

# Scenario Planning Methodology for Future Conflict

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Scenario planning has become an important tool for organizations to consider possible futures, how they might compete in those futures, what are the key trends and uncertainties, and what changes might be implemented to make the organization more competitive. The intent of scenario planning is to broaden and challenge decision makers' perspectives, allowing them to reconsider the standard assumption of "business as usual."<sup>1</sup> Scenarios are part of Australia's military capability planning processes, including the conduct of experimentation and analysis to assess Australian Defence Force (ADF) capability and capacity against possible futures.<sup>2</sup>

Australia's 2020 *Defence Strategic Update* has highlighted new and accelerated drivers that indicate a changing and less benign strategic environment.<sup>3</sup> In this light, using effective processes to prepare for new challenges is a critical task for defense planners. Feasible Scenario Spaces is an embryonic tool that may be instrumental in military scenario planning. To be effective, however, it needs to be further evolved to embrace the potential for unconventional threats, including the emerging primacy of information warfare (IW) in future conflict.

## The Rise of Scenario Planning

Planning is a fundamental military activity, with force planning undertaken to ensure that a modern military has the appropriate personnel and capabilities to meet potential security challenges. Scenario planning was used by RAND to support the US Department of Defense after World War II, with increasing use of scenario methodologies to support public policy in the 1960s.<sup>4</sup> Royal Dutch Shell pioneered the use of scenario planning in business, with its advantages being chronicled in Pierre Wack's seminal *Harvard Business Review* article.<sup>5</sup> Interest increased as authors such as Michael Porter and Henry Mintzberg highlighted the potential competitive advantage of applying scenario planning in business.<sup>6</sup> In the twenty-first century, academic interest in scenario planning has substantially increased.<sup>7</sup>

Scenario planning is a disciplined method for imagining possible futures relevant to an entity's mission. Whereas uncertainties of possible futures result in a multitude of influential variables, scenario planning simplifies the future into a

manageable number of possible states. In this way, it differs from contingency planning in that it addresses the combined effect of multiple variables. Organizations may benefit from scenario planning if they operate within certain conditions, such as high uncertainty relative to ability to predict; tendency toward costly surprises; limited ability to perceive or generate new opportunities; poor strategic thinking; significant change in the sector; the need for common language/framework; differences of opinion; or competitors who are better at planning.<sup>8</sup> Many of these conditions are relevant considerations in planning the future military force; hence, scenario planning is a priority for defense strategic analysis.<sup>9</sup>

A scenario planning process will involve a sequence of steps, typically including scoping; identification of stakeholders, trends, and uncertainties; construction of scenarios; and then testing of those scenarios.<sup>10</sup> Whereas the different techniques for scenario planning can be classed within three schools of methodology,<sup>11</sup> most efforts fall within the intuitive logics school. Intuitive logics analyzes the relationships among trends, uncertainties, and the behavior of actors with a stake in the particular future.<sup>12</sup> Validity of a scenario depends on five key criteria: *plausibility* (must be capable of happening), *consistency* (the logics in a scenario must not introduce contradiction), *relevance* (must contribute some insights to inform decisions), *challenge* (should help question the organization's ideas about the future), and *differentiation* (should be substantially different from other scenarios).<sup>13</sup>

Scenario strategies may be *rationalist*, focusing on optimum solutions given a level of predictability; *evolutionist*, developing a winning strategy based upon previous experiences; or *processurist*, developing organizational processes to help it adapt to changing circumstances.<sup>14</sup> Similarly, the culture of an organization may be *inactive* (where change is ignored), *reactive* (changing with the environment), *preactive* (where changes are anticipated), or *proactive* (where changes are anticipated and shaped).<sup>15</sup>

For a defense organization, there will be occasions when it needs to be reactive, although with a recent emphasis on shaping,<sup>16</sup> there is a growing intent for the ADF to be proactive. Nevertheless, the intent of military capability planning is more preactive, in terms of developing a credible force structure that can defeat anticipated threats. Such capability planning is primarily a rationalist strategy, with the intended outcome to develop and acquire solutions. Complementary capabilities such as doctrine, experimentation, and wargaming also contribute to evolutionary and processual strategies, strengthening adaptive capacities by building human systems that are able to cope with an unpredictable future.<sup>17</sup> A combination of all three strategies are widely accepted as contributing to effective scenario planning.<sup>18</sup>

Notwithstanding the potential advantages of scenario planning, there are limitations. Mintzberg acknowledged fallacies of strategic planning, including the ability to predict an uncertain future.<sup>19</sup> Unlike situations where risks are quantifiable, the potential for future conflict involves Knightian uncertainty.<sup>20</sup> Even in situations where individual factors seem relatively predictable, the compounding effect of individual variables can lead to an unexpected outcome.<sup>21</sup> The complex relationships between such individual variables often leads scenario planners to simplify design by creating master scenarios based around guiding themes or notions.

The development of rationalist strategy through organizational consensus can reinforce business-as-usual thinking and inertia to change.<sup>22</sup> Another limitation is that the intuitive logics process can give too much emphasis on the Aristotelian efficient cause, which, by neglecting other forms of causality, may narrow decision makers' perspectives as to the range of plausible futures.<sup>23</sup> Most importantly, for many organizations, there is a significant gap between the complexity of possible futures and the need for simplicity in assessing strategy options. This gap is one that Australia's Defence Science and Technology (DST) Group has sought to address.

### **Feasible Scenario Spaces**

Although early scenario planning work by RAND was focused on military planning, little emphasis since has been placed on the need to update methodologies to adapt to the changing nature of warfare and the increasing complexity of potential futures. A DST team, led by Brandon Pincombe, developed a methodology for scenario planning in complex situations, by identifying factors that might confound successful achievement of a key objective.<sup>24</sup> This built on earlier work<sup>25</sup> to show that situations can be remedied by generalizing scenario elements, recombining scenario elements to uncover critical interactions, and including opposing trends in a single scenario. This approach addressed a key conundrum of scenario planning: that it needs to deal with the complexity of the world and interactions between scenario elements, while retaining sufficient simplicity to be implemented by practitioners and subject matter experts.

The complexity gap is characterized by a divergence between manageable shared mental models of possible events and the diversity of events that actually happen, with people tending to focus on singular scenarios and singular strategies to deal with them. Pincombe's team developed the concept of Adversarial Scenario Analysis, in which a core strategy to achieve an outcome is developed, then scenarios are altered to make the strategy fail.<sup>26</sup> Such failures would assist development of mitigation strategies, in a similar manner to Mintzberg's utility of "right-hand" planners.<sup>27</sup>

More work was needed to develop the Adversarial Scenario Analysis concept into a scenario planning methodology. Subsequently, the DST team described a survey-driven approach to construct scenarios hierarchically, using dimensions developed through an iterative Delphi engagement with military experts, followed by thematic analysis.<sup>28</sup> This analysis derived six dimensions, being physical environment, human terrain, operational partnerships, sociopolitical issues, the threat, and own forces. These dimensions were developed with Australian Army participants and specifically in the context of land warfare scenarios. The DST team noted that a similar exercise would need to be undertaken with appropriate participants to produce a hierarchical dimensional framework for joint scenarios.<sup>29</sup>

A DST team, led by Fred Bowden, subsequently used the six dimensions as the basis for a more universal appreciation of scenario planning. Feasible Scenario Spaces (FSS) is defined as a surface that covers the set of scenario parameters for which a given capability set can achieve success within acceptable levels of risk.<sup>30</sup> FSS may be used to map capability options against scenario dimensions to compare relative advantages of options. This approach considers friendly force capabilities and those of a potential adversary, differentiating between the two to determine the overall impact of change in the future force. In this case, FSS was used to model a joint offensive support scenario, with a fictional assessment of different assets against three of the six dimensional components.

Although the FSS methodology was demonstrated in a joint offensive support scenario, this example was admittedly a simple one.<sup>31</sup> While brevity within a publication necessitated such simplicity, two questions arise. First, with the dimensions of FSS being derived from a land warfare scenario, how different would they be in the context of a future scenario that involves IW? Second, would the complexity of such scenarios be able to be simplified to inform decision makers about future force options?

## **Information Warfare**

The prospective loss of advantage and the changing threats landscape have been recognized in Australia, with its leadership noting the emergence of “grey-zone” threats in the information environment.<sup>32</sup> In particular, cyberthreats have evolved past the notion of attacks on enterprise computer systems to the potential to interfere and disable weapon systems.<sup>33</sup> This elevates IW from a secondary consideration for our defense forces to being a primary form of warfare that can be decisive in achieving military effects in its own right.

IW may be defined as the process of protecting one’s own sources of battlefield information and, at the same time, seeking to deny, degrade, corrupt, or destroy the enemy’s sources of battlefield information.<sup>34</sup> In this regard, this focus on hav-

ing an information advantage dates back through the history of warfare to Sun Tzu's teachings.<sup>35</sup>

Modern technologies integrate systems and enhance outcomes across the information, cognitive, and physical domains; however, this integration represents a vulnerability that can be exploited. The increasing dominance of the information environment can be attributed to technology advances of the fourth industrial revolution, with cyber-physical systems allowing information systems to control actions in the physical world.<sup>36</sup> At the same time, advances in information technology, the ability to manipulate information, and the broad adoption of social media mean that cognition is more readily controlled by the information environment. Therefore, the ability for actions in the information environment to impact all three domains represents the critical importance of IW, meaning that control of the information environment will confer complete control.<sup>37</sup>

This change in the influence and centrality of the information environment, in warfare as in broader society, heralds a shift in the nature of IW: from an enabling component of traditional warfare, with physical activity and kinetic effects having primacy, to one in which gaining an information advantage in itself can be singularly decisive. Not only can information effects create an advantage in awareness, but they can also create military advantage by disabling or misguiding physical systems or by influencing the cognition of warriors, leaders, and citizens.

The increasing power of IW is not only this potential to dominate across the domains but also the ability to achieve objectives at minimum risk and cost. Thus, IW activities are key tools in grey-zone warfare, conducted below the threshold of war. There is also evidence of the value of coordinating such activities with a range of other elements of national power, also known as hybrid warfare.<sup>38</sup> Whereas China and Russia are prominent actors in the use of hybrid and grey-zone warfare,<sup>39</sup> a variety of actors—state and nonstate—have pursued the idea that information-centric and liminal strategies provide an asymmetric offset to traditional Western, especially US, military power.<sup>40</sup>

The nature of IW and broader hybrid and grey-zone warfare is broader than a matter between military forces, with targets including critical national infrastructure, economies, and the well-being of citizens. This has implications for scenario planning, opening possible future threats to an even more complex array of possibilities. If the Australian Defence organization uses a methodology such as FSS, the underlying dimensional framework may need to be updated. Even then, a balance may need to be reached in exposing Defence to such an expanded range of future threats while simplifying them to support decision making.

## **Asymmetry**

During the first two decades of the twenty-first century, prevalent among defense and security experts was a belief that the primary threats to national security were insurgencies and terrorism, with a lesser concern for conventional state-on-state conflict.<sup>41</sup> The basis of such views were the West's demonstrated ability in the late twentieth century to deliver precise application of force within a symmetrical contest. Over the same timeframe, potential state and nonstate adversaries have been able to develop asymmetric strategies to defeat the West's conventional technological advantage.<sup>42</sup>

David Kilcullen characterized this overconfidence and lack of insight as potentially marking the decline of Western dominance, unless Western militaries adapt to the changing nature of warfare.<sup>43</sup> While the First Gulf War was very successful for the United States and its allies, the war had two contrasting effects on the West and its adversaries, both state and nonstate. For the United States and allies, their success created an excessive confidence that the augmentation of conventional force with networking and precision guidance would be unmatched into the future. For potential adversaries and rivals, the war's lessons led to asymmetrical and offset strategies that could be used to confound, surprise, and frustrate the West.

While terminology may change, the concept of seeking an advantage through such an offset has featured in one way or another in works by many military strategists, and surprise is one of the principles of war in most military doctrines. Liddell Hart interpreted this principle in terms of his "indirect approach."<sup>44</sup> The indirect approach diverged from previous strategists, such as Clausewitz, who had emphasized the importance of directing force against the main body of an adversary.<sup>45</sup> The two key axioms of the indirect approach are choosing the least line of expectation and exploiting the least line of resistance.<sup>46</sup> Hart described these two axioms as two faces of the same coin, representing the psychological and physical aspects of efforts to dislocate an adversary.

It could be said that using asymmetry and exploiting an indirect approach is not *a* strategy, but *the* strategy.<sup>47</sup> The key takeaway for scenario planning is that potential adversaries will undoubtedly take unpredictable actions to dislocate us, both psychologically and physically. A challenge will be to undertake scenario planning that allows us to understand and test our ability to succeed in the face of a complex variety of adversary acts.

A lesson to learn from Kilcullen may be that asymmetry is not just an inherent characteristic of a potential adversary but instead a deliberate strategy by an adversary to expose our vulnerabilities. In scenario planning therefore, it may be valuable to consider that the threat is more than a set of system variables, as pre-

dictable as environmental dimensions, but an adversary who is capable of planning and of rational decisions to make choices to succeed against us.

## Anticipation

Military scenario planning can be considered an anticipatory system in which predictions can help the organization adapt via a feedforward mechanism.<sup>48</sup> The human realm introduces a further complexity to an anticipatory system in that the system being modeled is itself anticipatory, continually reassessing and modifying itself in relation to its environment.<sup>49</sup> In a similar way, game theory has shown the potential for an infinite regress of prediction between decision makers.<sup>50</sup> A simplified approach to understanding adversary decision making may mitigate such a regress in scenario planning, although this may impact the outcome.<sup>51</sup>

The Sun Tzu principle of knowing the enemy remains more critical than ever in future conflict. In information-intensive future warfare, knowledge of an adversary's potential strategies may be as important as awareness of the capabilities of their military platforms. In this environment, grey-zone activities will be designed in anticipation of our level of tolerance and responses. Scenario planning must account for the fact that adversaries will anticipate how our armed forces may act and develop ways to achieve an advantage.

Susceptibility to the indirect approach means that methodologies should give emphasis to *plausibility*, not just the *probability*, of a scenario. Potential Surprise Theory is an example of such a methodology, in which consideration of plausibility with potential gains and losses of courses of action may overcome bias.<sup>52</sup> Such bias arises from an analogical view of risks, rather than embracing Knightian uncertainty. Balancing competing priorities of "most likely" versus unexpected scenarios therefore is a dilemma in military scenario planning.<sup>53</sup> Adopting a foresighting approach to prediction, using abductive rather than deductive reasoning, may improve anticipation of uncertainty by expanding the view of plausible futures.<sup>54</sup>

Organizations tend toward most likely challenges due to their experiences, culture, processes, and embedded technology. Clayton Christensen characterized this tendency in terms of a system-of-use, which essentially is a negative connotation of Porter's concept of value chains.<sup>55</sup> This inertia blocks management anticipation of change and allows external actors to take advantage of disruption and discontinuity.<sup>56</sup> The inertia may be further entrenched with the use of traditional intuitive logics scenario planning methodologies, which typically are concerned with a high degree of predictability.<sup>57</sup>

The organization's intellectual capital nevertheless remains important. Combining the human power of analogical reasoning with counterfactual experiences through scenario planning may create greater adaptability to disruptive future

challenges.<sup>58</sup> However, to ensure the planning process exposes the potential for disruption and discontinuity, care might need to be taken not to reinforce analogical beliefs about probable futures into the scenario design.

## **Concurrency**

An adversary may choose not only an indirect approach but also indirect approaches. This may involve complexity of maneuver within the physical domain—but also variety through the employment of hybrid warfare. Hybrid warfare in the future will involve concurrent pressure, disruption, and attack within different domains and with an aggregated effect.

Notwithstanding, Australia's *Defence Strategic Update* acknowledges concurrency;<sup>59</sup> concurrent threats may be a challenge to the ADF and allied military forces. Australia's military doctrine simplifies the Clausewitzian principle of concentration, focusing on a singular center of gravity to provide cohesion of the force.<sup>60</sup> The Joint Military Appreciation Process (JMAP) used by Australian military planners draws upon Clausewitz to focus efforts on a center of gravity to align ways and means with desired ends. Admittedly, hybrid and asymmetric threats may represent different ways and means to target a singular center of gravity. However, depending upon the context, there may also be several centers of gravity that are only related in terms of their support for the grand strategic objective. Clausewitz recognized the possibility of multiple centers of gravity in his eighth book, *On War*, albeit at the strategic level.<sup>61</sup>

The emergence of hybrid warfare has raised doubts about the validity of traditional approaches to center of gravity analysis, although clear consensus on an alternative remains elusive. While some see greater complexity in the need for multimodal analysis,<sup>62</sup> others see simplicity in the ultimate target being the nation's population.<sup>63</sup> Even though indirect hybrid attacks on the nation may not be seen as directly relevant to military scenario planning, they will have implications for our armed forces.

The plausibility of concurrent threats should not be underestimated. The challenge of coordinating and resourcing responses to multiple lines of effort are central to the hybrid warfare concept, but also there is significant potential for concurrency through compounding crises, as evidenced during the COVID-19 pandemic. Armed forces will be required to increase preparedness to meet a range of concurrent hybrid threats, and scenario planning could be used to validate preparedness and identify issues.

## **Scenario Planning Implications**

The FSS methodology developed by Pincombe and Bowden provides a reasonable framework for a defense organization to measure potential capability options against key variables. It simplifies scenario testing in which options can be tested against uncertainty of future scenarios. Available examples have demonstrated its suitability for situations that are bound in complexity, especially with tactical scenarios, where variables are considered in the physical domain. It is unclear how effective the methodology may be to support decision making in more complex scenarios, where multiple interdependent dimensional variables are relevant.

Given the dimensional structure of FSS was derived for land warfare using land warfare experts, there is no reason a broader structure could not be derived through a similar Delphi-based process. Selection of a suitable range of experts may establish a dimensional structure that could be suited for scenarios that reflect asymmetry, the emergence of hybrid threats, and IW. Care should be taken however in selection of the experts: external participants may not be sufficiently aware of military capabilities, whereas internal defense participants may reinforce the embedded and sustaining nature of the system-in-use. Whereas the land warfare dimensions of FSS relied on internal participants,<sup>64</sup> consideration might be given to a balance of stakeholders, expanding on plausible futures and providing a more rigorous test for future force designs against disruption and discontinuity.

It is important not only for our military planners to anticipate plausible futures in scenario planning but also to recognize the unpredictability of adversary behavior. This complexity may be addressed by use of confounding actions to help generate appropriate strategies, as in Adversarial Scenario Analysis.<sup>65</sup> Additionally, the methodology could include more dynamic inclusion of adversarial decision making through use of a red team construct within the activity.<sup>66</sup> However, such a shift toward a contest of decision makers may complicate the conduct of scenario planning.

The primary intent of scenario planning in defense organizations is to support decision making of future force structure. The conduct of scenario planning may also help develop organizational adaptability. With the long timeframes of changes in defense force structure compared to the shorter disruptive cycles in warfare, our armed forces will need to be more agile and adaptable. This is the essence of Australia's Army Accelerated Warfare concept.<sup>67</sup> Incorporating elements of organizational learning within scenario planning processes would represent a processual strategy for dealing with change in parallel with the formal rationalist approach used in capability planning. Such an initiative would contribute to the intent of Accelerated Warfare by strengthening the force's adaptive capacities. As

Helmuth von Moltke, Winston Churchill, and Dwight Eisenhower have noted, planning is more important than plans.

Among the drivers of change noted in the Australia's *Defence Strategic Update* are the emergence of grey-zone warfare, the influence of disruptive technologies, and the erosion of strategic warning.<sup>68</sup> Such drivers will need to be reflected in scenario planning to help shape future defense force structure. Ironically, these same drivers demand greater agility to anticipate and react to disruption than is possible through traditional acquisitions alone. Hence, the department's scenario planning processes could be used to also enhance organizational adaptability.

## **Conclusion**

National defense and protection of national interests are vital tasks that are only possible through methodical planning and preparation of the force. A changing and unstable strategic environment, in which specific threats and tasks are difficult to predict challenges effective planning and preparation. In such an environment, the conduct of scenario planning is an indispensable activity. Moreover, with the increasing attention on hybrid threats, disruptive technology, liminal warfare, asymmetry, and the indirect approach, surprise will only be mitigated if scenarios consider plausible events rather those that are predictable based upon experiences.

FSS is an embryonic methodology that simplifies decision making by distilling complex scenarios and focusing on the set of parameters for which a given capability set can achieve success. With revision of the associated dimensional structure, the methodology could be applied to assess capability implications of joint and future warfare, including consideration of the increasingly dominant information environment. In addition to helping to test the future force design, such scenario planning may help improve the force's organizational ability to adapt to future challenges, which are evolving at a rate faster than traditional military processes, concepts, capabilities, and structures were designed for. In doing so, use of disruptive scenario planning activities, rather than being a matter of going through the motions, may contribute to the preparedness of our armed forces to meet an uncertain and accelerated environment. ✪

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