Stumbling into Design: Action Experiments in Professional Military Education at Canadian Forces College

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Par ma foi, il y a plus de quarante ans que je dis de la prose, sans que j'en susse rien.[2]

Molière

Canadian Forces College (CFC) has been on a design journey it never planned to take. Indeed, in undertaking this journey myself, as a course developer and instructor at the College, I too ultimately recognised my own role as a 'designer.' Since 2013, the concept of design has become a growing part of the curriculum offered at as part of a spontaneous experiment looking at approaches to military operations. This began as part of the curriculum development work that began in the spring of 2008 as the six month National Security Studies Programme and the three month Advanced Military Studies Programme (AMSP) morphed into a single yearlong National Security Programme (NSP). It has continued with the development of the Advanced Joint Warfighting Studies (AJWS) stream to the Joint Command and Staff Programme (JCSP). These developments led to reflexive learning and continuous prototyping by the course developer, itself illustrative of a design process. The recognition of the design process

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[1] The views expressed here are those of the author alone and do not represent the position of the Canadian Forces College or the Department of National Defence.
[2] Molière, *Le Bourgeois gentilhomme*, (Paris: Larousse, 2003).

in which I was engaging was an important learning moment as a teaching professional. It demonstrated the critical role that tacit knowledge, 'known unknowns' in a Rumsfeldian sense, played in learning 'how to do design.' The surfacing of unconscious praxis enabled me to be a better instructor of design, as well as a better course designer. Finally, while the course is only one among seven offered on the NSP, its promise is that in reshaping how Canadian Armed Forces (CAF) officers, and more broadly, Canadian national security professionals think about how they conceive of government policy, it may lead to broader effects on the creation and execution of security operations.[3]

Developing the Course

The NSP emerged out of a decision to amalgamate the two senior-most professional military education (PME) programmes in the CAF into a single, ten-month long programme. As part of that decision, the curriculum of the former three month long AMSP had to be both up-dated and transformed into a thirteen-class course capable of being accredited as a graduate level course for a Masters of Public Affairs degree offered by Royal Military College.[4] Together with Col. Howard Coombs, I was assigned to undertake this task. I had just finished revising the "Warfare Theory and History" curriculum for the JCSP after recently returning to the College from a two-year sabbatical at the Institute for Defence and Strategic Studies of Nanyang Technological Institute in Singapore where I had taught on the Singaporean Armed Forces Command

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[3] As Robert Lummack illustrates in his contribution to this volume, "Don't Forget about Boxer," *Journal of Military and Strategic Studies* 17, no. 4 (2017), the combination of PME at both the officer and non-commissioned member levels creates greater certainty that such an outcome will, in fact, take place. In recent inter-service analysis of CAF officer educational goals and outcomes conducted in the fall of 2016, design was recognized as an official learning objective for both curriculum aimed at Majors, Colonels, as well as senior non-commissioned members at the Chief Warrant Officer / Chief Petty Officer level.
[4] The role of graduate level learning in senior PME programmes was mandated by the Minister of National Defence, the honorable Douglas Young in response to the Blue Ribbon Committee reports issued after the Somalia debacle. On the basis of this report, an educational revolution was launched at CFC, which is the subject of a related but different story. Since that report, the JCSP as well as the NSP have been required by Armed Forces Council to be taught at the graduate level. See: CANFORGEN 106/08 CMP 042/08 061754Z JUN 08; CANFORGEN 064/08 CMP 026/08 031905Z APR 08.

and Staff programme at their SAFTI-MI school. I was one of the few academics at CFC with the professional background to undertake this work, but the challenge was daunting.

While I had a Masters in War Studies, my degree work had not focused on doctrinal and operational matters and followed more of a strategic studies direction. I had few theoretical tools to rely on in the conduct of the review and design of the proposed course. Nor were there many examples to guide curriculum development.[5] Finally, at the most basic level, it has to be recognised that as an 'un-military' country, Canada has few specialised academic programmes focussing on military affairs. RMC's War Studies and University of Calgary's Military, Security and Strategic Studies programmes are examples, but neither is focused on the actual running of operations. Thankfully, Col. Coombs was finishing his doctorate at Queen's University on the development and instruction of operational thought within the CAF.[6] As a graduate of the US Army's School of Advanced Military Studies (SAMS), he was the professional rock on which I could begin to build an academic course in this matter. Still, the design of the course and the subsequent teaching of it involved a learning journey I could not anticipate when I was assigned this material.

Outside of the personal challenges was the task of taking three months of AMSP material and boiling it down to thirteen seminar classes. Some of that extensive material would go into a course on 'High Command' that would be taught by another of my colleagues, Dr. Eric Ouellet. However, there was still an enormous amount of material that had to be considered.

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[5] The PME programmes of our allies provided few clues, as they were largely developed in terms of their own operational contexts. American and British courses at this level focused on Theater level warfare, which has little relevance to the planning challenges in the CAF. The Canadian military is far too small to operate at a Theatre level, and the only command opportunities for Canadians at this level exist purely within NATO formations. LGen. Charlie Bouchard, who led Operation Unified Enforcer in 2011 was the first Canadian to command at this level since World War Two. Clearly, a course focused at this level would not serve the institutional needs of the vast majority of CAF senior leaders, employed at lower command levels. See: Paul Johnston, Chris Madsen, Paul Mitchell and Steven Moritsugu, "A Canadian Approach to Command at the Operational Level," *Canadian Military Journal* 14, 4 (2014).
[6] Howard G. Coombs, "The Evolution of Canadian Forces Staff Education and Operating in a Post-Cold War World," *Canadian Military Journal* 11, 3 (2008).

The principle reason for this curriculum shift had to do with the evolution in military thought itself. In the 1980s, Western militaries, led by the US Army 'rediscovered' the operational level of warfare.[7] In the aftermath of World War Two, the institutional debates over the nature of warfare in a nuclear armed world and the resulting battles for their share of defence budgets caused the American military services to turn inward and abandon the hard won practices of joint warfare. Following the end of the Vietnam War, both the US Navy and the US Army sought to return to first principles and through institutional re-examination of their respective missions, produced revolutionary concepts like Airland Battle and the Maritime Strategy. In both examples, the scale of the enterprise they sought to engage in necessarily meant a single service consideration to the conduct of warfare would be impossible. The Maritime Strategy was a plan for global warfare.[8] Airland Battle, as the name asserted, necessarily involved working closely with the USAF as well as allied air forces in a battle that would range not just along a 'front line' but deep into enemy held territory in an effort to blunt a Soviet attack before their forces had a chance to engage the numerically weaker NATO armies. In both examples, single service approaches to the conduct of warfare could no longer be countenanced. Furthermore, in sprawling operations that spanned the length and breadth of the continent of Europe, and in the USN's case, the entire globe, a tactical focus on winning battles had to be shifted to the actions of managing the complex orchestration of services and resources across time and space dimensions, a modern version of Moltke's "*aufmarsch.*"[9] Thus, following the direction of first the US, and later, both the UK[10] and NATO, the operational approach began to be incorporated into the middle and upper layers of Canadian senior PME.

In Canada's case, these curriculum redesigns began to take effect in the early 1990s. This created a bow wave of officers, educated in the older model of PME at CFC, who were unfamiliar with these new developments. At the War College level, this

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[7] Jeffrey Long, *From Active Defense to Airland Battle: the Development of Army doctrine 1973-1982* (MASc Thesis, Fort Leavenworth, 1991).

[8] United States Navy, *The Maritime Strategy*, 1986.

[9] Robert M. Citino, *The German Way of War* (Lawrence KS: University of Kansas Press, 2005), p. 151.

[10] Hew Strachan, "Operational Art and Britain," in *The Evolution of Operational Art from Napoleon to the Present*, eds. John Andreas Olsen and Martin van Creveld (Oxford: Oxford University Press, 2011), pp. 119-121.

problem was remediated by the three month AMSP, which taught operational level curriculum to those about to be promoted to Colonel/naval Captain and above. However, it was always recognised by CFC that this bowwave of officers would eventually move through the system. By the mid-point of the 2000s, that obsolescence date had arrived.

Coombs and I had to decide what the focus of this new course was to be. It clearly could not be about teaching the operational level of war, as the students now had a certain mastery of that material. The question we were seeking to answer was what in essence does a Colonel or naval Captain, in a small military, need to know about the conduct of warfare? What would take this course beyond what they had already received on the JCSP?

Early on, we decided that at this level our approach had to be more conceptual than the highly practice focused JCSP. If the practical problems of the junior officers were about the application of tactical techniques, and those of the mid-ranked officers was the management of operational planning, the challenge that presented itself to senior officers was the generation of strategic questions. Such a problem set would require much more reflective officer capabilities. Rather than 'how shall we achieve tactical objectives?' or 'where and with what shall we do it?' questions, the challenges at this level are 'what is the purpose we seek to achieve?'; 'why should we act in one such manner, rather than another?' Furthermore, such activities would have to be closely coordinated with other government departments, a practice that had often been fraught with difficulties and, up to that point in time, roundly despised within the CAF.[11] Given that in such environments, there are no ready answers that can be universally applied across all circumstances; the intellectual challenges confronting senior officers demanded a higher level of professional self-reflection than had been sought on the

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[11] David Barr's diplomatic telling of the story catches many of the problematic aspects of Whole of Government operations at the time. Col. David Barr, "The Kananaskis G8 Summit: A Case Study In Interagency Cooperation," *Canadian Military Journal* 4, 4 (2003). See also: Bernard Brister, "Family Relations: A Preliminary Analysis of the Use of the Comprehensive Approach at the 2010 Vancouver Olympics," in *Security Operations in the 21st Century*, ed. M. Rostek & P. Gizewski (Montreal/Kingston: McGill/Queen's University Press, 2011); and William J. Olsen, "Interagency Coordination: The Normal Accident or the Essence of Indecision?" in *Affairs of State: The Interagency and National Security*, ed. Gabriella Marcella (Carlisle, PA: Strategic Studies Institute, 2008) for similar American perspectives.

AMSP. These type of challenges and questions do not lend themselves to algorithmic processes and tactical heuristics, such as are taught at lower levels of PME. Strategic reasoning typically requires the creation of new political and economic relationships in the face of a reasoned and dynamic opposition on the part of an adversary. In effect, a new strategic reality has to be created by those operating in this environment. As such, there are many ways in which to frame and solve problems.   Decisions at this level cannot usually be based strictly on reasoned and scientific rationale, as there is no way to predict how the adversary will react, or how the demands of domestic politics will skew military judgment.   Given the lack of clearly defined and stable situations, strategic leaders, thus, must rely often rely on hunches and intuitive practices to inform their decisions. How problems are represented becomes all the more important if a full range of alternatives is to be considered.[12] Relying on "how we have always behaved" will often lead to making an already challenging situation worse.[13] Consequently, this would be a "how to think about" rather than a "how to do" type of course. It helped that the on-going conflicts in Afghanistan and Iraq were already requiring greater levels of professional self-reflection given their stubborn refusal to conform to any of the warfare models that had been anticipated under the so-called Revolution in Military Affairs of the 1990s. We organised our course development under a theme we called 'Critical Operational Epistemology' – the reflective re-examination of how practical action is grounded in professional knowledge.[14]   Figure one illustrates the inter-

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[12] Donald A. Schön, Martin Rein, *Frame Reflection: Toward the Resolution of Intractable Policy Controversies* (New York: Basic Books, 1994), pp. 22-27.

[13] Russell Ackoff famously remarked on this dilemma: "the more efficient you are at doing the wrong thing, the wronger you become. It is better to do the right thing wronger than the wrong thing righter. It you do the right thing wrong and correct it, you get better." As an educational challenge, professional curriculums are almost always based on past practices, under the assumption that what has worked previously will continue to work in the present. In the highly adaptable environment in which all military operations take place, this is often not the case as adversaries study past practice and adapt their own actions to take advantage of weaknesses of operational practices.

[14] Donald A. Schön, *Educating the Reflective Practitioner* (San Francisco: Jossey-Bass, 1987), pp. 12-17.

relationship between our own learning as it related to how we characterised what the client needed to learn.[15]

Figure 1: Instructor Learning Journey[16]
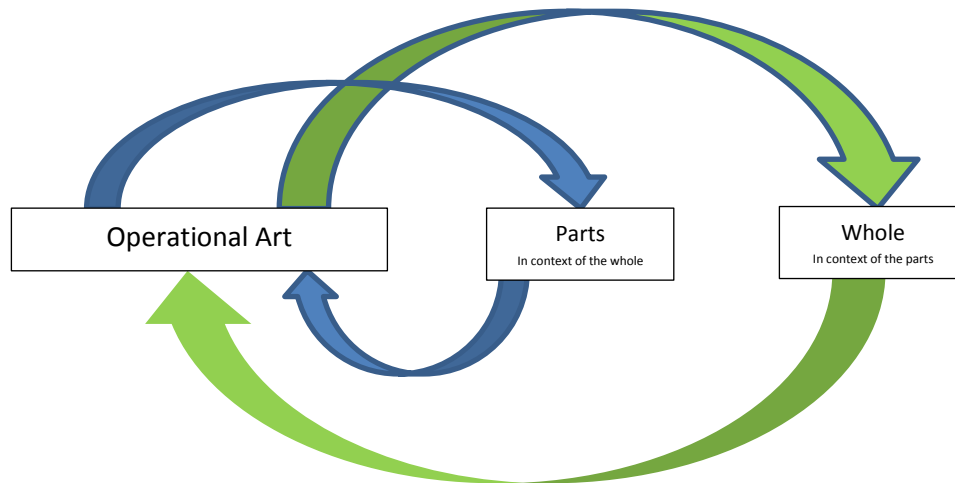
Critical Operational Epistemology and the entrance of Design

The focus of the first two rotations of DS592 could be described as critical reflections on the practice of military operations. Why did our ideas of the correct practice of warfare so often turn out to be inadequate or outright wrong? Why were our actions, while professional, highly efficacious in terms of the application of force (targets were identified, insurgents were killed, battles were successful) and yet the war was ever indecisive and final victory ever elusive. We fought enormously efficient warfare, and in turn got expensive, ineffective and inconclusive wars. Such questions required military officers to return to first principles on the construction and management of operations and their intersection with national strategy. As such,

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[15] The learning challenge we experienced is very similar to the challenges Lummack faced in developing his Systems Thinking course for NCMs at the Osside Institute, illustrated in his contribution to this volume.

[16] Adapted from Klaus Krippendorf, *The Semantic Turn: A New Foundation for Design* (Boca Raton FL: CRC Press, 2006), p. 62.

Coombs and I focused on a set of meta-themes that were embedded within the AMSP: the 'evolution of warfare,' the role of information in the battlespace, whole of government operations, coalition operations, the role of intelligence, and stability operations. We would employ critical cases to illuminate problems in these areas (Hurricane Katrina which examined complex whole of government operations, Northern Ireland which examined how socio-military interventions adapted and morphed over time, and the decision to invade North Africa in 1943 which examined the interaction between operational planning and strategic goal setting).[17] Finally, there would be a series of panel discussions devoted to recent operations or discussions on new operational theories.

Understanding the environment and what the client needs (and there are always several types of clients in any design project)[18] is always an evolutionary process. While we had general direction on what we had to produce, those generalities were not explicitly articulated by CFC. We also did not have a clear picture of who would make up the student base and what their particular needs would be. Some would be veterans of Bosnia, some of Kosovo, and a few (at that point) of Afghanistan. Did their needs differ? Were our assumptions correct about what Colonels needed to learn? Finally, we had a responsibility to teach at the graduate level, mandated by Armed Forces Council and even earlier by the Young Report: this was a public interest to ensure that "professional knowledge" was taught in a critical fashion.[19] Meeting all of these nested needs meant we ourselves had to learn what it was that we were actually teaching.

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[17] Arnold Howitt, "Hurricane Katrina: Preparing for the Big One in New Orleans," *Harvard Kennedy School Case Program* (Cambridge MA: Kennedy School of Government, 2006); Esther Scott, "Hurricane Katrina: Responding to an 'Ultra-Catastrophe' in New Orleans," *Harvard Kennedy School Case Program* (Cambridge MA: Kennedy School of Government, 2006); Philip Zelikow, "Policing in Northern Ireland: A Question of Primacy," *Harvard Kennedy School Case Program* (Cambridge MA: Kennedy School of Government, 1993); Philip Zelikow, "Policing in Northern Ireland: A Question of Balance," *Harvard Kennedy School Case Program* (Cambridge MA: Kennedy School of Government, 1993). The Operation Torch material was a collection of historical official documents.

[18] Harold G. Nelson and Erik Stolterman, *The Design Way: Intentional Change in an Unpredictable World* 2nd ed. (Cambridge MS: MIT Press, 2012), pp. 41-56.

[19] Douglas Young, *Report to the Prime Minister on the Leadership and Management of the Canadian Forces.* (Ottawa: DND, 1997). See also David J. Bercuson, "Up From the Ashes: The Re-Professionalization of the Canadian Forces After the Somalia Affair," *Canadian Military Journal* 9, no.3 (2008).

By the end of the second course, we knew that we had made a number of erroneous assumptions. Yes, students at this level needed higher levels of professional self-reflection, but the classes were providing material that our students were already very familiar with, many of them having already served at least one tour of duty in Afghanistan. Moreover, our purely critical approach suggested no apparent solutions to the conundrums they were facing in the field. PME is ultimately a highly practical discipline, and military students are decidedly instrumental in their attitudes towards education: 'Just the facts, Ma'am' sums up many professional attitudes towards learning. Having been assigned to their studies like any professional assignment (as opposed to having applied and competed to be admitted into an academic programme), there is little tolerance of knowledge for knowledge's sake. Learning must be instrumentally grounded: it must serve the professional needs of their career. The educational difficulty was in the absence of grounded professional knowledge at senior levels. The problems military officers confront are typically those found in the complexity of alliance and coalition operations ('frenemies,' ROE caveats, strategic divisions between allies, the absence of firm command and control arrangements, and disagreements over the ends sought in operations).[20] Furthermore, issues like the 'War on Terror,' cybersecurity, bio-security, human migration and demographic change require discourse not only amongst friendly partners, but also in terms of the 'Whole of Humanity' if strategic action is to be realised. While there is well established doctrine for tactical action and operational planning, at strategic levels, the interactivity of the problem with growing sets of actors results in 'missing manuals' to guide professional behaviour (illustrated below in Figure 2).[21]

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[20] NATO's 2011 Operation Unified Protector in Libya is a perfect illustration of all these problems. See United Kingdom House of Commons Foreign Affairs Committee. *Libya: Examination of Intervention and Collapse and the UK's Future Policy Options*, 2011,
https://www.publications.parliament.uk/pa/cm201617/cmselect/cmfaff/119/119.pdf (accessed 10 January, 2017); D. F. Baltrusaitis and M. E. Duckenfield, "Operation Unified Protector: Triumph or Warning Sign?" *Baltic Security and Defence Review* 14, issue 2 (July 2012).

[21] I am indebted to Aaron Jackson's *The Roots of Military Doctrine* for representing the evolution of modern military thought through the metaphor of military training and doctrine manuals. The addition of "missing manuals" is my own contribution to his idea. Aaron P. Jackson, *The Roots of Military Doctrine: Change and Continuity in Understanding the Practice of Warfare* (Leavenworth KS: Combat Studies Institute Press, 2013). NATO doctrine is an example of multinational doctrine, but it deals primarily with operational processes and fails to address the problems listed in the text.

Figure 2: Doctrinal Evolution

Drill	Tactics	Joint Ops	Whole of Gov. Ops	Coalition Ops	Whole of Humanity. Ops

The idea of "Systemic Operational Design" had circulated briefly inside CFC in 2008-09,[22] but I had initially brushed it off as simply another RMA buzz word or intellectual fad like Effects Based Operations. However, a series of articles in the *Military Review* on SAMS development of design and how it was being applied in the field, together with a blog post on military design by the University of Toronto Rotman School Of Management's design guru, Roger Martin piqued my interest.[23] Here seemed to be an approach, a set of tools, in order to solve the operational quandaries being faced in the field. A panel was set up with Roger Martin and former SAMS instructor Alex Ryan to expose the students to the ideas of what design was and how it could be applied in a military context.

Designing Exercises for Design

The second design spiral began in 2013. One of the final exercises in the programme, Strategic Warrior, was an exploration of coalition operations, but was actually a strict operational planning exercise. Students had long been frustrated by such activities as they were well past the point in their career where they did actual

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[22] LCol. John Anderson, "From Systemic Operational Design (SOD) to a Systemic Approach to Design and Planning: A Canadian Experience," *Canadian Military Journal* 12, no. 3 (2012).

[23] Colonel Stefan J. Banach and Alex Ryan, "The Art of Design," *Military Review* 89, no. 2 (March April 2009); LCol Celestino Perez Jr., "A Practical Guide to Design," *Military Review* 91, no. 2 (March April 2011); Jack Kem, *Design: Tools of the Trade*, http://usacac.army.mil/CAC2/Repository/Materials/Design.pdf, accessed 15 Dec. 2016; Major Ben Zweibelson, "Seven Design Theory Considerations: An Approach to Ill-Structured Problems," *Military Review* 92, no. 6 (November December 2012); Roger Martin, "Design Thinking Comes to the US Army," *Design Observer*, http://designobserver.com/feature/design-thinking-comes-to-the-us-army/13478, accessed 15 Dec. 2016.

planning.   Furthermore, the civilian public service students could provide few contributions to such activities, having no background in operational planning. The grumbling reached crisis levels by NSP4 and the Commandant began inquiring if the whole exercise should be scrapped. I had just begun to read Shimon Naveh's *In Pursuit of Military Excellence*,[24] and while I was struggling to grasp all of the strands of his thinking, I was particularly taken with the notion that how we think about problems influences the tools we pick up to solve them. I proposed to BGen. Craig Hilton, that rather than scrap a problem solving exercise, we transform it into a problem framing exercise. This would be particularly useful in the context of the course for that year. Up to that point, every year the NSP had had a geographical focus. The focus for NSP5 was to be South America. The students would travel to Panama, Brazil, Columbia, and Chile. They would develop a governmental strategy for Canada's relation to the region in another exercise; why not extend that geographic theme still further by getting them to focus on one strategic problem the region posed to Canada: transnational criminal organisations (TCO)? A typical operational planning exercise would focus on standard interdiction operations, intelligence, and special forces activities. The track record of the War on Drugs suggested the limitations of these approaches. Perhaps by looking at the problems we were attempting to solve, we could come up with novel methods for a whole of government solution. The goal would be to develop operational concepts that could be taken by a diverse set of agencies on which to base their own detailed plans, rather than crafting the plans themselves. The Commandant was taken with the different approach, and authorised the experiment. Alex Ryan was brought in as a design SME to assist the students with their intellectual investigations, and the Army Design Model (Figure 3) was employed as a construct to channel their activities.

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[24] Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Art* (Abingdon: Frank Cass, 1997).

Figure 3: The Army Design Model
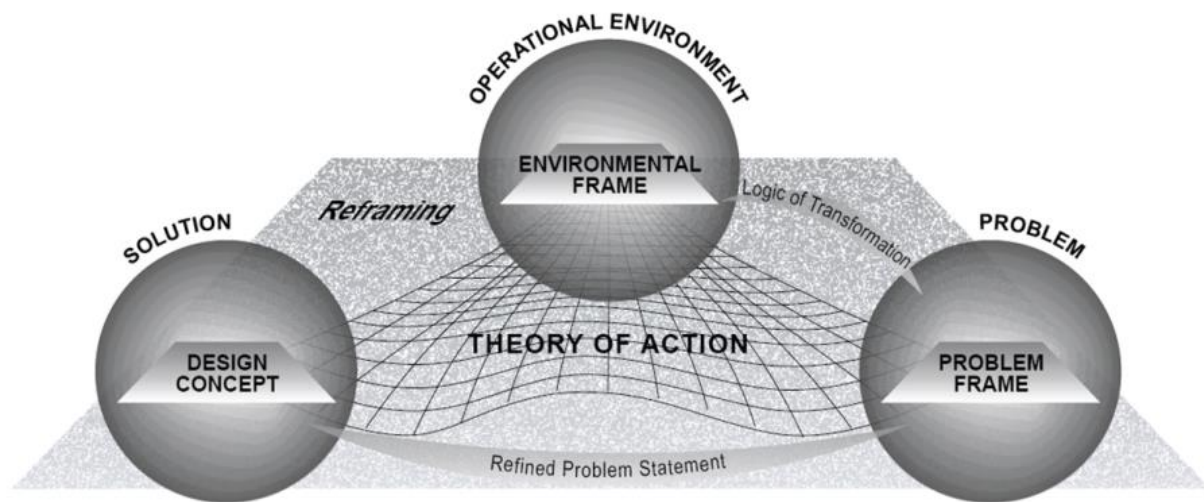
While the students professed to be unsure if they had succeeded in actually "doing" design, their analysis focused on the social antecedents of criminal organisations in South America, those factors which made TCOs so stubbornly resistant to elimination. In particular, they recognised that it was a network of systemic factors that enabled the success of the TCOs. In effect, counter-drug efforts were confronting a business model, not specific actors. Without eliminating the factors that enabled the business model, efforts to interdict TCOs were equivalent to playing a 'Whack-a-Mole' arcade game. The internal workings of the system had to be disrupted otherwise one mole would simply replace another. Since that exercise, NSP students have looked at Canada's approach to the arctic in the face of climate change, the design of the NSP itself, and responding to the potential of Russian hybrid warfare in Eastern Europe.

The iterations began to accelerate at this point. NSP5 students noted that no time had been devoted to exploring the practical aspects of design within the structure of the course. And so, design tutorials were added the following year. These adopted the Stanford dSchool "hack-a-thon" model, to which I had been exposed in practical

exercises at the Rotman School of Management. [25] An important lesson on "endogenising" models to the relevant audience was painfully learned in this process.

Learning through Rebellion

Prototyping is an important component of design work. Developing prototypes allows designers to explore in an active, practical sense how their ideas will work in the 'real world.'[26] In the Rotman workshops, we worked with a variety of materials to build mock-ups of technological devices proposed in our design solution for the problem we investigated: card board, construction paper, Popsicle sticks, pipe cleaners, and Play-doh. However, I made a faulty assumption that what had proved useful in one situation would be equally valid in an entirely different context.

In the first NSP design tutorial, I had them explore the experience of being students on the programme and how it might be improved. Following the techniques in the dSchool hack-a-thon, students were told to take ten pictures of themselves or other things that illustrated the various aspects of their NSP experience. In class, they did 'speed-dating' interviews with other NSP students. In their interviews, they were instructed to keep notes on what their subject 'said, thought, did, and felt'. Back in their syndicates, the students worked on white boards to summarise how these four themes manifested themselves conceptually in these interviews. Next, the students created a "persona" of a generalised NSP student so as to determine unmet needs that this ideal person was experiencing in their education. Finally, the syndicates were to build a proto-type solution, which addressed these needs using the materials I had provided.

Overall, the exercise was successful, and identified interesting issues illustrating how different groups within the student body experienced different types of problems. Furthermore, they learned how the typical call for a better balance between work (ie, learning at CFC) and life was a wicked problem of many intersecting issues not

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[25] "Mixtapes: Four-hour design sprints with your team," http://dschool.stanford.edu/use-our-methods/mixtapes-four-hour-design-sprints-with-your-team/, accessed 15 Dec. 2016.
[26] Heather M.A. Fraser, *Design Works: How to Tackle Your Toughest Innovation Challenges Through Business Design* (Toronto: University of Toronto Press, 2012), p. 22.

resolvable by any single simple fix. However, the proto-typing aspect of the exercise was an abject failure as the materials simply reminded them of 'arts and crafts' in elementary school. For a group of senior professionals, this association impeded the effort to learn through doing (some made humorous hats with the material reflecting confusion about how the materials could be applied in this scenario). Worse, the experience was subtly communicated to the next NSP class.

In the next year, the class got off to a bad start with the initial lecture, and students openly debated in class the value of the course to their professional development. By the time they arrived at the exercise, the students seemed to be in open rebellion, with one syndicate refusing to employ the methods that had been developed for exploring their design problem (despite the absence of the materials I had employed the year before). In spite of pointing out the Stanford linkages to the methodology (as well as the fact that people paid over $30,000 for such a tutorial at the dSchool), course members argued that the activity was juvenile in nature and developed their own methods which resembled standard planning processes.

Reframing the Course: The introduction of a new narrative

However painful, the experience pointed to an excellent opportunity to reframe the problem I was trying to address. I had learned an important lesson from my students on addressing their needs. Working with my colleague Dr. Ouellet and one of the retired three star flag officers who served as a NSP 'Senior Mentor,' former Chief of Maritime Staff Vice Admiral Dean McFadden (Ret.d), I took the opportunity to re-craft the narrative of the course.

By now, the course had been in a state of continuous evolution since its introduction in 2009. Old parts of the course had begun to conflict with the design path it was travelling down, and part of the rebellion clearly reflected not just a knee jerk, anti-intellectual rejection of this new methodology, but also honest professional confusion about what the goals of the course were. Work with McFadden helped to create a visualisation of what the NSP was as a 'system' and the role that the course played in that system. Work with Ouellet helped design a meta-narrative on

problematic operations built around environmental complexity and institutional rigidity. With this reframing sorted out, the following year's results were much more successful. The course was one of the most popular on the programme, and I was chosen as that year's honorary graduate of NSP8.

Reflexive Conclusions

Karl Weick argues that managers are "thrown" into the midst of a problem that is already underway.[27] In such circumstances, complete knowledge of the situation is impossible, and the procedures already being employed to problem solve are making things worse. Managers must make sense of the factors contributing to the problem and how to manipulate resources to nudge the system producing this behaviour in different directions. This accurately captures the dilemma both Col. Coombs and I confronted in 2008 and continues to describe the challenge of teaching this subject material at this level. As the epistemic evolution of doctrine figure above demonstrates, there is an absence of professional guidance for how to address these problems. Nor is it likely that such guidance will ever firmly develop given the evolutionary nature of wicked problems. As such, the teaching of professional knowledge requires a constant reflexive approach to learning as the problems and issues morph and change in nature (Figure 4).

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[27] Karl E. Weick, "Designing for Throwness," in *Managing as Designing,* eds. Richard J. Boland & Fred Collopy (Stanford: Stanford Business Books, 2004).

Figure 4: Design "Appreciation of the Situation"[28]
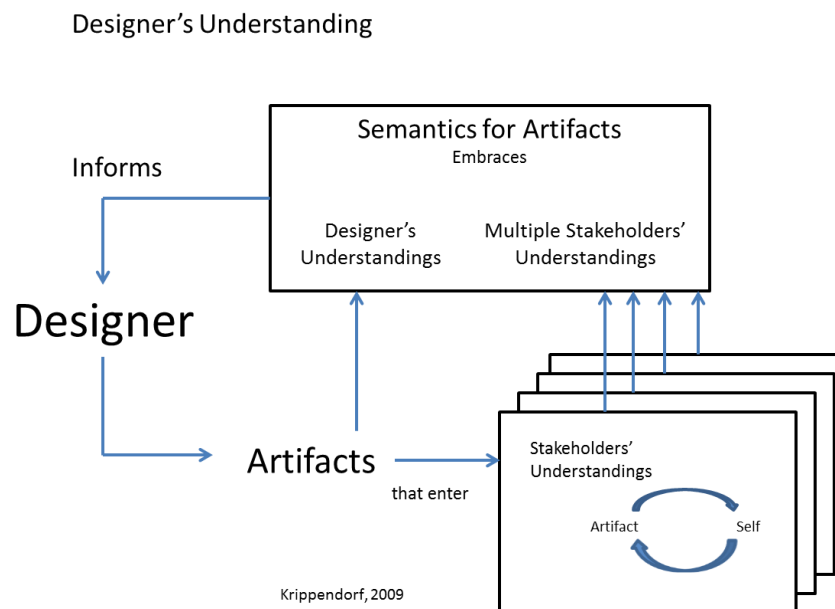
Such learning is also contingent on the part of NSP students. The recognition of how institutional practice shapes how managers perceive problems requires not only a high degree of empathy in terms of learning how other types of managers solve problems, but also requires a high degree of reflexive self-knowledge. This is perhaps the most difficult cognitive challenge for anyone, military or civilian, to confront. We all believe that we see the world in the same way as others. Even when we accept that *how we think* biases our perception, learning to be self-aware on a continuous basis in order to transcend this condition is, perhaps, impossible. Indeed, such a process has to be balanced against the successful practical application of professional knowledge in other contexts.

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[28] Krippendorf, *The Semantic Turn*, p. 67.

While I have not discussed it here, the transfer of design from the NSP to the JCSP also revealed important organisational learning. While many military officers at the rank of Colonel were skeptical of the value of design for military operations, Majors were much more open to it and leaned in to the exercises with greater levels of acceptance and enthusiasm than had been encountered in the NSP. We surmise that there is greater room for taking professional risks at more junior levels and thus Majors are more willing to experiment with new approaches than senior managers about to be promoted to flag rank and, thus, 'on the edge of greatness.' However, by teaching the concept to both Colonels and Majors, we hope that senior managers will encounter junior designers and not flinch when one of them proposes a new way of approaching problems.[29]

Working with a far larger group of students meant bringing in a large coterie of experienced designers to coach them through their work. Up to that point, NSP had only contracted a single design SME as a coach for syndicate work, who would move from group to group during the course of their deliberations. This could not be accomplished with a group comprising seven to eight syndicates. As such, we made the decision to employ as many SMEs as there were syndicates. Of course, it was impossible to enforce a single instructional design model in this exercise as our SMEs arrived from a variety of different design traditions and approaches.[30] However, the different approaches generated very different design solutions, which in turn was a significant revelation to the JCSP planning staff. As such, we have adopted an agnostic policy with regards to the mode of design instruction at CFC, an aspect which a recent international workshop on the subject commended the school for its innovative and advanced approach. Retrospectively, this finding is in keeping with much of the

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[29] Of course, this approach means that we have created a similar problem as that which led to the creation of the course in the first place. Ultimately, those Majors will return to CFC already having an understanding of design. We will ultimately have to determine the different educational needs for design at the operational and strategic levels of PME, entering into yet another design spiral.

[30] In recent years, SMEs have come from Rotman, SAMS, USSOCOM, the Joint Special Operations University, IBM, the Privy Council Office, and a variety of independent contractors.

literature on wicked problems and complex systems, where diversity in analytical points of view aids in situational understanding.[31]

Finally, at this point, the organisation has begun to take notice of these developments and discuss them in a healthy organisational fashion. The enlightened leadership of CFC permitted a constantly evolving action experiment to take place. This gave the instructors time to understand the problem we were trying to solve with design and devise a solution that could be taken to the services and survive challenge. At this point, while we never intended such lofty goals, the experiment may lead to the transformation of how the professional military, and ultimately public service, conceives of and copes with the complex environment in which it is immersed.

Going forward, the institutional challenge will be to project CFC's epistemological agnosticism for design methodology and resist the urge to create a defined design doctrine that concretizes the approach and thus lose the vitality our approach creates for situational appreciation. Chris Paparone's contribution to this volume refers incidentally to how a design doctrine has created problems within the US Army's approach.[32] Design is not, strictly speaking, a defined methodology, but rather a collection of approaches and loosely connected ideas. Design is more of an art form rather than a process: it cannot be 'taught,' but learners can be 'coached' through design problems, just as artists, sportsmen, and trades are developed in terms of their practice. Placing it within the confines of a doctrinal definition effectively mechanises that which is more properly described as a 'gestalt' and would strip away all the value it lends to appreciating and managing environmental complexity. Resisting the doctrinal urge will be difficult for the CAF, given the industrial origins of our modern military institutions and the innate desire for certainty in confronting dangerous situations. While the US Army has been less successful here, this approach may work for the CAF

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[31] See in particular: Hardimos Tsoukas and Mary Jo Hatch, "Complex Thinking, Complex Practice: The Case for a Narrative Approach to Organizational Complexity," in *Complex Knowledge: Studies in Organisational Epistemology*, ed. Hardimos Tsoukas (Oxford: Oxford University Press, 2005), pp. 230-262.
[32] Another contributor, Ben Zweibelson has explicitly addressed the institutional problems of bringing design into US Army doctrine. See: Ben Zweibelson, "To Design or not to Design," *Small Wars Journal*, March 4, 2011. http://smallwarsjournal.com/jrnl/art/to-design-or-not-to-design (accessed 11 January 2017).

given its small size (which makes intra-institutional sharing of knowledge more informal to begin with) and its historical trend of muddling through doctrinally. Ironically, some of the anti-intellectual forces within the CAF make it less interested in theory, and thus more resistant to institutionalising through doctrine the role of design in the command and control 'mechanics' of the CAF.