thomas S. Kuhn, *The Structure of Scientific Revolutions*, Third Edition (Chicago: University of Chicago Press, 1996, [First published Chicago: University of Chicago Press, 1962]).

41 See Department of Defence, *Strategy Framework Planning Handbook 2006* (Canberra: Department of Defence, Australian Government, 2006), p. 5.