A Tale of Two Designs: Developing the Australian Defence Force's Latest Iteration of its Joint Operations Planning Doctrine

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Unlike most of the other authors in this volume, I am not involved in the delivery of professional military education (PME) courses. Instead, during the period discussed herein, I was a doctrine developer at the Australian Defence Force (ADF) Joint Doctrine Centre. Accordingly, this paper does not focus on the incorporation of design thinking into Australian PME, although it will touch on that in some places. What it does focus on is the incorporation of design thinking ideas into the latest iteration of the ADF's joint operations planning process, the Joint Military Appreciation Process (JMAP). This process is contained in Australian Defence Force Publication (ADFP) 5.0.1—*Joint Military Appreciation Process*, the latest edition of which was published in 2015 and twice subject to minor amendment during 2016.[2]

First, this paper provides some background information about my personal interaction with design thinking and associated concepts. This is pertinent because my own understanding and interaction directly shaped the content of the doctrine.[3] Of

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[1] The views contained herein are exclusively those of the author. They do not necessarily reflect those of the Australian Department of Defence, or any part thereof.

[2] Australian Defence Force, Australian Defence Force Publication (ADFP) 5.0.1—*Joint Military Appreciation Process*, 2nd ed. (Canberra, Defence Publishing Service, Amendment List 2), 2016.

[3] This paper, and its first section in particular, extensively refers to my own prior publications, to a degree that I must admit I feel awkward about. This is due to the personal narrative that characterizes this paper and is not due (exclusively) to my academic vanity! I tend to learn by writing and my publications history therefore chronicles the progress of my learning about many military studies topics, including design

course, this was only one factor in its development and accordingly other factors are explored throughout the remainder of the paper. The second section gives an overview of the development of ADF *Joint Planning* doctrine and my role within that process, and the third examines the subsequent development the JMAP doctrine as well as summarizing the aspects of design thinking it included. These aspects are critically evaluated in the fourth section, and it is argued that in the past decade the ADF has often 'done' design thinking without necessarily knowing that it has. Finally, a recommendation is offered regarding how the ADF may further enhance its implementation of design thinking approaches in the future.

A Foray into Epistemology

My personal interaction with design thinking began with a phone call from Canada in late 2009. The person on the other end of the line was Colonel Howard Coombs, Canadian Army, whom I had interviewed a few years earlier as part of my doctoral research.[4] Colonel Coombs asked me a simple question: had I seen any research examining the epistemology of military doctrine?

The answer was that I had not. In fact, I had not even heard of epistemology! But I was intrigued so I started researching and ultimately I found nothing about the epistemology of military doctrine in the literature then available. I decided to fill this gap and, using some of my doctoral research as a starting point, I wrote a draft journal article entitled "The Epistemology of Military Doctrine." I completed this draft in January 2010; it ran to 6,500 words and focused primarily on the US Army's famed 'doctrinal renaissance' of the 1980s.[5] In particular it examined the development of the

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thinking. It is therefore a useful resource that I have drawn upon in light of the personal nature of this paper.

[4] My doctorate was a comparative study of keystone and capstone doctrine development in Australia, Canada and New Zealand. The dissertation has since been published as: Aaron P. Jackson, *Doctrine, Strategy and Military Culture: Military-Strategic Doctrine Development in Australia, Canada and New Zealand, 1987-2007* (Trenton: Canadian Forces Aerospace Warfare Centre, 2013).

[5] On this 'renaissance', see: John L. Romjue, "The Evolution of American Army Doctrine," in *The Origins of Contemporary Doctrine: Papers Presented at a Conference Sponsored by the Director General of Development and Doctrine at Larkhill, March 1997*, ed., John Gooch, *Occasional Paper* no. 30 (United Kingdom: Strategic and Combat Studies Institute, September 1997).

'AirLand Battle' doctrine.[6] It also briefly discussed the 2006 US Army/Marine Corps counterinsurgency doctrine, arguing that changes in the development processes used for these manuals constituted evidence of changes in doctrine's epistemology.

I sent the draft paper to Colonel Coombs for comment, and he forwarded it to some colleagues at the Canadian Forces College. I subsequently received feedback from three faculty members, one of whom I commenced corresponding with regularly: Dr Paul T. Mitchell. Following my early correspondence with Dr Mitchell, I concluded that my paper had missed the mark. What I had identified as epistemological changes to doctrine development processes were actually methodological changes and the introduction of 'AirLand Battle' had been an ontological change within the doctrine and not an epistemological one. I went back to the drawing board, and over the next three years, comprehensively reviewed and redeveloped the paper.

The result was a 36,000 word monograph entitled *The Roots of Military Doctrine: Change and Continuity in Understanding the Practice of Warfare*, which was published in August 2013.[7] This paper examined both the epistemology and ontology of military doctrine, as well as providing a historical overview of the institutional role and significance of doctrine in Western militaries since the early seventeenth century. It concluded that the scope and content of military doctrine had been subject to four major ontological expansions over a four-hundred year period, each of which I called a 'school of doctrinal ontology.' Yet it also concluded that the epistemology of doctrine had remained stable throughout most of this period. It was *positivist*, an epistemic approach characterized by (self-proclaimed) rationality and objectivity.[8]

Since the start of the twenty-first century, however, doctrinal epistemology had shown signs that it was possibly undergoing a 'paradigm shift' to an *anti-positivist* epistemology. This approach emphasizes subjectivity and relativity, and refutes the existence of objectivity on the grounds that there can be no such thing as a 'neutral

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[6] US Army, FM 100-5 *Operations* (Washington, DC: Headquarters, Department of the Army, 1982); see also: US Army, FM 100-5 *Operations* (Washington, DC: Headquarters, Department of the Army, 1986).

[7] Aaron P. Jackson, *The Roots of Military Doctrine: Change and Continuity in Understanding the Practice of Warfare* (Fort Leavenworth, Kansas: Combat Studies Institute Press, 2013).

[8] On positivism, see: Phil Johnson & Joanne Duberley, *Understanding Management Research: An Introduction to Epistemology* (London: Sage Publications, 2000), pp. 12-27.

observer' of social phenomena (including warfare).[9] *Roots* concluded that at the time of its publication it was too early to determine if the changes observed constituted a genuine 'paradigm shift' in the Kuhnisian sense, or just a flirtation with new and emerging ideas.[10] I am now, with the benefit of three more years of observations, inclined to conclude the latter for reasons that will be revisited briefly later in this paper.

Most importantly for discussion here is that the primary manifestation of anti-positivist epistemology within the doctrine I studied was 'design thinking.' Although *Roots* focused on the 2006 US counterinsurgency doctrine and developments in other US publications since then, it acknowledged the intellectual lineage of this idea in Israeli military thinking dating back to the 1990s.[11] This thinking, and its subsequent development, is discussed in Ofra Graicer's paper elsewhere in this volume. Discussion of design thinking in *Roots* was cursory and descriptive, and added nothing new to design thinking literature, although it did neatly summarize where this literature sat relative to military doctrine.

Following the publication of *Roots*, I was unexpectedly contacted by Colonel Christopher Paparone, US Army (retired). He wanted to discuss my work and subsequently added me to an email distribution list between him and some colleagues who were exploring design thinking in a military context. At that time, the email group consisted of him, Lieutenant Colonel Grant Martin and Major Ben Zweibelson, both US Army. The email group has since expanded to include (amongst several others) most of the authors featured in this volume, and has been informally dubbed 'the design cabal' by its members.

In my correspondence with this email group, I have been a student much more often than a teacher and I have expanded my understanding of design thinking

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[9] I note that others have called this same approach *post-positivism*, rather than *anti-positivism*. I explain the difference between these epistemological approaches as I then understood it, and justify my selection of the term, in the fourth chapter of *Roots.*

[10] Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 4th ed. (Chicago & London: Chicago University Press, 2012). For a further development of the brief exploration of paradigm shifts contained in *Roots*, see: Aaron P. Jackson, "Paradigms Reconsidered," *Infinity Journal* 4, no. 1 (Summer 2014): pp. 26-31.

[11] The most prominent example of this thinking is Shimon Neveh's Systemic Operational Design (SOD) concept. See: Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory* (London: Frank Cass, 1997).

considerably because of this correspondence. Frankly, had I not received Colonel Paparone's email and subsequently been added to group email discussions, it is likely I would have moved onto a new project and not explored design thinking any further. Instead, my inclusion in the design cabal and subsequent foray into design thinking was timely given my role in ADF joint planning doctrine development.

Reviewing Australian Defence Force Joint Planning Doctrine

In January 2010, I commenced employment as a public servant within the Australian Department of Defence, where I was appointed as a doctrine developer at the Australian Defence Force Joint Doctrine Centre.[12] The ADF has a hierarchy of over 80 joint doctrine publications, divided into eight series that align with the NATO staff designators for J0 to J7. Within each of these series there are two types of doctrine publications: Australian Defence Doctrine Publications (ADDP), which are philosophical in nature; and ADFP, which are procedural. In accordance with its doctrine development cycle, the ADF aims to review each joint doctrine publication every three-to-five years.

Beginning in 2013, the two publications in the J5 (planning) series came up for review. These publications are ADDP 5.0—*Joint Planning* and ADFP 5.0.1—*Joint Military Appreciation Process*. The first of these publications was initially delivered by a contractor; this is an option that the ADF has pursued from time-to-time to ensure its doctrine is updated in a timely manner.[13] Of note, the contracted lead author was a retired Australian Army officer who had graduated from the US Army War College and who was involved in the Australian Army's key conceptual organizations during the period when the Army's 'complex warfighting' and 'adaptive campaigning' concepts were developed and implemented.[14] Hence, they were in a good position to be familiar with design thinking and its implementation within the US Army in the mid-2000s.

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[12] This organization changed title several times during the six-and-a-half years of my appointment. The title used herein is current as at August 2016, which is when I left the organization.

[13] Jackson, *Doctrine, Strategy and Military Culture,* p. 148.

[14] Both of these concepts examined complexity theory in some detail. For a summary, see: Aaron P. Jackson, "Moving Beyond Manoeuvre: A Conceptual Coming-of-Age for the Australian and Canadian Armies," *Australian Defence Force Journal*, no. 177 (November/December 2008): pp. 85-100.

Unsurprisingly with the benefit of hindsight, the draft *Joint Planning* doctrine drew heavily on Shimon Naveh's 'systemic operational design' (SOD) concept and its subsequent development by a range of US-based authors. The draft doctrine was subsequently reviewed by several Joint Doctrine Centre staff and there was general agreement that large parts of it were incomprehensible, mostly due to its abstract language. This language was similar to that used by Naveh, several examples of which are listed in Alex Ryan's blog post on the introduction of design within the US military.[15] In light of my research for *Roots* I was able to make some sense of the draft, although I was in agreement with my colleagues that it was too esoteric to be implemented by the ADF. Accordingly, I became something akin to a translator in discussions about the publication. Perhaps because of this, in August 2013, a few weeks after *Roots* was published, I was assigned as lead author of a comprehensive redevelopment.

A brief detour to my personal perspective is necessary here regarding the nature and purpose of military doctrine. After spending a decade researching it, I determined that doctrine is best described as an expression of a military's institutional belief system.[16] Getting doctrine 'right'—that is, producing doctrine that is acceptable to a military institution and will therefore be implemented—means finding two key balances. The first is achieving an acceptable compromise between the desires of different interest groups within the institution while also ensuring the doctrine remains accessible to the majority of lay readers. The second balance involves achieving the first balance while also ensuring that the doctrine remains intellectually robust and able to stand up to deep intellectual analysis and scrutiny. Anecdotally, I would offer that the first of these two balances is achieved much more regularly than the latter.

It was with these balances in mind that I commenced work on the redevelopment of *Joint Planning*. The reason for the rejection of the contractor's previous draft becomes quickly obvious in light these balances. That draft over-catered for the desires of one interest group (those with knowledge of SOD) and as a result its content was so radically different to the previous edition that the rest of the ADF was not ready to

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[15] Alex Ryan, "A Personal Reflection on Introducing Design to the U.S. Army," *Medium: The Overlap* (blog), posted 4 November 2016, accessed 7 February 2017, https://medium.com/the-overlap/a-personal-reflection-on-introducing-design-to-the-u-s-army-3f8bd76adcb2#.lqhycz1g7.

[16] This is elaborated in: Jackson, *The Roots of Military Doctrine,* pp. 5-7.

embrace it. Christopher Bassford has described this phenomenon excellently, calling it "sales resistance" to new doctrine, which is "often stimulated by overt attempts to introduce a new paradigm."[17]

Although this article emphasizes my personal role because it deliberately provides a first-person account of my own experience, doctrine development is always a team effort (which is why I was designated 'lead author', not simply 'author'). From the redevelopment's outset, stakeholders across the ADF were consulted regularly and some even wrote parts of the publication's content. The three main stakeholders were Headquarters Joint Operations Command (HQJOC), which is the main ADF organization responsible for conducting joint operations planning, the Joint Warfare Training Centre (JWTC) and the Australian Command and Staff College (ACSC), which are both responsible for teaching joint operations planning as part of the ADF's PME continuum. In particular, two mid-ranking officers from ACSC and three from the JWTC had regular input into this publication and subsequently into the development of the JMAP publication. An officer from HQJOC later became a single point of contact for that organization and had regular input into the development of the JMAP.

The redevelopment of *Joint Planning* proceeded very quickly (delivery of the final draft took less than six months), due to demand for the new edition leading to its development being prioritized over other projects. The publication's final structure was four chapters.[18] Regarding design thinking, chapter two is the significant part of the publication.

Chapter Two presents a list of joint operations planning concepts that were subsequently expanded and linked to form a process (JMAP), which was detailed in a separate publication (see below). The list includes several long-standing components of operational art, such as end states, operational objectives, centres of gravity, decisive points, effects and lines of operation. Of this list, the subject that attracted the most

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[17] Christopher Bassford, "Doctrinal Complexity: Nonlinearity in Marine Corps Doctrine" in *Maneuver Warfare Science 1998,* eds., F. G. Hoffman and Gary Horne (Washington DC: Department of the Navy, US Marine Corps, 1998), p. 11.

[18] Australian Defence Doctrine Publication (ADDP) 5.0—*Joint Planning*, 2nd ed. (Canberra, Defence Publishing Service, Amendment List 1, 2015).

debate—in terms of both time and intensity—was centres of gravity.[19] A new concept was also included at the beginning of this list, one that will be familiar to students of design thinking: framing. Under this heading, two pages were dedicated first to a (very) brief description of complexity and then to briefly summarizing two types of framing, the environment and the problem frames.

The *Joint Planning* doctrine was published in February 2014, in time for its use during the ACSC course that year.[20] Although I was not able to witness the doctrine's impact on the course, I did receive feedback from one of the instructors that "From a Staff College perspective it is a great improvement over the first edition because it has given us the cognitive framework to deal much better with complex planning problems."[21]

While developing this publication I did not consider myself a 'design guy', although I was open to the inclusion of any new concept or idea that could help improve the doctrine and, more importantly, the operational plans that it would assist practitioners to develop. From the outset, I could see the value in design thinking for confronting and overcoming complex problems, but at this point in time the primary effect of my limited forays into design thinking was to help ensure that the short spiel on framing was consistent with the underlying epistemological and ontological approaches that had emerged in the design thinking literature.

Design Thinking and the Joint Military Appreciation Process

Immediately upon completing *Joint Planning*, I was appointed co-author for the development of the much more comprehensive *Joint Military Appreciation Process*

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[19] Depending on one's position on centres of gravity, this debate may be considered either as absolutely vital to ensuring effective operational planning or as akin to 'rearranging the deck chairs on the *Titanic*.' Most of the stakeholders were of the former viewpoint and the outcome of the resulting debate was the inclusion of a completely revised ADF centre of gravity construct, the mechanics of which I have summarized in another paper. See: Aaron P. Jackson, "Center of Gravity Analysis 'Down Under': The Australian Defence Force's New Approach", *Joint Force Quarterly*, no. 84 (1st Quarter 2017): pp. 81-85.

[20] The ACSC runs an annual joint course for O4-level students drawn from across all three Australian Services.

[21] From the author's personal correspondence.

publication. The appointment of two co-authors instead of one lead author is unusual and emphasizes the importance of this publication within the ADF and the speed with which the new edition needed to be completed. My co-author, Squadron Leader James Rea, had been on the instructing staff at the JWTC before posting to the Joint Doctrine Centre. Development of this publication took us most of 2014 (it was published in February 2015) and an interesting aside is that as I further corresponded with the design cabal and learned more about design thinking, I also had the opportunity to watch Squadron Leader Rea's own foray into the subject matter. Over the course of the project he went from never having explicitly considered design thinking to being an advocate of it.[22]

One of the themes explored in several papers in this volume, including those by Alice Butler-Smith and Grant Martin, is the fragmentary nature of the military design thinking community. In the same vein, Alex Ryan identified a significant divide between what he labelled 'purists', advocating adherence to strictly post-modernist design thinking constructs, and 'pragmatists', advocating the inclusion of key aspects of design thinking alongside more traditional military planning tools.[23] My colleagues' response to the contractor-authored version of *Joint Planning* showed that the former of these approaches was unlikely to gain traction in the ADF; however, the inclusion of framing in the redeveloped version indicated the likely effectiveness of a pragmatic approach. Furthermore, the 2011 publication of a new edition of US Joint Publication 5-0 *Joint Operation Planning* had already prompted pedagogical shifts at ACSC and by 2014 there was growing momentum for some aspects of the 'operational design' discussion it featured to be included in the updated JMAP.[24]

Once again, the development process was driven primarily by stakeholder requirements, with theoretical developments in operational art having a significant secondary influence on the content. Achieving the balances elaborated above was a key

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[22] One of my favourite memories of our co-authorship was the morning when, about eight months into the project, Jim concluded that centre of gravity analysis—again one of the most time intensive aspects of the publication's development—actually detracted from deep and creative thinking about the nature of the problem and how to solve it! For me the subsequent conversation was one of the highlights of the entire project.

[23] Ryan, "A Personal Reflection on Introducing Design to the U.S. Army."

[24] US Department of Defense, Joint Publication 5-0—*Joint Operation Planning* (Department of Defense: Washington DC, August 2011).

concern and, in my assessment, the publication did so. Its content was therefore a compromise, which fits neatly within the auspices of the 'pragmatic' approach to implementing design thinking. This is because it contains several of the more easily accessible aspects of design thinking but not those that are more esoteric. Although it uses the term 'operational design' extensively, this is an adaptation of the term used in US joint planning doctrine and does not relate to design thinking in the sense that concepts like SOD do. In the revised JMAP's adaptation, operational art consists of operational design and 'arrangement of operations':

> Operational design produces a schematic that articulates the contemporary application of operational art. It constitutes a synthesis between classical notions of operational art, developed during the late nineteenth and twentieth centuries … and selected aspects of complex adaptive systems theory that have emerged during the early twenty-first century.
>
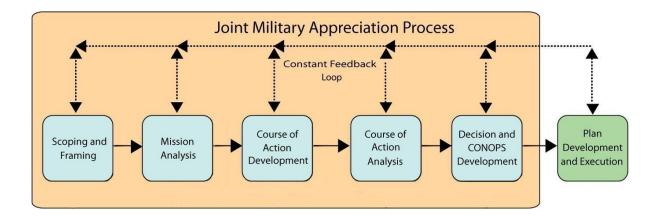> Arrangement of operations adds additional depth and flexibility to the broad outputs of operational design … This vital detail allows commanders and planners to ensure that activities are ordered to efficiently progress towards achieving the end state.[25]

Figure 1 shows the five steps of the JMAP.[26] The components of operational design constituted the first two steps and the arrangement of operations constituted the final three.

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[25] ADFP 5.0.1—*Joint Military Appreciation Process*, para 1.10 & 1.13.

[26] Figure 1 has been derived from: ADFP 5.0.1—*Joint Military Appreciation Process*, Figure 1.1.

Figure 1. Steps of the Joint Military Appreciation Process

The components of the JMAP doctrine that were shaped by design thinking are elaborated below. These components are critical thinking, circularity during planning, scoping and framing (and reframing), and the inclusion of a fictional narrative within the publication.

Critical thinking

The need to explicitly address critical thinking was raised by key stakeholders, in particular staff from JWTC and ACSC. Critical thinking was already a component of PME courses and although it was implicit in the previous iteration of the JMAP, making it explicit would help in the delivery of associated PME components. Ultimately, only three paragraphs on this topic were included in the publication's introductory chapter. These defined critical thinking and explained its importance during planning.[27] Despite the brevity of this section, it contained some very important caveats regarding the application of the JMAP:

> Critical thinking is an important skill for planners to develop and exercise
> because it enables them to challenge accepted norms, to determine the

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[27] The Joint Doctrine Centre also considered developing a Joint Doctrine Note about critical thinking, which would serve as an enhancement to the JMAP doctrine publication. Work on this had not yet commenced at the time of my departure from the organization.

right questions to ask and to answer those questions with an intellectual rigour that might otherwise lack depth. … The JMAP is, as the name states, a process. Although it is robust and adaptable, it is nevertheless subject to some inherent limitations that stem from its linear nature and formulaic structure. It will not foster critical thinking by itself. … It behoves commanders to allow their staff to think critically and constructively about solving the right problem within the most appropriate planning construct.[28]

Reading between the lines, one could be forgiven for thinking that it leaves the door open for astute planning staff to deviate from the JMAP if they assess that the situation warrants it, including by the application of design thinking. As I read back over this quote, I am reminded of Ben Zweibelson's assertion that "sometimes, designers need to 'Trojan Horse' some experimentation and design thinking into an organization that is not quite ready or willing to increase uncertainty and risk."[29] That seems to be what has happened in this section of the JMAP doctrine, although I am making this observation in hindsight and this was certainly not a deliberate intent at the time the publication was written.[30]

Circularity during Planning

Another section in the first chapter, 'planning and the need for circularity,' was even shorter than the one about critical thinking. It was included for a single reason: as a reminder to flexibly apply the process to achieve a desired outcome, rather than slavishly adhering to it for its own sake. The following best summarizes this section's message:

As has been stated, JMAP tends to encourage linear thinking. This is inevitable because of the need to start somewhere, finish somewhere, and

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[28] ADFP 5.0.1—*Joint Military Appreciation Process*, para 1.30-1.32.

[29] This quote is from his article contained elsewhere in this volume.

[30] The intent at the time of writing of the JMAP was very straightforward: to briefly introduce readers to the idea of thinking critically, including about the JMAP itself. While I cannot speak for my co-author, it is likely that my own interactions with the literature on design thinking shaped my views about the strengths and weaknesses of the JMAP itself, and that these views are evident in the choice of wording used in this section of the publication.

be able to logically progress in a broadly structured way. Conversely, the world is inherently non-linear, fluid and complex. A situation will not usually unfold in a linear way and, furthermore, planners will not necessarily have to hand all the information about the situation. Therefore, JMAP should be harnessed linearly only up to the point of diminishing utility. Beyond this, planners may need to re-visit some steps and complete them more than once.[31]

In particular, readers were encouraged to reframe the situation as new information emerged, to "counter a checklist-oriented drive for the final conops."

Scoping and Framing

From a design thinking perspective, the sub-section discussing 'framing' is the most significant of the JMAP publication. Its inclusion constituted a major change from the previous iteration, which contained a four-step planning process preceded by 'preliminary scoping'. In preliminary scoping planners collected relevant material, including the commander's initial planning guidance, and established a planning timeline. This was expanded into a new first step in a five-step process by the addition of framing, which "is used to deconstruct complexity and to ensure that the correct problem or series of problems are fully explored to help inform more detailed planning."[32]
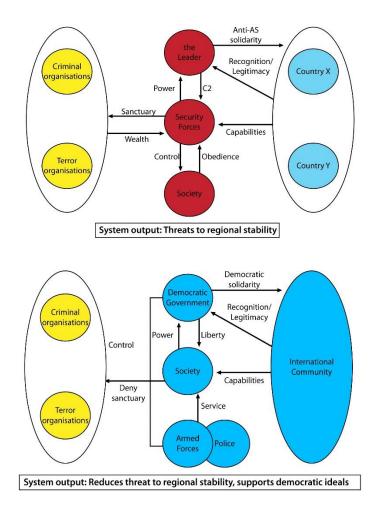
The sub-section on framing includes eleven pages of explanation that elaborates on the two-page summary included in *Joint Planning*, while maintaining the same structure: a summary of complexity and the subsequent explanation of two types of frames, the environment and the problem frame. What sets the JMAP apart is that it provides a methodology for conducting these framing activities, which was derived largely from what was already being taught at ACSC and JWTC. For instance, generic examples of systems diagrams that may be produced during environment framing were

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[31] ADFP 5.0.1—*Joint Military Appreciation Process*, para 1.33.

[32] ADFP 5.0.1—*Joint Military Appreciation Process*, para 2.26.

taken from a slide package developed by Lieutenant Commander Lorrae Blunden, an instructor at JWTC. These diagrams are reproduced in Figure 2.[33]

Figure 2: Example observed (top) and desired (bottom) system diagrams used for environment framing

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[33] Figure 2 has been derived from: ADFP 5.0.1—*Joint Military Appreciation Process*, Figures 2.3 & 2.3.

Inclusion of a Fictional Narrative

This inclusion shows a result of the application of design thinking by the doctrine development team. During discussions about how the doctrine could best be used as a teaching aid, the development team explored unorthodox alternatives to traditional doctrine formats. A key outcome of this exploration was the inclusion of a fictional narrative explaining how a planning team applied the doctrine in response to a hypothetical military problem.[34] This narrative unfolded in vignette form with a series of connected short stories following the explanation of each sub-step of the JMAP. To date this remains a unique feature that has not been included in any other Australian doctrine publication.[35]

The Australian Defence Force and Design Thinking: Doing without knowing it?

So what does the updated JMAP mean for design thinking within the ADF? On one hand, the inclusion of some design thinking ideas within doctrine undermines the purist approach in two significant ways. First, it offers a replicable formula for the conduct of framing. Despite efforts to ensure this formula can be applied as flexibly as possible, it nevertheless runs counter to the nature of design thinking, which ought to avoid formulas of any kind as the nature of its application is entirely situation-dependent and therefore cannot be replicated.

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[34] This idea was partially inspired by earlier Canadian Army efforts to use fictional writing in support of concept development. On this see: Andrew B. Godefroy, "Fictional Writing and the Canadian Army of the Future", *Canadian Army Journal* 8, no. 1 (Winter 2005): pp. 93-98.

[35] Another aspect of this 'hypothetical example' is that it was intentionally used to provide a light counterpoint to the seriousness of the main body text. Accordingly, it included the occasional humorous point. My personal favourite is an offhand quip about the planning team needing to consume a prerequisite number of caffeinated beverages before commencing day two of their planning. The inclusion of this unconventional material was another result of the design process and was intended to enhance the publication's appeal to potential readers. This intent was also achieved by the occasional use of humorous quotes, for example the opening of Chapter 1 includes the famous line "don't panic" from Douglas Adams' *The Hitchhiker's Guide to the Galaxy*. To me this quote seems particularly appropriate and is amusing on several levels, but unsurprisingly the overall approach was contentious and a considerable amount of persuasion of various stakeholders was required to ensure that it remained in the final version of the publication.

Second, post-positivist design approaches have been relegated as a sub-step within a positivist planning framework. The epistemological effect of making a concept from one paradigm into a component of a process from another has been to compromise the epistemological integrity of the embedded paradigm. Despite emphasizing the need for circularity during planning, ultimately a technical rationalist and linear approach still characterizes the JMAP. Australia is not alone in this, however, as grafting one paradigm into another also seems to have happened within various US planning doctrine publications.[36] It is for this reason that, as I stated above, my conclusion since the publication of *Roots* is that the incorporation of design thinking into doctrine has been a flirtation and not a paradigm shift.

In my view, however, these drawbacks are outweighed by the benefits of pragmatically including a few major design thinking ideas within JMAP doctrine. The inclusion of framing in particular generates two critical outcomes that enhance operational planning considerably. First, it helps planners to better understand the operational environment before they start planning. This reduces the chance that they will work towards solving the wrong problem from the outset. Second, it encourages operational planners to seek better solutions, even if this requires them to question strategic level thinking. For example, the doctrine states that:

> In some situations … the operational level commander's environment and problem frames may point to the need for an operational level end state that appears to not be linked to the strategic level end state. In such situations the operational commander may seek clarifying guidance from the strategic level commander, and may even propose that the strategic level end state be reconsidered.[37]

For me, the potential of improved operational outcomes is worth the perversion of 'pure' design thinking that has had to occur to achieve this outcome. In this instance the end justifies the means.

Importantly, the elements of design thinking included in JMAP are also being applied during ADF PME courses. This is despite there not being a dedicated ADF design thinking course akin to that taught by Dr Mitchell at the Canadian Forces

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[36] For example, see: US Department of Defense, Joint Publication 5-0—*Joint Operation Planning*.

[37] ADFP 5.0.1—*Joint Military Appreciation Process*, para 2.66.

College, and despite the term 'design thinking' not having been used by the ADF (to the best of my knowledge). As noted above, the application of this thinking during PME courses was happening before the updated JMAP doctrine was published and one of the reasons some design thinking ideas were included in the doctrine was to bring it into alignment with what was already being taught. Furthermore, some significant ADF conceptual developments also contain elements of design thinking or complexity theory, even though they do not use these labels. For example, the Australian Army's complex warfighting and adaptive campaigning concepts both contain several elements of complexity theory, and recent calls for the introduction of more comprehensive 'red teaming' may lead to the conduct of more thorough reflexive thinking in the near future.[38]

This indicates that the updated JMAP is only one aspect of the ADF's implementation of certain elements of design thinking. Yet this implementation appears to have happened without the occurrence of any explicit debate within the ADF about the merits or otherwise of design thinking approaches. This is reminiscent of Coombs' observations regarding the Canadian Forces adoption of the operational level. Coombs applied Ludwig Fleck's concept of 'thought communities' to argue that Canadian practitioners viewed themselves as part of a "North American military thought collective", wherein US doctrine writers were perceived as an inner circle of conceptual experts and Canadian practitioners as an outer circle. The latter followed the ideas of the former by default because they viewed themselves as part of the same thought community.[39] Further research would be required before a similar link could be established or disproven in the case of the ADF.

Yet I suspect a different reason for the ADF's implementation of certain elements of design thinking without any accompanying debate about their merits. This reason is

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[38] Australian Army developments are briefly discussed in Ryan, "A Personal Reflection on Introducing Design to the U.S. Army". On red teaming, see: Nick Rose, "Thinking Red for the Australian Army," *Land Power Forum* (blog), Australian Army, posted 2 September 2014, accessed 29 November 2016, http://www.army.gov.au/Our-future/Blog/Articles/2014/09/Thinking-red-for-the-Australian-Army.
[39] Howard G. Coombs, "In the Wake of a Paradigm Shift: The Canadian Forces College and the Operational Level of War (1987-1995)," *Canadian Military Journal* 10, no. 2 (2010): pp. 19-27. See also: Ludwig Fleck, *The Genesis and Development of a Scientific Fact*, trans. Fred Bradley & Thaddeus J. Trenn, ed. Thaddeus J. Trenn & Robert K. Merton, (Chicago: Chicago University Press, 1979).

related to a pragmatic (as opposed to intellectual) bias within Australian national culture:

> Australians tend to favour the happy larrikin over the deep thinker. Within the defence realm this takes the form of a preference for 'doers' over 'thinkers', or, as one officer observed, the Army [and the rest of the ADF] has a cultural fixation on delivering outputs rather than achieving outcomes.[40]

Publications, such as JMAP doctrine and the Army's adaptive campaigning concept, are outputs. The content of these outputs is evidence that contributors to them have developed an understanding of design thinking; yet they have not analyzed a level deeper and explicitly written about the development of this understanding or the broader significance of it.[41] Hence, in the past fifteen years, the ADF has been credited with being "the first to publish a comprehensive analysis of the new conflict environment and its implications," yet it has also been criticized for its lack of debate about the possible nature of future warfare.[42] In the case of design thinking, this paradox is manifest in the ADF having 'done it' without necessarily knowing that it has.

Concluding thoughts: Where to next?

Rather than a traditional conclusion, I will use this final section to offer a recommendation for how the ADF could further enhance both its implementation of design thinking and its joint operations planning methodology. This recommendation constitutes another pragmatic compromise position that will no doubt raise the ire of design purists; again, though, for me the outcome is worth the compromise.

In the updated JMAP, framing is a means that enables planners to develop a deeper understanding of the situation and the problem they are facing. Then only one

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[40] Albert Palazzo, "The Future of War Debate in Australia: Why has There Not Been One? Has the Need for One Now Arrived?" *Working Paper* 189, (Land Warfare Studies Centre: Canberra, August 2012).

[41] I would suggest that this article is an exception to this observation, but I must also note that it is being written at the invitation of the editors of this volume and not of my own initiative.

[42] International Institute for Strategic Studies, "Complex Irregular Warfare: The Face of Contemporary Conflict", *The Military Balance* 105, no.1 (2005): quote p. 417; Palazzo, "The Future of War Debate in Australia."

method for addressing that problem is offered: the subsequent steps of the JMAP. But what if these steps were instead perceived as only one possible method for problem solving? Because of its positivist methodology, the JMAP is arguably sub-optimal for addressing the types of 'wicked problems' that Western militaries have encountered recently.[43] However, this does not mean that the JMAP should be done away with—it is the product of a great deal of institutional learning that has occurred over several decades and it remains well suited for scenarios involving 'traditional' interstate conflict. As this type of conflict cannot be ruled out in the future, military planning processes such as the JMAP remain important.

However, what if the JMAP existed alongside other methodologies that may be better suited to solving wicked problems? After completing an initial learning activity such as framing, planners could select the methodology (and by default, the corresponding ontology and epistemology) that they assess to be best suited to the nature of the environment and the problem—including by developing a unique methodology if they assessed that all existing approaches were not suitable.

The JMAP would become one tool in a multi-paradigmatic toolkit, wherein there would be no need to subordinate one paradigm to another (as is presently the case with framing). Alternative paradigms that may provide alternative tools include, but are not limited to, interpretivism, radical humanism and radical structuralism. These alternative paradigms have been summarized elsewhere, including in Ben Zweibelson's paper in this volume. Unfortunately, there is no space here to offer a greater elaboration of what their development into alternative planning methodologies may look like.[44] The development of such alternative methodologies will also need to avoid the divisiveness that attempts to implement prior design thinking approaches, such as SOD, caused. If this can be achieved, then the development of these methodologies may in turn prompt

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[43] On wicked problems, see: Horst W. J. Rittel and Melvin M. Webber, "Dilemmas in a General Theory of Planning," *Policy Sciences* 4 (1979): pp. 155-169.

[44] In addition to Zweibelson's paper in this volume, these paradigms are discussed in more detail in: Dennis A. Gioia & Evelyn Pitre, "Multiparadigm Perspectives on Theory Building," *Academy of Management Review* 15, no. 4 (1990): pp. 584-602. For a discussion of inter-paradigmatic tension in a military context, as well as possible means for deconfliction, see also: Ben Zweibelson, "An Awkward Tango: Pairing Traditional Military Planning to Design and Why it Currently Fails to Work", *Journal of Military and Strategic Studies* 16, no. 1(2015): pp. 11-41.

a genuine paradigm shift, rather than just a flirtation, although the shift would be to a multi-paradigmatic space and not to a new paradigm altogether.