



## LINEAR THINKING IN A WORLD OF CIRCLES: THE REQUIREMENT FOR DESIGN IN PAN-DOMAIN OPERATIONS

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#### Exercise Solo Flight

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## **LINEAR THINKING IN A WORLD OF CIRCLES: THE REQUIREMENT FOR DESIGN IN PAN-DOMAIN OPERATIONS**

The world is more accessible than it has ever been because of technological advancements over the last century. These advancements have also created the ability for actions in one place, domain, or environment to instantly affect another potentially opposite or unintended place, domain, or environment. This statement holds true to military operations and has changed how Western militaries conduct operations. Throughout the global war on terror, the whole-of-government approach was believed to mitigate the effects of military actions across multiple domains. The whole-of-government approach was not sufficient, and militaries realized that they would need to conduct multi-domain operations (MDO) /pan-domain operations; as such, the problems became more complex. Not only are the issues more complex due to the new operating environment being across all domains and environments, but trying to understand or identify the cascading second and third-order effects of an action within this new operating environment is critical. This is problematic for most militaries because the complexity of the operating environment has never been as all-encompassing as it is today. This, combined with the demand on militaries from their governments to be precise with their actions and reasonably foresee the effects caused by their actions is calling into question the effectiveness of traditional planning processes.

While this demand is entirely reasonable, traditional planning tools most Western militaries use do not enable military planners to be out-of-the-box thinkers or promote divergent thought. Nor do they allow planners to fully unpack a complex problem, ensure it is framed correctly, and understand potential futures to respond to these new demands smartly and thoroughly. Most Western militaries have successfully incorporated design thinking into their planning processes to address this delta. However, the Canadian Armed Forces (CAF) have not yet officially incorporated this type of thinking into its planning process. While the process of building the framework of the CAF's design thinking is complete, it has not yet been institutionalized into doctrine. Without an employment concept guiding how the CAF will utilize design thinking inside its planning process, there is potential for it to be underutilized, causing the end user not to see the benefit of it or not harnessing its full capacity to solve complex problems. Worse, it could be misused, causing military planners to lose trust in it before seeing its actual capability. For the CAF to effectively plan and conduct pan-domain operations, it must incorporate design thinking into its operational planning process, particularly Stage 2, to ensure that its actions can be precise and predictable in this new operating environment. I will demonstrate this by first defining MDO/pan-domain operations, manoeuvre warfare, and design thinking to ensure a common understanding. Further, I will explore why manoeuvre warfare inside pan-domain operations is complex and requires design. I will then discuss how design can increase the precision and predictability of military operations in a pan-domain environment. Lastly, I will explore how design can increase the effectiveness of manoeuvre warfare.

## Definitions

The term multi-domain operations or pan-domain operations, before being defined, needs to be unpacked first because understanding what a domain is, is necessary to have the required context. Therefore, the CAF defines a domain as something that can be divided into physical and non-physical aspects in which activities can be conducted and knowledge and influence can be applied.<sup>1</sup> With this in mind, the US Army defines MDO as the combined arms employment of Land, Air, Maritime, Space, and Cyber forces to achieve mission success by creating situations where relative superiority exists; these operations can occur across the competition continuum.<sup>2</sup> NATO, however, defines MDO as “the orchestration of military activities, across all domains and environments, synchronized with non-military activities, to enable the Alliance to deliver converging effects at the speed of relevance.”<sup>3</sup>

The CAF does not use the term MDO but instead uses pan-domain operations, and defines them as “a tailored set of military capabilities, integrated across all domains, and applied in concert with other instruments of national power.”<sup>4</sup> Unlike NATO and the US military, the CAF recognizes six domains vice the five; in addition to the domains already listed, the CAF has added the information domain to its doctrine.<sup>5</sup> A further nuance between the two definitions is that pan-domain operations incorporate not just military actions to achieve mission success, but all government agencies that impact multiple domains. A military planner's ability to comprehend the impacts across all domains to achieve mission success is currently limited to cause and effect and not second-order, let alone third-order effects. This challenge manifests from the new operating environment being more complex than most military planning processes were designed to function.

Design thinking has been evolving since the 1950s; its tools, methodologies, and general acceptance have grown, and it has become accepted as a multi-disciplinary tool.<sup>6</sup> Design thinking is an unbounded problem-solving process that ultimately walks an individual or team through a problem to explore multiple solutions, bring solutions to prototype, test them, and implement the best solution.<sup>7</sup> Further research suggests that, at minimum, design thinking requires “three common activities and methods,” which are “need-finding, brainstorming, and prototyping within multidisciplinary teams.”<sup>8</sup> This process is believed to not only create the conditions for creative unbiased thought that can lead to innovation and influence organizational culture.<sup>9</sup> Western militaries have started

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<sup>1</sup> Canada. Department of National Defence. Pan-Domain Force Employment Concept Prevailing in a Dangerous World. 44.

<sup>2</sup> United States. Department of Defense. FM 3.0, Operations. Washington, DoD US, 2022, 1-3.

<sup>3</sup> NATO, “Multi-Domain Operations: Enabling NATO to Out-Pace and Out-Think Its Adversaries: NATO’s ACT.”

<sup>4</sup> Pan-Domain Force Employment Concept Prevailing in a Dangerous World, 4.

<sup>5</sup> Ibid, 5.

<sup>6</sup> Auernhammer and Roth, “The Origin and Evolution of Stanford University’s Design Thinking: From Product Design to Design Thinking in Innovation Management,” 633.

<sup>7</sup> Linke, “Design Thinking, Explained,” 1.

<sup>8</sup> Auernhammer and Roth, 624.

<sup>9</sup> Ibid, 624.

incorporating design into their planning process for the above reasons. Further, design is not meant to replace the military planning processes but to complement them and aid military planners in understanding the “why” of the problem before determining the operational objectives needed to achieve mission success.<sup>10</sup> When applied to military planning, an important nuance of design thinking is that it should only be used to solve complex or “wicked” problems; complicated or confusing problems should use traditional planning processes as they are the most efficient and practical.<sup>11</sup> Wicked problems “lack clarity and have a continuous element of ambiguity and uncertainty.”<sup>12</sup>

Manoeuvre warfare, like pan-domain operations and MDO, has similar definitions between militaries, but some nuances are essential to acknowledge. At the same time, the CAF and NATO have similar definitions of manoeuvre warfare of destroying the enemy by influencing their understanding and attacking or undermining their will to fight, shattering their cohesion.<sup>13</sup> The United States Marine Corps (USMC) defines manoeuvre warfare as leaders understanding the situation faster than their enemy and adapting to it faster.<sup>14</sup> While understanding and adapting to the environment quickly allows the USMC to attack their adversary psychologically and physically, the emphasis is on speed. With the speed of decision and action, the USMC believes it can shatter the will to fight of their adversary.<sup>15</sup>

While these three definitions are similar, they are not exactly the same, but combined, they offer a comprehensive definition of manoeuvre warfare. The true value in these definitions when discussing manoeuvre warfare inside pan-domain operations is their nuances. Two slight nuances between the CAF’s definition and NATO’s are that the CAF uses the manoeuvrist approach as a synonym to manoeuvre warfare and that the CAF views manoeuvre warfare as more effective against a conventional adversary than an asymmetrical adversary.<sup>16</sup> The most important difference between the CAF’s and the USMC’s definitions is the USMC’s emphasis on the speed of decision-making and action. These nuances will be further explored in the context of when manoeuvre warfare is conducted in pan-domain operations and the importance of design thinking. Regardless of the doctrine, manoeuvre warfare strives to change the operating environment enough that the planning the adversary has done is rendered less effective or outdated, giving an edge to the friendly forces. To do this, military planners must first be able to understand and make sense of the operating environment.

## **The Complexity of Pan-Domain Operations**

Manoeuvre warfare remains the gold standard for Western militaries to employ at all levels of war, regardless of how the operating environment rapidly and dramatically changed. Pan-domain operations are the new normal, and militaries must become masters

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<sup>10</sup> AOD, Collaborative Innovative Thinking by Design for the Canadian Armed Forces, 8.

<sup>11</sup> AOD, 3.

<sup>12</sup> Ibid, 4.

<sup>13</sup> Canada. Department of National Defence. B-GL-300-001/FP-001, Land Operations. 5-64.

<sup>14</sup> United States. Department of Defense. MCDP 1-0, Marine Corps Operations. 1-3.

<sup>15</sup> Ibid. 1-4.

<sup>16</sup> Canada, Land Operations 5-67.

of this new environment. Mastery of this environment will force militaries to evolve how they plan and execute operations. Planning a pan-domain operation is comparable to working within a complex adaptive system because actions in one domain can have both intended and unintended effects in another domain or domains, causing dramatic changes and shifts in how the domain operates.<sup>17</sup> The results of these actions are magnified when employing manoeuvre warfare, where destroying the enemy's will to fight at the tactical, operational, and strategic levels is paramount to success, and all require coordinated but tailored actions across all domains. Given that pan-domain operations are conducted in complex adaptive systems, applying the tenants of manoeuvre warfare increases the complexity.<sup>18</sup> The complexity increases because each level of war tries to layer its independent actions to achieve a collective result across different domains. This often creates unpredictable consequences across the operating environment both at a macro and micro level.<sup>19</sup>

### **Military Design Thinking and Pan-Domain Operations.**

Given how complex and interrelated the pan-domain operating environment is, traditional planning processes are no longer effective because they do not address the government's demands for precision and predictability. While design thinking will enable the military to succeed in pan-domain operations, two aspects of this thought process are particularly important in meeting those demands: problem framing and envisioning possible futures. Both directly address the shortcomings of military planning in a pan-domain environment and will aid in meeting the abovementioned demands. The military often does not understand the root of a problem because of its complexity and wickedness. Therefore, it usually applies treatment to a symptom or misdiagnosis rather than to the foundational problem. The other equally problematic part of leveraging traditional planning processes is the requirement only to consider the desired end state; if planners only focus on what they want to happen, they fail to envision all that is possible. This narrow-mindedness often makes it improbable for military planners to accurately identify or have an educated understanding of the second or third-order effects, making the operations' outcomes challenging to predict. While both aspects will be explored in more detail, it is essential to acknowledge that the most efficient and effective methodology for planning in a pan-domain environment requires design elements. As seen in the past, traditional planning processes are not adequate. As such, military design thinking must evolve to solve the wicked problems created by a pan-domain environment.<sup>20</sup>

### **The Precision of Planning in Pan-Domain Operations.**

“Give me six hours to chop down a tree and I will spend the first four sharpening the axe.”

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<sup>17</sup> AOD, *Collaborative Innovative Thinking by Design for the Canadian Armed Forces*, 4.

<sup>18</sup> Ibid, 5.

<sup>19</sup> Ibid, 5.

<sup>20</sup> Jackson, “DESIGN THINKING IN COMMERCE AND WAR: Contrasting Civilian and Military Innovation Methodologies,” 39.

- Abraham Lincoln

In a singular domain or joint domain, problems are often complicated, and the ends to a problem are often identifiable and fixed. In these cases, a plan can be developed, predictable, and fixed in time and space. When that is not the case, and the end is complex, it can appear that there is no problem to solve.<sup>21</sup> This often puts military planners at odds because they have been told to solve a problem, yet in these complex adaptive systems, the root of the problems often disguises itself or manifests in a different domain. This causes military planners to not only try and treat the wrong problem but also to add a variable into an adaptive system causing unintended consequences and making the applied solution seem haphazard or lacking precision. For this reason, design thinking, particularly problem framing, is considered critical to many militaries, and failure often flows from how problems are defined.<sup>22</sup> Incorporating design thinking into planning processes helps avoid this pitfall by expanding the mindset of military planners to focus on ensuring the problem is framed correctly and not on the solution or how to overcome the problem.<sup>23</sup> Common to all military planning, problem-framing activities are an iterative process that must be revisited throughout the planning process and execution to be effective.<sup>24</sup> There are multiple tools that exist within the design school of thought that can be used to frame a problem, but like all tools, they all have their time and place. More importantly, the design thinking mentality is critical to success. Ensuring that the problem is framed correctly does not mean the plan will be successful, but it ensures that the military's actions are accurately directed to the problem.

To illustrate this, the CAF's Operational Planning Process (OPP) is expected to aid planners in developing a solution that offers the precision of action while solving a problem. OPP comprises five steps to guide planners through the planning process, initiation, orientation, course of action development, plan development, and plan review.<sup>25</sup> For this illustration, I will only focus on Stage Two of OPP, orientation, as this is where the problem should be framed before moving forward with more detailed planning. The CAF also understands that "proper orientation of the planning process is critical to the success of the plan."<sup>26</sup> However, this is not the case, and this stage is dedicated to two outputs, mission analysis and developing commander's planning guidance. Mission analysis is the framework to follow to determine what the end state is, all assigned and implied tasks, any restraints and constraints imposed on the operation, and what the intention of the higher commander is.<sup>27</sup> This process allocates no time or staff effort to ensure that the problem is framed correctly, nor is the problem interrelated

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<sup>21</sup> Schon, *The Reflective Practitioner: How Professionals Think in Action*, 41.

<sup>22</sup> AOD, *Collaborative Innovative Thinking by Design for the Canadian Armed Forces*, 26.

<sup>23</sup> Jackson, "DESIGN THINKING IN COMMERCE AND WAR: Contrasting Civilian and Military Innovation Methodologies," 10.

<sup>24</sup> AOD, *Collaborative Innovative Thinking by Design for the Canadian Armed Forces*, 26.

<sup>25</sup> Canada. Department of National Defence. B-GJ-005-500/FP-000, The Canadian Forces Operational Planning Process Change 2. 4-1.

<sup>26</sup> Ibid, 3-1

<sup>27</sup> Ibid, 3-10.

to any other system within the system. Yet, the CAF still employs OPP, knowing it is ineffective in complex systems.

The addition of elements of design into Stage Two of the CAF's OPP would address some of the deltas that currently do not make an effective planning tool for pan-domain operations. Not only would design elements make it a more effective planning tool, but it would also increase its ability to be precise. Specifically, if the orientation stage of OPP also demanded a problem-framing technique in addition to mission analysis, it would allow military planners the flexibility and creativity to ensure the problem is understood and addresses the correct problem statement. Other militaries have adopted augmented planning processes like what is being suggested for the CAF to great effect. An example of this can be found in the USMC. The USMC Planning Process comprises six steps: problem framing, course of action (COA) development, COA war game, COA comparison and decision, order development, and transition.<sup>28</sup> The relevant part of this planning process is the first step, problem framing. This step aims to understand the operating environment and the problem within it. With this information, a mission statement and a commander's intent can be drafted.<sup>29</sup> The USMC understands that this step is critical and that no subsequent planning can overcome a poorly framed problem.<sup>30</sup> To maximize the effectiveness of this step, the USMC has developed a design methodology to provide its planners with a process to follow. The process blends design thinking into military planning in four distinct steps:

- Describe the current and desired states of the operational environment.
- Define the problem set.
- Produce the operational approach.
- Reframe throughout planning and execution.”<sup>31</sup>

By incorporating design methodologies into its planning doctrine, the USMC has agreed that its planning process is more effective in properly framing the problem inside a pan-domain operating environment. This is the precision demanded of them by their government, and the same demands exist on the CAF by the Canadian Government. There is no reason to suggest that should OPP be augmented by design in Stage Two, CAF planners could not achieve the same level of precision in pan-domain operations.

### **Predictable Operational Outcomes in Pan-Domain Operations.**

It is abundantly clear that the traditional military planning process is no longer adequate to deal with the complexity of the pan-domain operating environment. When dealing with wicked problems accompanying complex adaptive systems, a military planning process incorporating design thinking leads to innovative thought that yields more comprehensive and predictable solutions.<sup>32</sup> Predictable military solutions to a well-

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<sup>28</sup> United States. Department of Defense. MCWP 5-10. Marine Corps Planning Process. Washington, DoD US, 2022, 5.

<sup>29</sup> Ibid, 4.

<sup>30</sup> Ibid, 4.

<sup>31</sup> Ibid, 11.

<sup>32</sup> AOD, 4.



framed problem does not mean the solution is guaranteed but does mean that military planners understand some of the possible solutions and can account for or attribute most second or third-order effects. Using traditional military planning processes in a pan-domain environment, second or third-order effects seem like emergent actions that could not have been foreseen or, worse unpredictable. In complex systems, this can be the case, but often these unintended effects are caused by an action that was added in the same domain or possibly another, and the planning process was too rigid to acknowledge the possibility of it.<sup>33</sup> The use of design thinking can help and likely predict second and third-order effects in complex adaptive systems.<sup>34</sup> Predicting and explaining these once-believed emergent actions in the operating environment is not only what design can do for predictability, but it can also help planners foresee possible futures. Design methodologies can bring this foresight to military planning, but also empowers planners to “think in possibilities instead of constraints and focus on consequences for the future.”<sup>35</sup> A design-enabled military planning process will provide more predictability when conducting pan-domain operations.

To demonstrate why the CAF’s OPP is currently not able to be predictable in this new operating environment, Stage Two of this process will need to be further explored. As mentioned above, Stage Two is responsible for identifying the solution to the problem and developing the mission statement and developing the end state of the task at hand. A combination of the commander and military planners determines the desired end state. This end state is derived from various factors and methods; however, none of them include the possible outcomes, based on proposed actions or changes to the environment. This narrow-mindedness not only reinforces a failure to identify unintended consequences but also restricts the creativity to explore other desired end states or other possible outcomes that are not desirable. It is these conditions that allow for unintended consequences to appear as emergent or unrelated to the actions introduced into the environment. They appear emergent because military planners’ and practitioners’ processes have not outlined the importance of considering how their actions can affect the environment. They have not anticipated how actions in one domain may have consequences in another. It is, therefore, an unreasonable expectation that military planners that derive their end state in this fashion can have foresight or predictability in a complex adaptive system.

The addition of elements of design into Stage Two of the CAF’s OPP would again address the deficiencies that currently do not make it a suitable planning tool for pan-domain operations. Not only would adding design elements make it a more effective planning tool, but it would also enable military planners to be more effective in three related areas. These areas being: developing a desired end state, acknowledging possible futures in the operating environment, and in turn, being able to identify or understand second or third-order effects. With a properly framed problem, foresight design methodologies align themselves well into OPP, as most of them start with developing a better understanding of your current environment and how it can change to what the team

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<sup>33</sup> United States. Department of Defense. MCDP 5. Planning. Washington, DoD US, 2018, 1-19.

<sup>34</sup> AOD, *Collaborative Innovative Thinking by Design for the Canadian Armed Forces*. 9.

<sup>35</sup> Ibid, 18.

needs it to be. These methodologies increase situational awareness and help identify potential outcomes by allowing planners the time for divergent thought to identify signals, drivers, and trends.<sup>36</sup> Understanding how signals interact with drivers inside a pan-domain operating environment provides a planner greater foresight or predictability of how introduced military actions will change the environment. These changes will align the new environment with the desired end state, which is well-informed and predicted. This methodology will also empower military planners to have foresight into unintended consequences because of a deeper understanding of what signals or drivers can affect trends within the environment. The addition of foresight design methodologies into Stage 2 of OPP will make the CAF's planning process capable of planning operations in a complex adaptive system with predictable outcomes.

The addition of these design methods to OPP is not a novel idea; the USMC uses these methods in their planning process with positive results. Much like problem-framing activities to increase planning precision, design methods are used in developing a desired end state the precision of planning, design methods are used in developing a desired end state is done in Stage 1 of the USMC planning process. In particular, the planning process seeks to understand the signals, drivers, and trends by gaining detailed knowledge of the system or the system of systems. The USMC achieves this by using various different planning tools, including but not limited to system diagrams, causal loop diagrams, or stakeholder analysis.<sup>37</sup> Through these planning tools, the USMC is able to develop a list of factors that may impede the shift from the current state to the desired state and understand what may also occur during and after the shift.<sup>38</sup> This gives the USMC the ability to meet the demands by their government of being able to of their government and predict the outcome of their actions in an operating environment. It also gives the USMC the ability to have foresight into any potential unintended consequences. Using the USMC model demonstrates that should OPP stage two be augmented by design methods, it would increase predictability and foresight. Without this augmentation, CAF planners could not achieve the same level of precision in pan-domain operations.

### **Manoeuvre Warfare's Effectiveness Increased by Design Thinking.**

Design thinking is clearly required for military planners when conducting military planning, but its benefits can also be seen when conducting operational tasks in a pan-domain environment. The positive results of executing a plan that was derived from a planning process incorporating design are magnified by manoeuvre warfare. At the core of manoeuvre warfare is the belief in empowering commanders at all levels to make decisions based on the intent of how the superior commander sees the mission unfolding. The value then of design in the planning process during execution is a well-thought-out intent that explores multiple futures of a problem that was well framed. Not only does a well-framed problem enable proper planning, but it also limits the amount of duplication of effort across multiple layers of command and flat-out wasted effort on tasks that are

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<sup>36</sup> Ibid, 33.

<sup>37</sup> United States. Department of Defense. MCWP 5-10. Marine Corps Planning Process. Washington, DoD US, 2022, 13.

<sup>38</sup> Ibid, 14.

not required. Further, the importance of an intent paragraph is critical for subordinate commanders and staff therefore, at the operational or strategic level, a more wholesome understanding and approach to a well-framed problem articulated in a usable intent paragraph can better-enable practitioners to make better decisions during operations.

CAF doctrine would suggest that manoeuvre warfare is ineffective against asymmetrical threat actors.<sup>39</sup> While true in a traditional sense, I suspect the problem is not with manoeuvre warfare but with how complex asymmetrical threats are. To make the best use of manoeuvre warfare, an underlying goal is to change the operating environment enough to give friendly forces the advantage by rendering the adversary's plan out of date. Therefore, the potential problem when using manoeuvre warfare in a traditional sense was twofold. The first problem is when military planners do not understand that the operating environment has changed from a singular-domain fight to a pan-domain fight. Without acknowledging this shift, planners attempt to use traditional planning techniques to overcome these complex threats, which has limited success due to no innovative thought. Second, the application of traditional manoeuvre warfare did not work effectively in an MDO environment because planners focused on the new doctrine and ways of thinking of the time to win against these types of threats: the operations needed to be joint with a whole-of-government approach. Even if this were true, Western militaries would not have succeeded because of the planning processes used to try and solve wicked problems. It is not suggested that design thinking could have changed modern military history against asymmetrical threats. However, this demonstrates that design thinking could have improved the longevity of success of modern military campaigns by ensuring the problems were framed correctly, promoting divergent thought at appropriate times, and better defining operational objectives and end states correctly.

## Conclusion

“Small shifts in your thinking, and small changes in your energy, can lead to massive alterations of your end result.”

— Neil Gaiman

As MDO and pan-domain operations change how military planners see and understand the new operating environment, a change in how planning is conducted must occur. The new operating environment reflects all six domains where an action in one domain can have unintended consequences throughout the system partially because the “combat space is shrinking, but war space has expanded.”<sup>40</sup> Additionally, this new operating environment is a complex adaptive system; as such, it entails wicked problems making planning especially difficult with precision and predictability. Even though the operating environment has changed, and the problems are complex, governments still demand that military planners be able to treat the cause of the problem and anticipate unintended consequences. This is problematic because traditional military planning processes are not designed for complex problems and therefore offer little ability to

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<sup>39</sup> Canada. Department of National Defence. B-GL-300-001/FP-001, Land Operations. 5-67.

<sup>40</sup> Burke et al., “People’s Liberation Army Operational Concepts,” 9.

ensure the problem is framed correctly or provide the power of foresight in planning. To be able to have precision and foresight, OPP needs augmentation by design.

Incorporating design thinking or methodologies into the OPP process increases the military's planning effectiveness and, in turn, its ability to provide the Canadian Government precision and predictability. To achieve this, design augmentation is required in Stage Two of OPP this will enable military planners to accomplish two things the current process does not address, ensure the problem is framed correctly and envision multiple futures. Ensuring the problem is framed correctly will enable planning to treat the root cause of the problem and not the symptoms of the problem. With a properly framed problem, military planners can develop a reasonable plan to address the root cause of the problem. This leads to precision in planning and execution. Similarly, predictability and foresight of military planning in a complex adaptive system will improve with design tools. These improvements are found in the design tools which empower planners to envision multiple futures and not just the desired end state. By understanding what multiple futures are possible, planners gain a more in-depth understanding of the system they are working in. Not only do they gain better situational awareness of the operating environment they have a better understanding of how different systems relate to each other. With this understanding, planners can better anticipate second and third-order effects and understand why they are occurring, vice thinking they are emergent and unrelated to friendly actions in the system. Adding design methods and mindset into stage 2 of the OPP will ensure this process is effective in complex adaptive systems and enable the military to be more accountable to the government.

An augmented OPP will also ensure that the CAF is more effective in its application of manoeuvre warfare. Without question, manoeuvre warfare inside pan-domain operations is complex and benefits from a plan with design. The main benefits are twofold, first, a plan that originates from design will be developed with a better understanding of how systems within the operating environment interact with each other and a properly framed problem. Combining these two things will enable commanders at all levels to give a better intent on why the task must be completed; this empowers subordinates to use mission command more effectively while executing the plan. With this deeper understanding, manoeuvre warfare can become effective against asymmetrical threats for two reasons. First, roles and responsibilities between government agencies are identified early in the planning process, and a holistic plan can be developed, ensuring a shared end state. Secondly, with this understanding, planners can more aptly try and change the operating environment to favour them more while rendering previous plans by their adversary less effective. The culminating effect of both is a more effective application of manoeuvre warfare.

The incorporation of design thinking into the CAF's planning process is essential to plan and conduct effective pan-domain operations. In particular, during Stage Two of OPP, augmentation is required to make the process yield more precise and predictable results. The complexity of manoeuvre warfare in this operating environment requires out-of-the-box thinking, and traditional planning tools do not allow for that. Design thinking encourages collaboration, empathy, and experimentation, which are essential skills for solving complex problems. By adopting design thinking, military planners can approach

problems creatively, identify the root causes of problems, and develop solutions that address them comprehensively. Therefore, the CAF must institutionalize design thinking into its doctrine to ensure its actions can be precise and predictable in this new operating environment.

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