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# *An Awkward Tango: Pairing Traditional Military Planning to Design and Why It Currently Fails to Work*

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*"People are often locked into cognitive traps because it is in the interests of certain individuals and groups to sustain one pattern of belief rather than another."* [1]

- Gareth Morgan

*"Organization is an attempt to order the intrinsic flux of human action, to channel it towards certain ends, to give it a particular shape, through generalizing and institutionalizing particular meanings and rules."* [2]

- Haridimos Tsoukas and Robert Chia

Over the past decade, traditional military planning methodology and doctrine has gained an unlikely dance partner- the ambiguous, conceptual, and controversial process called 'design.'[3] Although I will expand in this article on what exactly

[1] Gareth Morgan, "Exploring Plato's Cave: Organizations as Psychic Prisons", *Images of Organization*, SAGE publications, 2006, p. 248.

[2] Haridimos Tsoukas & Robert Chia, "On Organizational Becoming: Rethinking Organizational Change," *Organization Scienc.e* 13, no. 5 (September-October 2002): p. 570.

[3] While the American military uses variations of the term 'design' building off the original premise from the Israeli Defense Force's 'Systemic Operational Design', other nations have adapted similar concepts


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'traditional military planning' constitutes as a methodology, readers familiar with the debate over conceptual and detailed planning will recognize traditional military planning as the linear, analytic process grounded in metrics, categories, and objective scientific tenets. Many call this 'detailed planning' to refer synonymously to traditional military problem-solving, reflecting a military institutional practice of developing specific, sequential, and highly scientific-based plans that are quantifiable (analytical, objective) according to an accepted language, format, and professional education.[4]

Unlike detailed planning, design as an emerging practice evokes eclectic combinations of philosophy, social sciences, complexity theory, and often improvised, unscripted approaches in a tailored or "one of a kind" practice. Ultimately, design becomes something beyond military planning entirely, thus we should avoid an "either or" sort of debate with design and detailed planning. Although this article employs the metaphor of awkward dancing partners, the metaphor is incomplete in that design may "dance" with detailed planning, while also able to depart the dance floor and do things that detailed planning is simply incapable of. However, for military professionals facing complex problems, we might continue the awkward tango metaphor for this article in that a military might employ both design and detailed planning in many conflict environments.

Both design and detailed planning are elements of sensemaking, where for military applications we derive the notion of 'planning' and 'knowing' in a broad sense as an integral part of comprehending reality. Planning is subordinate to 'knowing' in that the detailed blueprints for constructing a tank are subordinate to the conceptual design of "how does one construct an armored vehicle to dominate specific terrain"? Planning is subordinate to design, with detailed planning further subordinate to various types of planning, with ill-structured conflict environments requiring militaries to whirl various dancing partners of design and planning across confusing and

with synonyms such as 'conceptual planning', 'adaptive campaigning', 'operational thinking', and a host of other similar constructs. For this article, I use the generic term 'design' and avoid service-specific terms such as the U.S. Army's "Army Design Methodology" or American Joint Doctrine's "Operational Design".

[4] Karl Weick, "Rethinking Organizational Design" in *Managing as Designing*, ed. Richard Boland Jr. and Fred Collopy (California: Stanford University Press, 2004), p. 42. Weick discusses how highly coordinated groups are "the last groups to discover that their labels entrap them in outdated practices." For the military, this article suggests rigid adherence to detailed planning is one such 'trap.'

dynamic dance floors. Yet as our associated western military doctrine, military education, and practice in conflict environments demonstrates repeatedly, we are unable to get these dance partners to work together as a team, or move to the music for purposes of effectively creating and directing useful action for a military organization.[5]

Institutionally and as a practicing community of professionals, the Western military has little trouble agreeing upon the general principles of traditional planning.[6] Yet we collectively remain fiercely divided, confused, and often resistant to design in any form, whether a rival methodology, complimentary, or even a subset of traditional planning. [7] 'Military Design' comes in as many shades and patterns as service camouflage patterns now, and just as uniform differences symbolize organizational relevance and identity, so do the various service-centric design versions available for sensemaking and subsequent planning applications.

Design has become so much of a stumbling block that the U.S. Army has devoted multiple research projects on design integration using the U.S. Army Research Institute for the Behavioral and Social Sciences, and in 2011 revised Army design doctrine with a name change and "rebranding" complete with academic realignments.[8] While the U.S.

[5] Simon Murden, "Purpose in Mission Design: Understanding the Four Kinds of Operational Approach", *Military Review* (May-June 2013). Murden discusses the institutional confusion on how design is supposed to be applied by the military in practice. See also: Stefan Banach, "The Art of Design: a Design Methodology," *Military Review* (March-April 2009): p. 106. "One obstacle is that the U. S. Army already has widely accepted and well documented methods for planning complex operations…another obstacle is that a methodology for design has not been described in any detail." Banach wrote this in 2009 prior to the publication of multiple design doctrinal publications, which have met with extremely mixed reviews.

[6] Canadian, Australian, British, Israeli, and American (as well as other militaries) share a similar analytic decision-making process that features a sequential methodology of analysis, compartmentalization of tasks, and directing orchestrated military decisions and actions across time and space in a deliberate manner.

[7] Thomas Graves and Bruce Stanley, "Design and Operational Art: A Practical Approach to Teaching the Army Design Methodology," *Military Review* (July-August, 2013). The authors hold a "doctrine-centric" perspective cast in technical-rationalism and institutionally sanctioned talking points on what design is, and is not. This approach rejects epistemological considerations and promotes a rather myopic interpretation of design which reflects approved Army design doctrine for professional education within U.S. Army run faculties.

[8] Later in this article, we will cover the multiple publications of Army design instructions that between 2009 and 2013 demonstrate significant shifts in what design is defined as, and how the U.S. Army ought to practice it.

Army has cycled through several incarnations of design in the past decade, American Joint doctrine (which strongly influences other western military doctrines) has separated design from 'operational design' while casting both within traditional planning, resulting in a rather befuddled operational force. The U.S. military Joint Staff's Planner's Handbook for Operational Design from 2011 offers the following explanation:

In general, the terms [design and operational design] have been related but not identical. The focus of discussion and writing on design during the past three years has been on the critical and creative thinking and learning required to understand complex operational environments and ill-defined problems facing the commander. Such understanding should facilitate early development of a broad operational approach that can guide the more detailed planning process. Operational design is a construct that joint doctrine has used since 2002 to encompass various elements of operational design (previously called facets of operational art) that planners have applied to develop a framework for a campaign or major operation… In essence, the above explanation conveys that joint doctrine's operational design has embraced and subsumed design's philosophy and general methodology." [9]

Thus, United States military organizations at the Joint level apply some aspects of the service-specific "Army Design Methodology" into joint doctrine where "operational design" functions more as a reverse-engineering planning project for campaign construction.[10] This confuses military professionals because our organizations are not only mixing terms and concepts, but engaging far too much in methodological discussions without getting above it all and into the challenging abstract levels this article will offer. Although "design" is intended in the various U.S. Army doctrinal incarnations to be an iterative and adaptive sensemaking process for focusing critical and creative thinking on complex military problems, the American Army struggles to

[9] Joint Staff, J-7 Joint and Coalition Warfighting, *Planner's Handbook for Operational Design Version 1.0,* (USJFCOM Joint Doctrine Division, Suffolk, Virginia, October 7, 2011), pp. 10-11.

[10] Jack Kem, Campaign Planning: Tools of the Trade (Fort Leavenworth: Department of Joint, Interagency, and Multinational Operations, March 2009), pp. 15-24. Kem's methodology for operational design demonstrates the 'reverse engineering' aspect of military planning. See also: Jeffrey Reilly, Operational Design: Shaping Decision Analysis through Cognitive Vision (Maxwell Air Force Base: Department of Joint Warfare Studies, November 2009), pp. 14-23.

make sense of why military organizations have so many problems grasping what design is, and how it integrates into traditional military decision making. [11]

With all of these different interpretations of how to make sense of complex military situations with 'design', is it any wonder why our militaries remains unable, or perhaps at a deeper institutional level, *unwilling* to integrate design effectively with traditional planning? We need to explore why traditional military planning and design theory remain awkward dance partners, and where we might try to nudge the larger Western military institution towards in the future. The difference goes beyond superficial arguments on language, doctrine, or conflict environments- it has to do with how the military prefers to make sense of the world *beyond methodologies entirely*.

**What Joan of Arc Tells Us about French and British Army Methodologies?**

The U.S. Army continues to invest significant resources and academic inquiry into why design is not integrating effectively with traditional planning and decision-making models. The U.S. Army Research Institute for Behavioral and Social Sciences found in their 2012 study that design was considered by some in the military as "dense, elitist, and inaccessible to the masses" and that there were a series of organizational barriers preventing the Army from integrating design into existing traditional planning practices.[12] While U.S. Army doctrine on design as well as much of the research on design defines it as a "methodology", a major oversight for existing research is that we

[11] Simon Murden, "Purpose in Mission Design: Understanding the Four Kinds of Operational Approach," *Military Review* (May-June 2013). Murden discusses the institutional confusion on how design is supposed to be applied by the military in practice. See also: Stefan Banach, "The Art of Design: a Design Methodology," *Military Review* (March-April 2009), p. 106. "One obstacle is that the U. S. Army already has widely accepted and well documented methods for planning complex operations…another obstacle is that a methodology for design has not been described in any detail." Banach wrote this in 2009 which was early in the U.S. Army's evolution of design in doctrine. Banach's work represents what is likely the most open and flexible phase in design theory adaptation when compared to subsequent versions.

[12] Anna Grome, Beth Crandall, Louise Rasmussen, and Heather Wolters. "Incorporating Army Design Methodology into Army Operations: Barriers and Recommendations for Facilitating Integration," *U.S. Army Research Institute for the Behavioral and Social Sciences Research*, (Report Number: 1954, 2012.), pp. 1-32.

do not clarify what these methodologies operate under, from a further abstract level that may prevent two distinct methodologies from cooperating at all.

To operate a methodology like military planning, the institution must initially make some distinctions between what functions within that methodology, and what does not. This is why an Infantry Platoon chooses a map and compass process instead of using animal spirits, Native American tracking techniques, or a divining rod to accomplish their navigation task. They select a valid methodology to navigate built upon what their organization values, or does not value as "*how* we navigate." As Apache Indian scouts also could navigate very effectively without maps or compasses, a deeper question of "why one organization values this, but not that" is also necessary. Thus, we must distinguish between the notion of methodology (principles and rules), epistemology (how we made the rules), and ontology (determining what constitutes a rule, and why), and why that matters for military practice. [13]

A methodology reflects the theoretical underpinnings, the principles and rules applied by the discipline- in this case the western military profession of arms.[14] However, the methodology chosen by the military profession also is nested within the overarching epistemological reasoning of that discipline. How do we determine what military knowledge is, and *why* do we agree that, for instance, there are three levels of war, and not four, or seven, or even none? Finally, at the ontological level, we first must distinguish between what is valid military knowledge, and what is not. For instance, when is something a military conflict such as a counterinsurgency, and when is it a policing or security matter for internal national security? What drives us to make these distinctions, and how? Indeed, while various blueprints offer different ways to build different tanks, when we explore our organizational ontological and epistemological choices, we depart "planning" entirely and enter the abstract "thinking about thinking" world. This is no easy task, and has challenged philosophers, social scientists, and organizational leaders for millennia.

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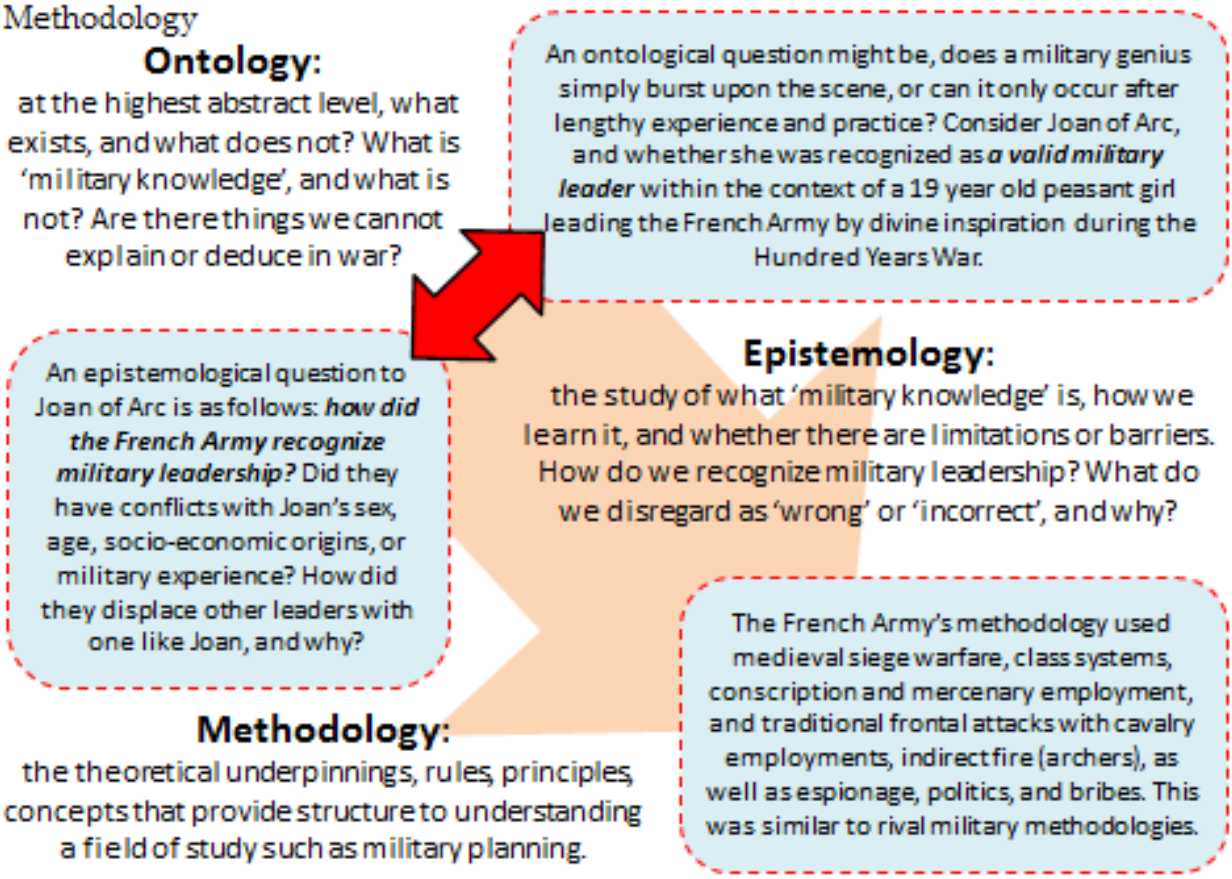
[13] Wm. J. Olson, "The Continuing Irrelevance of Clausewitz," *Small Wars Journal* (July 26, 2013), retrieved on November 10, 2013 from: http://smallwarsjournal.com/jrnl/art/the-continuing-irrelevance-of-clausewitz. Olson writes tongue in cheek, referring to epistemology as "that most scariest of terms", but offers a useful summary. It asks us "how we know what we know; or how can we reliably know what we know; or can we reliably know what we know; or we cannot reliably know."

[14] On methodologies, see: Mary Jo Hatch & Dvora Yanow, "Methodology by Metaphor: Ways of Seeing in Painting and Research," *Organization Studies* 29, no. 1 (2008): p. 24.

To explore the notion of methodologies, epistemologies, and ontology, consider the military leadership of Joan of Arc, as illustrated in Figure 1. Perhaps one of the more unusual military leaders in Medieval European history, Joan of Arc was quite unlike other leaders employed by European military forces on the principles of gender, class, age, and military professionalization. As a metaphor for exploring these concepts, the French Army's acceptance and utilization of Joan of Arc helps illustrate the differences between methodology, epistemology, and ontology. Joan of Arc is used here purposefully because of her atypical qualities within a period where the vast majority of military leaders are unlike her.

Figure 1: How Military Knowledge Relates to Ontology, Epistemology, and Methodology



At the methodological level, the French Army embraced all of the accepted practices and principles of medieval warfare, but at the epistemological level (how we know what we know), integrated religious doctrine and awareness that like Kings, unskilled peasant girls might be selected by a divine hand to take the mantle of military decision-making. The French Army maintained their general military methodology by continuing their formations, siege techniques, and application of relevant technology and military training while also at an epistemological level took a deviation in *how* they recognized military leadership, experience, and decision making. Although she led the French to multiple victories, from a military historian perspective, she did not do anything tactically or strategically unorthodox in the overarching medieval context. [15] Joan employed the same *methodology of medieval warfare* in a successful manner that both the French and British Armies were accustomed to, and after she was executed, the French Army returned to more familiar leadership options.

Joan of Arc raises epistemological questions (how we do things; how we know what we know about knowing) on how the French Army understood and evaluated leadership. This further raises some ontological questions (what we determine is, or is not knowledge) on what military leadership is, and is not, at the broadest scale for human societies. If the French say that Joan indeed is a military leader, while the English hold a different position on who should lead an army, they are ontologically divided over the construct of what leadership is, and isn't, even while both armies continued to use similar methodologies in actual fighting. Thus, tactics and methodologies remain constant between battling armies while organizationally and cognitively, changes are afoot. While Joan of Arc helps us frame the reason for examining beyond methodological differences between English and French medieval armies on whether 19 year old peasant girls with divine prophesy should lead military campaigns, this leads back to the greater topic at hand of why traditional military planning as a methodology does not work well with design as a cognitive action that transcends planning entirely.

[15] Undoubtedly, some military historians may disagree with this- but the purpose here is to use Joan of Arc as a metaphor to convey the difficult concepts of ontology, epistemology, and methodology. Her unique status within the context of traditional well educated, noble or high class status, wealthy male military leaders meets this need.

**How Design and Detailed Planning Tend to Differ on Picasso**

The term "epistemological" is a bit cumbersome, yet an essential concept for asking the right question on why design in practice does not appear to integrate with traditional military planning. While the U.S. Army Research Institute made excellent observations on the existing tensions (terminology, conceptual, organizational culture, command-level, and application barriers) that indeed prevent design from being a useful dance partner with traditional military planning methodology, the research makes a tacit (unspoken) presumption that both design and traditional military planning operate within the same epistemological framework. [16]

Thus, by modifying design terminology, adjusting concepts, tweaking the organizational culture, they imply that the American Army can shift towards an emergent methodology that fuses design with traditional planning within future Army doctrine so that "design can feed detailed planning." [17] This overlooks the *major epistemological tensions* that potentially provide greater explanation on design incompatibility with traditional military planning. These tensions further explain why future military doctrine simply will not fix this problem by tweaking design to become more compatible within a detailed planning framework, as numerous "pro-doctrine" parties suggest. [18]

Breaking from previous design research where design and detailed planning share the same ontological and epistemological environments, I argue that they instead

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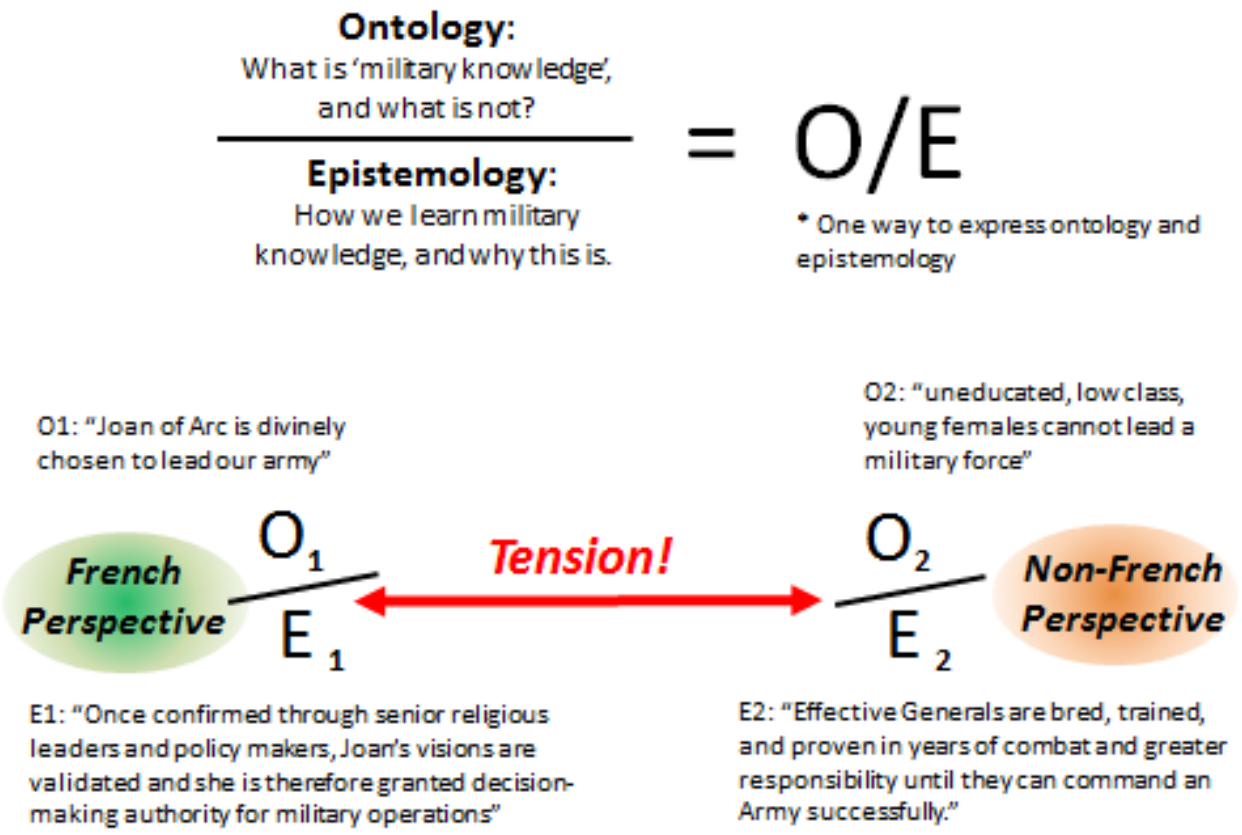
[16] Grome, Crandall, Rasmussen, and Wolters. The authors repeatedly cite Army doctrine where design is "defined in FM 5-0 as a methodology" (p. v, 1, 10, 12). Their research appears to accept this position, which reinforces an epistemological perspective that design and detailed planning operate as methodologies within the same larger epistemological and ontological stances for the Army as an institution.

[17] Ibid, p. 29. In their conclusions, the authors suggest the Army "provide a consistent, clear message regarding the relationship between Design and planning...[and] include specific description of the various ways that Design can feed detailed planning."

[18] Wayne Grigsby, Scott Gorman, Jack Marr, Joseph McLamb, Michael Stewart, Pete Schifferle, "Integrated Planning: The Operations Process, Design, and the Military Decision Making Process," *Military Review* (Kansas, Fort Leavenworth, Jan-Feb 2011), pp. 15-22. The authors claim as 'myth #1' that "design methodology is not a stand-alone methodology…[it] is a subcomponent of planning." Like the U.S. Army Research Institute Study, these authors also nest design with detailed planning under the same epistemological framework.

fall into radically different positions, so that their methodologies are entirely dissimilar. More significantly, design as a dissimilar methodology to detailed planning is an extension of an overarching dissimilar design epistemology and ontology that operate beyond the limits of military planning. This means when we design, we are sensemaking with entirely different cognitive tools and values that are alien to detailed planning constructs, and at times planning in general. To illustrate this, we can frame an epistemological question in tension with an ontological one concerning Joan of Arc in the next figure, where opposing ontological as well as epistemological tensions help create strong paradoxes.

Figure 2: The Ontology/Epistemology Fraction and Exploring Tensions



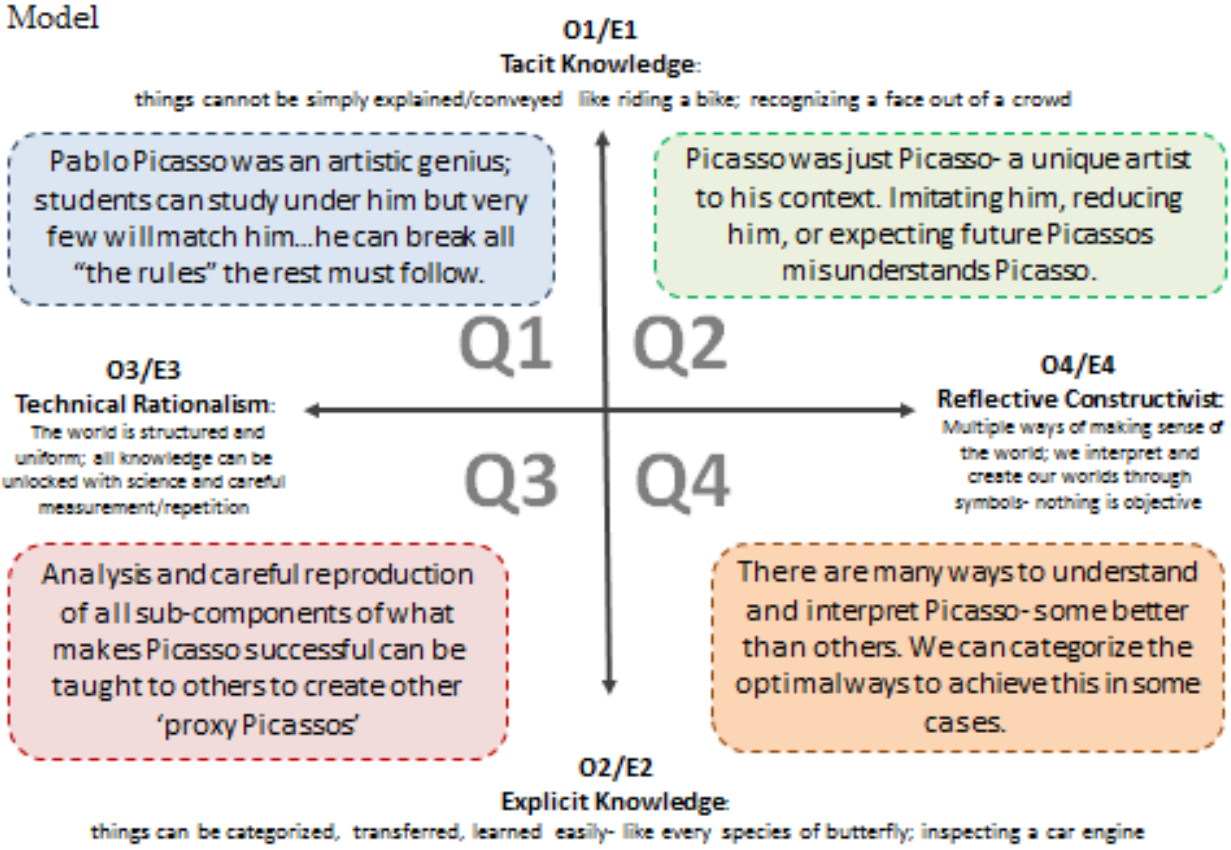
At the ontological level, what constitutes valid military knowledge, and what does not? Knowledge that is tacit (very hard to explain) appears in tension with knowledge that is explicit (very easy to teach, list, or convey). [19] The epistemological question that follows relates to *how* a military institution organizes making sense of the world, thus in Figure 2 we link ontological tensions with epistemological ones. If one views the world as governable by universal laws of military conflict where one can employ science, metrics, and deductions, this worldview would be in tension with an opposing view where the world was subjective, constructed by humans entirely, where no metric really works out of context and nothing is "universal"' [20]

Figure 3 offers the cognitive framework capitalizing on previous figures for portraying multiple ontological and epistemological paradoxes in a quad-chart to frame this relationship on design and detailed planning. While the tensions do not imply an "either-or" scenario, each quadrant in Figure 3 offers insight into how different epistemological and ontological constructs subsequently employ methodologies that are *dissimilar in function*. Instead of Joan of Arc in the first two figures, consider the abstract artistic genius of Pablo Picasso, and how these ontological and epistemological questions challenge our perspective on creativity and education. How does one learn to create art, and how might an institution like an art academy "teach" it to aspiring Picassos? Like art schools, the military is also focused on understanding why great military leaders arise, and how we might shape our institutions and planning processes to understand how to develop future success.

[19] On implicit cognitive practices within a paradigm, see: Maria Gondo & John Amis, "Variations in Practice Adoption: The Roles of Conscious Reflection and Discourse" *Academy of Management Review* 38, no. 2 (2013): p. 232. See also: Donald A. Schön, "Educating the Reflective Legal Practitioner," *Clinical Law Review*. 2:231 (Fall 1995): p. 243.

[20] Antoine Bousquet, *The Scientific Way of Warfare; Order and Chaos on the Battlefields of Modernity* (New York: Columbia University Press, 2009), p. 56. "As the Enlightenment and Scientific Revolution took hold, reason and scientific method were recruited for the study and organization of all fields of natural phenomenon and human activity, including a quest for the discovery of the fundamental laws governing warfare." See also: Haridimos Tsoukas, *Complex Knowledge: Studies in Organizational Epistemology* (London: Oxford University Press, 2005), p. 171.

Figure 3: Ontological, Epistemological and Methodological Tensions in a Quad Chart Model




The vertical axis in Figure 3 denotes the variation between tacit and explicit knowledge, alluding to the ontological and epistemological questions posed earlier where we ask what constitutes knowledge of a field such as war or art, and how can we categorize or clarify that framework. While explicit knowledge is considered something measurable, complete, and able to be transferred to other people (such as learning the alphabet, multiplication tables, or one's own family tree), tacit knowledge is a fusion of artistry, experience, and a blending of many types of knowledge so that it is very difficult to capture or convey directly. [21] A hundred apprentices might study under Michelangelo, and another hundred eager young officers attend every Ivy League seminar by a retired General, yet potentially none of them will gain any of their tacit mastery. The next military or artistic genius may emerge from an entirely unlikely

[21] Schön, p. 243. "Tacit knowing or knowing-in-action has this property…we are unable to describe what it is that we do." See also: Haridimos Tsoukas, *Complex Knowledge: Studies in Organizational Epistemology* (London: Oxford University Press, 2005), pp. 85-90.

origin, as did perhaps an untrained farm girl in medieval, war-torn France. This tension is one of how knowledge is shared, conveyed, preserved, and advanced- thus it is a pedagogic (thinking about how we teach) tension combining ontology and epistemology simultaneously. Military doctrine and rigid classroom modules work exceptionally well with explicit knowledge such as how to assemble a rifle, clear a room, or breach an obstacle. They function poorly with tacit knowledge such as how to blend vague national guidance into orchestrated military action down to the tactical level while synergizing multiple agencies and competing interests. [22]

The second tension illustrated is the horizontal axis which denotes another ontological/epistemological tension of: "how does the American (and most Western) Army prefer to make sense of military environments within our world?" One extreme is termed "technical rationalism" and views all knowledge in the world as fixed, attainable through application of science, universal and constant. [23] Thus, universal principles of warfare are not tied to a particular period or technology- rather; universal elements such as mass, maneuver, speed, and surprise appear to exist across all conflicts throughout human history, where the winners in warfare are those that apply them with great proficiency. [24] This is an objectivist understanding of reality. Military

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[22] Gareth Morgan, *Images of Organization* (SAGE publications, 2006), p. 229. "Many of our most basic conceptions of organization hinge on the idea of making the complex simple…we manage our world by simplifying it." See also: Stefan Banach, "Educating by Design: Preparing Leaders for a Complex World," *Military Review* (March-April 2009): p. 103. "Complex situations—by their very nature—present commanders with special challenges. To comprehend the situation requires deep study and reflection on the underlying system before engaging in action." Banach implies tacit knowledge is associated with design practice.

[23] Other sociologists use a similar term with "functionalism" instead of "technical rationalism". Here, the difference is essentially the dependence upon greater technology to further reduce and control reality. See: Haridimos Tsoukas & Kevin Dooley, "Introduction to the Special Issue: Towards the Ecological Style: Embracing Complexity in Organizational Research," *Organization Studies* 32, no. 729 (2011): p. 730; See also: Gibson Burrell & Gareth Morgan, *Sociological Paradigms and Organizational Analysis,* (London: Heinemann, 1979); Dennis Gioia & Evelyn Pitre, "Multiparadigm Perspectives on Theory Building," *Academy of Management Review* 15, no. 4 (1990): pp. 584-586; Weaver & Gioia, pp. 567-569; Donald A. Schön, "The Crisis of Professional Knowledge and the Pursuit of an Epistemology of Practice" in *Teaching and the Case Method, Instruction Guide,* ed. Louis Barnes, C. Roland Christensen, and Abby J. Hansen (Boston: Harvard Business School Press, 1987), pp. 241-254.

[24] John L. Romjue, *American Army Doctrine for the Post-Cold War* (Fort Monroe: Military History Office, United States Army Training and Doctrine Command, 1997), p. 11. "For the American Army, the dominant influence on 19th century tactical thinking came from writings derived from the experience of

sensemaking, in the technical rationalist perspective, employs "describable, testable, replicable techniques derived from scientific research, based on knowledge that is objective, consensual, cumulative, and convergent." [25]

The other end of the horizontal tension in Figure 3 features the sense-making termed "reflective constructivism." The opposite of objectivism is subjectivism, where everything is fluid and contextually based. Instead of universal and timeless positions, everything becomes linked unavoidably to the unique context of the time and space in the moment, and change does not follow a linear path to the next predictable configuration. [26] Constructivists offer multiple ways of interpreting the world, nothing is universal and societies create their own constructions of reality with symbols that are fixated upon periods of time, space, and social interactions. [27] I add the term "reflective" to this as reinforcement of Professor Schön's extensive work on 'knowledge in action' or 'reflective practice' where inquiring into one's own military efforts brings greater

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the Napoleonic Wars. Primary in influence were the writings of Major General Antoine Henri Jomini, whose *Precis de l'Art de la Guerre* was published in 1838." Modern Army principles of war in our doctrine are copied directly from Jomini's principles of war. See also: Brian McAllister Linn, *The Echo of Battle: The Army's Way of War* (Cambridge: Harvard University Press, 2007), p. 8. "For Heroes, war is simply battle- an extension of combat between individuals on both the physical and moral plane. The side whose commanders and soldiers exhibit superior courage, strength, discipline, martial skills, honor, and so forth will inevitably secure victory…"

[25] Schön, "The Crisis of Professional Knowledge and the Pursuit of an Epistemology of Practice," p. 243. See also: Banach, "Educating by Design," p. 101. "Planning is systematic and produces execution instructions, while execution connotes action." See also: Karl Weick, "Rethinking Organizational Design," in *Managing as Designing*, ed. Richard Boland Jr. and Fred Callopy (California: Stanford Business Books, 2004), p. 47. "Institutional theorists attribute machine-like processes of conformity and mimesis to fluid events, and network theorists attribute machine-like nodes and connections to dynamic relationships."

[26] Marianne Lewis and Mihaela Kelemen, "Multiparadigm inquiry: Exploring organizational pluralism and paradox", *Human Relations* 55, no. 2 (2002): p. 256. The authors present postmodernism as an example of subjectivity in tension with objectivist analytical approaches. See also: Reed, "Reflections on the 'Realist Turn' in Organization and Management Studies," p. 1629. Haridimos Tsoukas, "Refining Common Sense: Types of Knowledge in Management Studies", *Journal of Management Studies* 31, no. 6 (1994): p. 767. Tsoukas employs 'contextualism' instead of 'subjectivism'.

[27] Anne Kinsella, "Constructivist underpinnings in Donald Schön's theory of reflective practice: echoes of Nelson Goodman", *Reflective Practice* 7:3 (2006): p. 279. See also: Peter Berger and Thomas Luckmann, *The Social Construction of Reality* (Anchor Books, 1966); Jean Baudrillard, *Simulacra and Simulation*, trans. Sheila Faria Glaser (The University of Michigan Press, 2001).

awareness and generates new knowledge. [28] The reflective constructivist therefore sense-makes in military environments in a subjective, highly adaptive, and fluid manner where multiple perspectives socially construct reality. Reflection is "a process of getting in touch with the understandings we form spontaneously in the midst of action," according to Schön. [29] This forms the antithesis of the technical rationalist outlook, yet again it should not be considered an "either-or" scenario. Design encompasses both, and while transcending planning it also offers us the flexibility to maneuver across different cognitive perspectives to critically reflect and creatively improvise novel approaches to complex problems.

Figure 3 uses Picasso as a metaphor for how different ontological and epistemological perspectives for a group, institution, or society generate significantly different ways of interpreting how to produce more 'Picasso-esque' artists. The Q1 quadrant, where technical rationalism includes tacit knowledge, appreciates Picasso as a genius that can break the rules that lesser artists must obey to be successful, much the same way Carl Von Clausewitz allows military genius to violate his theory of the art and science of warfare. [30] For Clausewitz and others, *tacit genius trumps explicit military constructs.* However, in the Q3 where technical rationalism meets with a desire to interpret all knowledge as explicit, we see the familiar mass-production models of education where classes of artists are taught the rules, processes, and metrics of Picasso in the goal of producing many more future versions of the artist. [31]

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[28] Benyamin Lichtenstein, "Generative Knowledge and Self-Organized Learning: Reflecting on Don Schön's Researc," *Journal of Management Inquiry* 9, Issue 1 (Mar 2000): pp. 48-49. See also: Donald Schön, "Champions for Radical New Inventions," *Harvard Business Review* (March-April 1963): p. 83.

[29] Donald A. Schön, "The Theory of Inquiry: Dewey's Legacy to Education," *Curriculum Inquiry* 22, no. 2 (Summer, 1992): p. 126.

[30] Carl Von Clausewitz, *On War* (Penguin Classics, 1968), p. 184.Clausewitz states that the military genius is not bound by rules or principles, and can artfully break them or create entirely new ones in warfare which becomes the nature of military genius in action.

[31] Alex Ryan, "The Foundation for An Adaptive Approach," *Australian Army Journal* 6, Issue 3 (2009): p. 70. "With the industrial revolution, the planning and decision-making process gradually built up a well-oiled machine to reduce reliance on individual genius." See also: Valerie Ahl and T.F.H. Allen, *Hierarchy Theory: A Vision, Vocabulary, and Epistemology* (New York: Columbia University Press, 1996), p. 1. "Contemporary society has ambitions of solving complex problems through technical understanding…the first strategy is to reduce complex problems by gaining tight control over behavior. It is a mechanical solution in the style of differential equations and Newtonian calculus."

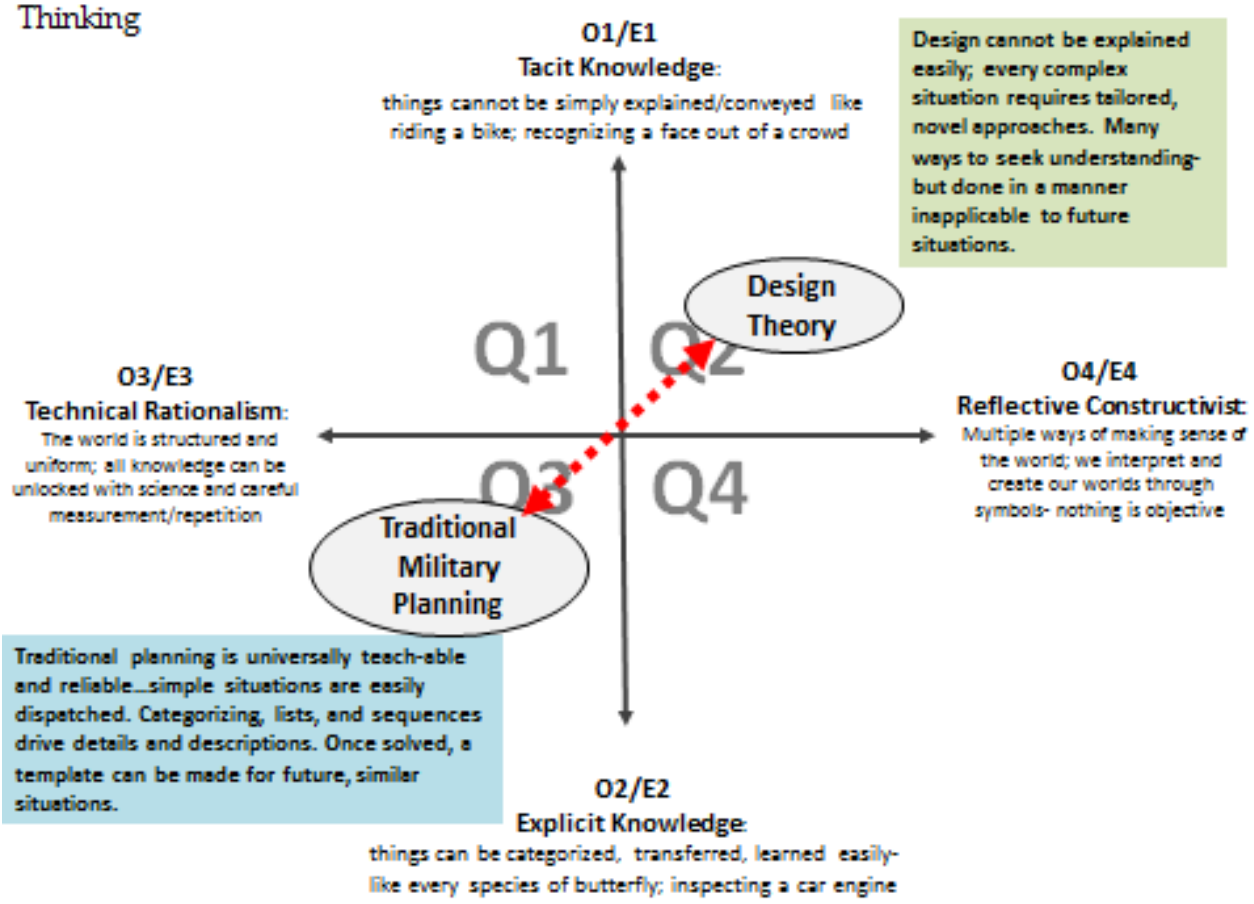
The Q2 sees Picasso within the socially constructed and subjective world where his artistic accomplishments advanced societal ideas on human artistic expression, whereas Q4 maintains a largely explicit view on knowledge despite a reflective constructivist epistemology. Thus, those that operate in the Q4 are ontologically and epistemologically at odds with those in the Q2, and expect that with the right approaches, future Picassos could be instructed through explicit information that can bridge a variety of subjective methodologies. While Picasso is a useful metaphor for establishing ontological and epistemological differences in learning (and thus planning), Figure 4 replaces the 20th century Cubism master with our two dance partners of military sense-making and planning: military design (manifested here as a design methodology stemming from overarching design) and detailed planning methodology (stemming from general planning within technical rationalism).

**Defending Picasso with Design**

Before shifting to Figure 4 below, some readers may ask why Picasso as an example and not some relevant military genius instead. To defend the use of Picasso here, consider what happens when a group of military professionals discuss the genius of any particular military leader in history. Just as with the various military forces differing over precisely how to enter and clear a room, or siege techniques at the Battle for Orléans, attempting to discuss the content from Figure 3 with a military figure invites the wrong discussions over methodological differences. Was Napoleon a genius? Was Washington superior, or was Montgomery? Unlike Picasso where except for a minority of readers with extensive art history backgrounds, military professionals tend to carry significant cognitive baggage concerning military topics. As a profession, we tend to have strong ideas (and opinions) which are extremely valuable, but also potentially blinding when we want to get above and beyond methodological debates. For design, we need to break out of this manner of thinking. Picasso, as a metaphor and cognitive tool here, acts as a bridge to deliver us (briefly) away from our comfortable military understanding so that we might discuss these messy ontological and epistemological concepts freely.

Overlapping this article's ontological and epistemological questions on how the military thinks about thinking creates four quadrants that illustrate interactions of these tensions. Figure 4 helps us plot where traditional military planning (a component of technical rationalism and general analytic planning) and design (as a design methodology nested within an encompassing design paradigm) seem to fall, and establishes the framework on why design and detailed planning operate as vehicles for entirely distinct ontological and epistemological constructs for making sense of military conflicts. Their paradoxical locations as illustrated help with the title metaphor of this article; the U.S. Army's desire to partner design with traditional planning makes for awkward dancing partners due to their diametric ontological and epistemological positions.

Figure 4: Traditional Military Planning is in Complete Paradox to Design Thinking



Detailed planning has traditionally functioned at the crossroads of technical rationalism and the outlook that most knowledge is explicit and can therefore be cataloged into doctrine and taught through universal practices. [32] There are plenty of advantages with this ontological and epistemological combination for a planning methodology. Soldiers can be trained on a wide variety of tactical roles and specialized purposes. Whether an infantry platoon is in Iceland, Afghanistan or the Philippines, they all can perform the same exact tasks consistently in a wide variety of environments and conditions. While there are millions of possible floor plans, the battle drill for entering and clearing a room with an infantry squad uses the *same methodology* and adapts in practice to different buildings as encountered. Through doctrine, drill, and repetitive training, military forces are able to learn explicit knowledge easily through categorization, memorization, and clear, shared language. [33] This works for any floor plan because all floor plans encompass a simplistic problem set. Despite the huge variety in building materials and configurations, "rooms" are explicit and thus suitable for detailed planning methodological applications, military doctrine, and technical rationalist approaches. Canadian, American, and Dutch forces might differ over the methodology for best entering and clearing a room, but these are akin to the British and French forces bickering on siege techniques during Joan of Arc's victory at the Siege of Orléans.

[32] Shimon Naveh, Jim Schneider, Timothy Challans, *The Structure of Operational Revolution; A Prolegomena* (Booz, Allen, Hamilton, 2009), p. 88. The authors argue that military planning demonstrates repetitive *tacticization* where military institutions "are inclined to apply knowledge they have acquired from their tactical experiences to their operational functioning sphere. In such cases, they either reduce the operational inquiry of potential opposition into a mechanical discussion or completely reject the need for a distinct learning operation." See also: Morgan, p. 246. "The drive to create tightly controlled rational organizations has been a major feature of the twentieth century." See also: Jamshid Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity*; second edition (Elsevier: Butterworth-Heinemann, 2006), p. 10.

[33] Antoine Bousquet, *The Scientific Way of Warfare; Order and Chaos on the Battlefields of Modernity* (New York: Columbia University Press, 2009), p. 60. "Drill and the associated surveillance of troops helped ensure political obedience and greater reliability of the military instrument for purposes of both internal rule and the settling of disputes with other states." See also: Henry Guerlac, "Vauban: The Impact of Science on War", in *Makers of Modern Strategy; From Machiavelli to the Nuclear Age*, ed. Peter Paret, (Princeton: Princeton University Press, 1986), p. 67. "This cult of reason and order was not merely an authoritarian expedient, nor just an aesthetic ideal imposed by the prevailing classicism…it was the form in which the scientific revolution, with its attendant mechanical philosophy, first manifested itself in France."

As illustrated in Figure 4, the Q3 quadrant has many advantages, and military environments that feature problems that are solvable through the technical rationalist approach coupled with an emphasis on explicit knowledge are exactly the situations where traditional military planning produces precisely the outcomes desired. But even with detailed planning, there are plenty of things that are not explicit, and are hard to explain by the practitioner. Many highly effective military professionals can rapidly absorb information and creatively develop innovative solutions to challenging military situations, but have a hard time explaining afterwards how they did it, or they struggle to "teach it" to others to produce the same results. [34] Many efforts at applying metrics or forcing metaphors such as a "center of gravity" upon something non-linear like a strategic 'will of the nation to resist occupation' end up failing. [35] Many ambitious military campaign plans steer the entire military force towards a decidedly ineffective direction, and often become impossible to adjust or dismantle over time as the organization invests more time, resources, and commitment to the ideas. [36] In military

[34] Grome, Crandall, Rasmussen, and Wolters, p. 11. The researchers identified a lack of conceptual clarity for the military describing and defining 'design'. The researchers even noted the lack of agreement on what "design is" due to the wide range of views and attitudes by the personnel polled in their study. This finding may support the theory that design has more tacit knowledge, and thus becomes problematic in teaching or even describing it to others. See also: Grant Martin, "Tell me how to do this thing called Design!" *Small Wars Journal* (April 8, 2011), retrieved on November 10, 2013 from: http://smallwarsjournal.com/blog/journal/docs-temp/729-martin.pdf. Martin offers readers one way to gain deeper understanding of design, but concedes that it is a difficult construct to convey.

[35] Joseph Strange and Richard Iron, "Center of Gravity: What Clausewitz Really Meant," *Joint Forces Quarterly*, Issue 35 (2004): pp. 24-25. See also: Kurt VanderSteen, "Center of Gravity: A Quest for Certainty or Tilting at Windmills," in Addressing the Fog of COG, 39. VanderSteen explains Dr. Strange's "reductionist and dualistic method" for COG formations is driven by the need to "explain complex theoretical concepts to future practitioners." Christopher Paparone and William Davis, Jr., "Exploring Outside the Tropics of Clausewitz: Our Slavish Anchoring to an Archaic Metaphor" in Addressing the Fog of COG, 66. Paparone and Davis reject the COG as a "dead metaphor" and explore modern military fixation on metaphors rooted in specific paradigms.

[36] Azeem Ibrahim, "Afghanistan's way forward must include the Taliban," *Los Angeles Times Opinion Online*, (December 09, 2009). Accessed November 03, 2013 at: http://articles.latimes.com/2009/dec/09/opinion/la-oe-ibrahim9-2009dec09. See also: Joshua Foust, "How Short-Term Thinking Makes the U.S. Worse at Fighting Wars," *The Atlantic,* (March 31, 2012). Last accessed on December 7, 2014 at: http://www.theatlantic.com/international/archive/2012/03/how-short-term-thinking-makes-the-us-worse-at-fighting-wars/255292/. Aaron Jackson, *The Roots of Military Doctrine: Change and Continuity in Understanding the Practice of Warfare* (Fort Leavenworth: Combat Studies Institute Press, 2013), p. 52.

situations where adaptation, irregularities, and uncertainty dominate the environment, the technical rationalist seeking explicit knowledge tends to get lost. [37]

**Even if Design and Detailed Planning are Just Dancing in the Dark**

Unlike detailed planning methodology, design appears to thrive under antagonistic ontological and epistemological conditions (and also thrive within where detailed planning seems strongest). The technical rationalist perspective embraces detailed planning with a passion, while the reflective constructivist instead encourages the transformative, adaptive, and improvisational nature of design. [38] Detailed planning seeks to channel all new information in a military situation as 'explicit in nature' so that it may master and control the new knowledge, categorize it, build metrics and patterns, and assimilate "best practices" for the next military conflict.

Design appreciates much of the uncertainty and ambiguity of a messy military situation as tacit, where over time one might gain a greater appreciation through critical reflection, creative risk, and improvisation in action, yet avoids "cookie cutter" applications to future, undetermined problems. Design operates seeking a unique, tailored approach to sense-making, and generally has no intentions of re-using the solution in a future "off the shelf" sort of modeling, thus resisting any efforts of indoctrination. As Figure 4 attempts to illustrate, our two dancing methodologies gravitate towards entirely antagonistic ontological and epistemological directions, creating significant tension when the institution attempts to cobble them together.

Returning to the interaction of these ontological and epistemological tensions that helps frame four distinct quadrants, the military propensity to interpret most

[37] Gerald M. Weinberg, *Rethinking Systems Analysis and Design* (Boston: Little, Brown and Company, 1982), p. 12. "If our previous experience with systems analysis proves anything, it proves that anyone who tries to use *all* the information- even about the simple systems existing today- will be drowned in paper and never accomplish anything." See also: Christopher Paparone and George Reed, "The Reflective Military Practitioner," *Military Review* (March-April 2008): p. 73. Paparone and Reed use the term "myopic decision making" and how MDMP or detailed planning is an example of this due to its inflexible criteria.

[38] Schön, "The Crisis of Professional Knowledge and the Pursuit of an Epistemology of Practice," p. 245. See also: Anne Kinsella, "Constructivist underpinnings in Donald Schön's theory of reflective practice: echoes of Nelson Goodman," *Reflective Practice* 7:3 (2006): p. 279.

military knowledge as explicit is where universal lessons, checklists and categorization become the rallying call for producing new doctrine and enforcing collective adherence through professional schooling. While detailed planning thrives in this tension (Q3) when nested with technical rationalism so that doctrine and scientific measurements unlock the mysteries of uncertain conflict environments, what about the Q4 quadrant? Here knowledge remains largely explicit, yet the conflict environment is interpreted in a constructivist mindset that avoids the pitfalls of technical rationalism. This is where we begin to find the military codification of design theory into doctrine, whether termed 'Army Design Methodology' or any of the other territorial monikers that fellow military services or foreign military forces apply. [39] This is not a design methodology nested within the larger design paradigm, but a misunderstood construction of design methodology tied to general planning within the limits of technical rationalism. Thus, when military doctrine creeps into the Q4 and attempts to force reality to function within the analytical and objective perspective of technical rationalism, we end up with restrictive design doctrine subordinated under traditional planning.

While military doctrine writers and major academic institutions for military education continue to acknowledge that design is difficult to codify into steps, sequences, or checklists, they continue to break it down into doctrine and training modules for universal application across the military force.[40] This illustrates why 'design doctrine' in any incarnation remains at the crossroads of a constructivist mindset seeking to convert design practice into explicit knowledge. Only through the

[39] The U.S. Army aggressively changed 'Design' to 'Army Design Methodology' in 2011 with the publication of ADP 3-0, *Unified Land Operations,* while the U.S. Marines and U.S. Air Force continue to use either 'operational design' or similar joint terminology. The Australian Army uses 'Adaptive Campaigning' while the Israeli Defense Force continues to use incarnations of 'Systemic Operational Design' without calling it SOD. See also: Ministry of Defence, *Joint Doctrine Note 3/11: Decision Making and Problem Solving: Human and Organisational Factors*, (June 2011). See also: Shimon Naveh, Operational Art and the IDF: A Critical Study of a Command Culture (Center for Strategic & Budgetary Assessment, contract: DASW01-02-D-0014-0084, September 30, 2007). See also: Australian Head Modernisation and Strategic Planning- Army, Australian Army's Future Land Operating Concept (Canberra, September 2009).

[40] Between 2009 and 2013, three different School of Advanced Military Studies directors promoted three different official "SAMS schoolhouse" positions on how to teach design in the following Military Review publications. See: Banach (March-April 2009), Wayne Grigsby, Scott Gorman, Jack Marr, Joseph McLamb, Michael Stewart, Pete Schifferle, (Jan-Feb 2011) and Thomas Graves and Bruce Stanley, (July-August, 2013) in *Military Review*. All three articles attempt to blend or influence official design doctrine.

ontological and epistemological lens where knowledge is largely explicit and reducible into sequences can military doctrine continue to dominate the profession. This also means that while design (as a methodology stemming from design in general) in practice remains at the crossroads of reflective constructivism and the appreciation that most design processes are comprised of tacit knowledge, design shackled to doctrine remains a watered down, incomplete, and often incoherent mess for military practitioners. Thus, the American Army conducts research to make sense of why this is, and how it might "fix" design doctrine and professional education.[41]

Below, Figure 5 adds the element of 'genius' to the discussion, to illustrate further tensions between detailed planning (Q3), design in practice (Q2), and design in doctrine (Q4). While the military decision-making model is the 'operational science' champion of technical rationalism coupled with the ontological perspective towards largely explicit knowledge, detailed planning tends to downplay the 'genius' and artistry, in that it remains easier to teach military science over military artistry. Genius is impossible to explain, otherwise our militaries would bottle it and issue it to all soldiers prior to graduating basic training! We tend to instruct military professionals on the positivist aspects of decision making through procedures and careful military science, but we shy away from instructing very much on the 'military artist' in operational art. [42] Although in retrospect we can always define those that meet the shared criteria of 'military genius' after we sift through the historical results of a conflict, we often struggle to explain how these military leaders accomplished what they did- particularly if they "broke the rules that all others should follow."

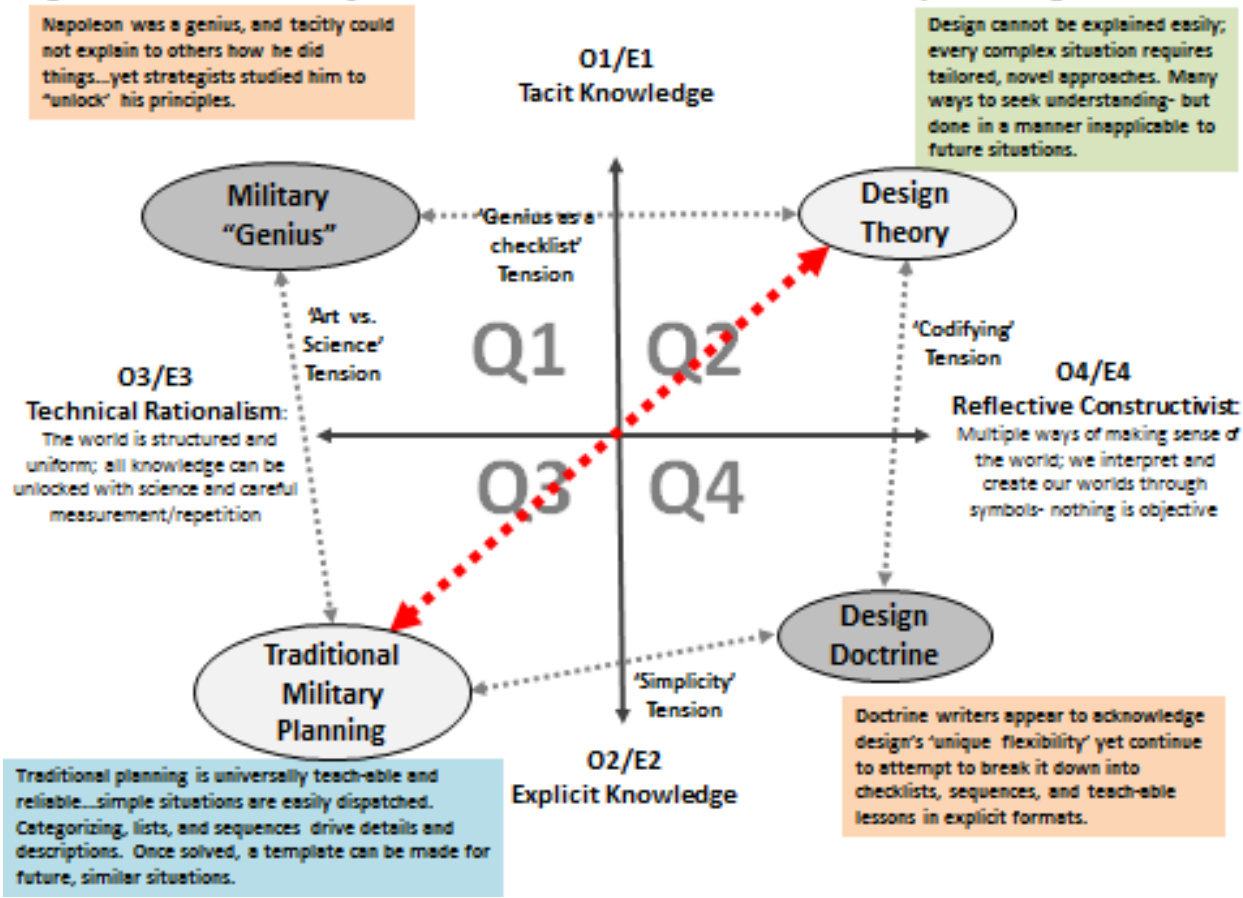
Whether choosing to cross an icy river to surprise Hessians on Christmas Day and gather a much-needed tactical victory, or enveloping a Roman legion by feigning a

[41] Grome, Crandall, Rasmussen, and Wolters.

[42] Schön, "The Crisis of Professional Knowledge and the Pursuit of an Epistemology of Practice," pp. 246-248. The term 'positivist' is now unpopular with philosophers in scientific disciplines as it is largely discredited, however military science and theory continue to rely upon ontological and epistemological positions that remain positivist. See also: Gilles Deleuze and Felix Guattari, *A Thousand Plateaus; Capitalism and Schizophrenia*, trans. Brian Massumi, (Minneapolis: University of Minnesota Press, 1987), p. 374. "The ambulant sciences confine themselves to *inventing problems* whose solution is tied to a whole set of collective, nonscientific activities but whose *scientific solution* depends, on the contrary, on royal science and the way it has transformed the problem by introducing it into its theoretical apparatus and its organization of work."

weakened center and circling with Iberian and Gallic heavy cavalry, many cede the profound success of brilliant military leaders to "military artistry" or "genius". We tend to fail to explain how they did what they did, in part because tacit knowledge is exceedingly hard to explain the *how* of the action. Military historians often tackle the '*what'* with greater ease, as description equates to explicit knowledge, and returns us to the scientific side of that tension.

Figure 5: Different Perspectives within Each Quadrant for Military Thinking



**Of Spiders Dancing the Tango with Starfish**

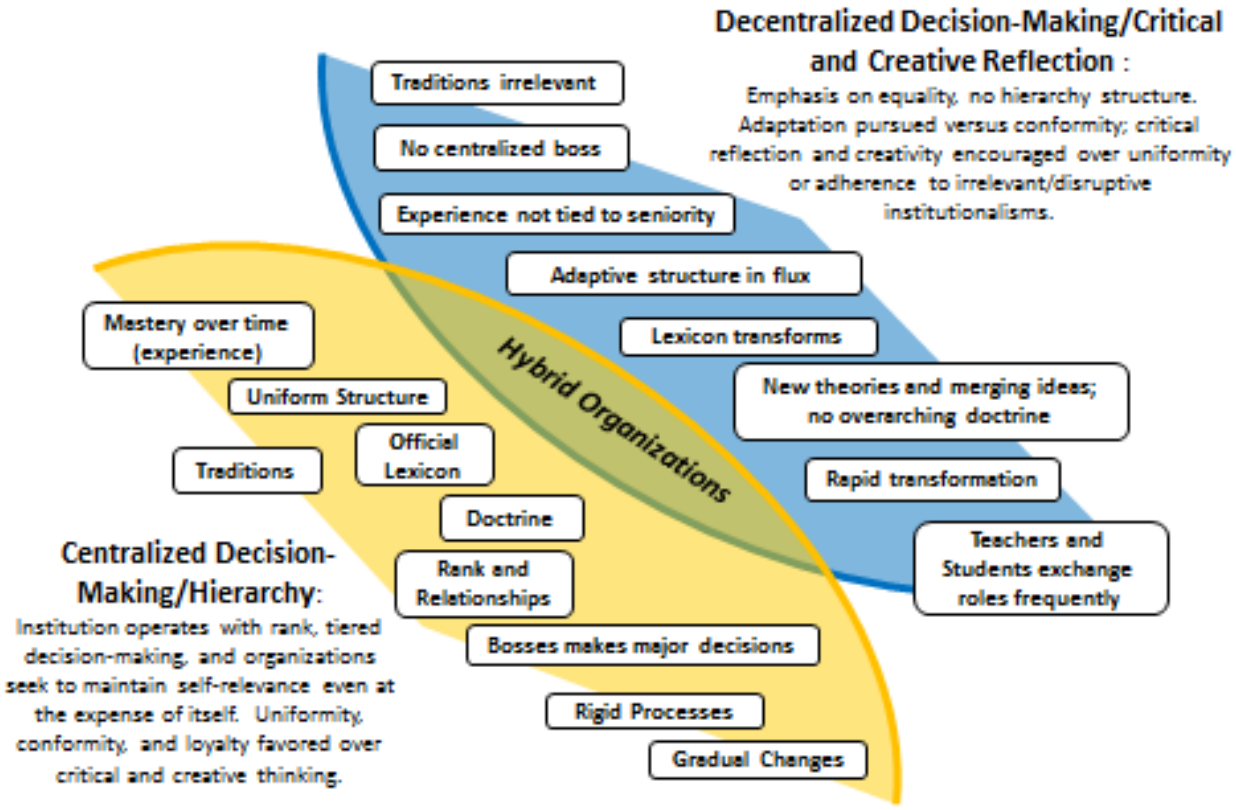
Ori Brafman and Rod Beckstrom's book titled 'The Starfish and the Spider' not only made the Chief of Staff of the U.S. Army's professional reading list, the U.S. Army Training and Doctrine Command (TRADOC) even developed an experimental leadership course based upon the concepts of centralized and decentralized organizations. [43] The authors clearly and vividly describe hierarchical organizations with centralized decision making as highly structured, slow to change, where systematic adjustments remain isolated to a department or through direct senior leadership from the top, thus conveyed in their metaphoric use of the "spider." [44] Notice that like many examples in this article, design prefers using metaphors to convey often difficult to explain ideas. Metaphors are not analytical, nor are they literal- spiders are not anything but spiders. The idea of the spider is useful, however.

In contrast to the spider metaphor, the "starfish" is a decentralized organization that is flexible, adaptive, and fast changing under conditions where the local environment often influences systemic transformation from the bottom up. These are useful metaphors that highlight an organizational tension between whether to establish a largely stable hierarchical structure that relies upon centralized decision-making, or to embrace decentralization and undergo adaptation, frequent change, and a deconstructed decision-making that is far more plural, or democratic in structure. Figure 6 attempts to illustrate this tension, providing many of the elements and concepts associated with both styles of organization.

[43] Ori Brafman and Rod Beckstrom, *The Starfish and the Spider* (The Penguin Group, New York, 2006). Brafman and Beckstrom discuss the differences between centralized and decentralized organizations. For the TRADOC leadership program, see also: William Colbert, "Improvisational Leadership: Setting the Stage for Future Army Leader Development," *Army Magazine* (December 2010) accessed 02 November 2013, http://www.ausa.org/publications/armymagazine/archive/2010/12/Documents/Colbert_1210.pdf

[44] Janna Raye, "Fractal Organization Theory," *Journal of Organisational Transformation & Social Change* 11, no. 1 (April 2014): p. 51.

Figure 6: Additional Tension of Organizational Structure (Hierarchy Versus Decentralized)



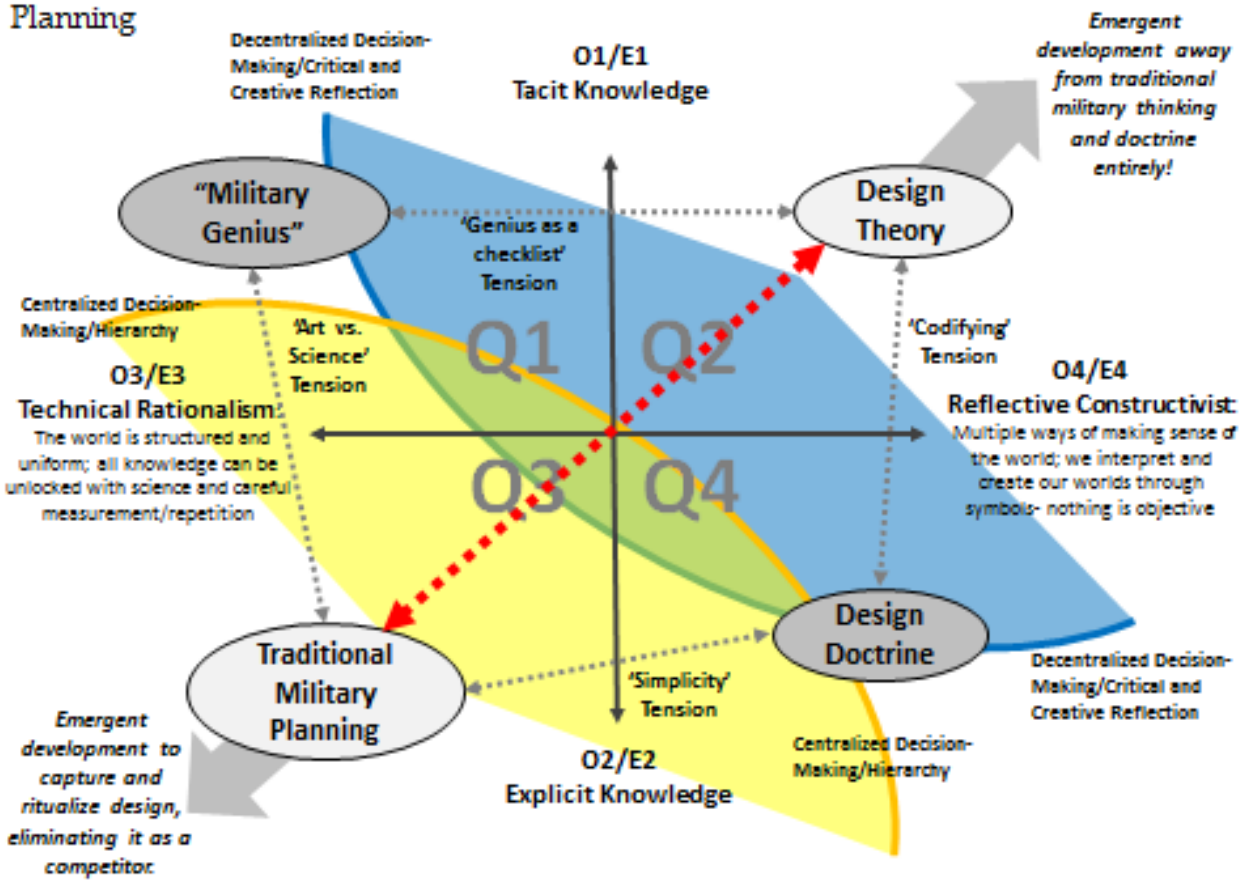

There are benefits and disadvantages to either epistemological end of *how to organize*, with the overlap featuring hybrid organizations that Brafman and Beckstrom argue contain combinations of both. The centralized decision-making hierarchy is most familiar to military forces because it applies rank, status, position, and experience with decision-making in a rigid and sequential hierarchy starting from the top. [45] Here, uniformity, conformity, repetition, tradition, and loyalty are highly favored behaviors, while critical and creative thinking is actually discouraged if it breaks with any of the

[45] Gary Jason, *Critical Thinking: Developing an Effective System Logic* (San Diego State University: Wadsworth Thomson Learning, 2001) p. 337. "People tend to compartmentalize: they divide aspects of their lives into compartments and then make decisions about things in one compartment without taking into account the implications for things in another compartment." See also: Ervin Laszlo, *The Systems View of the World; A Holistic Vision for Our Time* (New Jersey, Hampton Press, 1996), p. 2. Laszlo observes that knowledge is usually "pursued in depth in isolation…Rather than getting a continuous and coherent picture, we are getting fragments- remarkably detailed but isolated patterns."

favored behaviors. [46] A decentralized organization places emphasis on equality, with little or no hierarchical structure, and adaptation is pursued over conformity. Critical reflection and creative action potentially shatter and reform the organization over and over, taking novel and often unexpected forms. These organizations are non-traditional, lack uniformity, are seemingly random, and manifest loyalty in formats dissimilar to a rigid hierarchy. As Figure 6 illustrated this additional epistemological tension alone, we shall now apply it to the original quad chart with our other ontological and epistemological tensions that drive design (as a methodology) and detailed planning (nested within analytical planning) apart. This is shown in Figure 7.

[46] Karl E. Weick, "*Improvisation as a Mindset for Organizational Analysis," Organizational Science* 9, no. 5 (September-October 1998): p. 551.Organizations follow "the chronic temptation to fall back on well-rehearsed fragments to cope with current problems even though these problems don't exactly match those present at the time of the earlier rehearsal." See also: Michel Foucault, "Discourse and Truth: The Problematization of Parrhesia," (originally covered in six lectures given by Michel Foucault at the University of California, Berkeley in October-November, 1983), retrieved on November 15, 2013 from: http://foucault.info/documents/parrhesia/. Foucault explains the dangers of being right, but being attacked by the organization because change often threatens institutionalisms.

Figure 7: Epistemological and Ontological Tensions for Design and Detailed Planning




This figure offers one way to frame these multiple ontological and epistemological tensions in military sense-making, with the centralized decision-making perspective most compatible with technical rationalism and the desire to make most knowledge explicit. For an organization that holds to a strong hierarchical form, the structure and appearance of control of technical rationalism coupled with a desire to codify knowledge in sequences and doctrine as explicit is most suitable. Paradoxically, design is comfortable with the opposite (while also highly useful within both), operating within a decentralized organizational structure where plural decision-making remains within a largely constructivist perspective, acknowledging that knowledge is often tacit and cannot be transferred or categorized easily. [47] Returning to our tango

[47] John Molineux, Tim Haslett, "The Use of Soft Systems Methodology to Enhance Group Creativity," *Systemic Practice and Action Research* 20, Issue 6 (December 2007): pp. 477-496. Molineux and Haslett cite

metaphor, the recent efforts by the U.S. military to either combine detailed planning with design, or reduce design to a subservient component within detailed planning methodology are at odds with multiple ontological and epistemological tensions that drive these two dancers apart.

**Kuhn's Paradox and Incompatible Paradigms**

Since Thomas Kuhn published his pivotal work 'The Structure of Scientific Revolutions' in 1962, his conceptualization of a "paradigm" has gained global appeal for framing the transformation of knowledge as well as the epistemological practice of how organizations interpret knowledge. [48] Although there are numerous interpretations of the term 'paradigm', for this article I use sociologist George Ritzer's description where a paradigm is "a fundamental image of the subject matter within a science" … that "serves to define what should be studied, what questions should be asked, how they should be asked, and what rules should be followed in interpreting the answers obtained." [49] Kuhn argued that paradigms were incommensurable when in direct or rival positions attempting to perform the same purpose for an organization. Newtonian physics and Einstein's 'Theory of Relativity' do not make for collaborative math partners, as they seek to answer the same questions.

Although detailed planning and design are subordinate methodologies, they comprise rival and incommensurable paradigms for military sense-making. This theory is supportable by the numerous ontological and epistemological tensions demonstrated in this article. Thus, efforts to combine design with detailed planning reflect more than incompatible methodologies, they represent aspects of rival and incommensurable paradigms for sense-making in complex military situations. This makes for disastrous dance partners indeed.

Readers may misinterpret this article as "pro-design" whereas there are many benefits for employing detailed planning in all manner of future military conflicts. I do

numerous studies on creativity and group dynamics to argue that democratic (plural, not hierarchical) and collaborative leadership fosters increased creativity.

[48] Thomas Kuhn, *The Structure of Scientific Revolutions* 3rd ed (Chicago, University of Chicago, 1996).

[49] George Ritzer, *Sociology: A Multiple Paradigm Science* (Boston: Allyn and Bacon , 1975), p. 7.

not argue that we must abandon one methodology in favor of the other. Instead, a reflective practitioner should shift between both as they become relevant to a military situation, and abandon them when they are not. In stable or simplistic environments where problems respond best to linear approaches, traditional planning may suffice where the benefits of technical rationalism and explicit knowledge production outweigh the detriments.

In complex and adaptive military environments, design rejects the purely technical rationalist approach and rewards innovation and creativity, while traditional planning reinforces the military hierarchy and obedience to doctrine and past success. Design demands artists and unique thinkers that operate in highly uncertain environments where illusive tacit knowledge cannot be compressed into a design checklist or programmed into a series of lectures by an eminent and institutionally sanctioned expert for uniform and rapid dissemination. Thus, in some environments, there is no need to engage in traditional planning where the conditions favor design because of our own institutional predilections. Even in conditions where we might not need to plan, we can design. There is no planning, however, without the use of design.

Previous arguments that design and detailed planning are compatible methodologies or "the design methodology is a subcomponent of planning" are incorrect and based upon a myopic perspective of design as interpreted through the dominant epistemological and ontological paradigm espousing both technical rationalism and explicit knowledge production. [50] Detailed planning simply "eats design" for lunch for institutional reasons, and will likely not have it any other way, being the dominant paradigm steering military education and cognitive approaches. [51]

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[50] Grigsby, Gorman, Marr, McLamb, Stewart, Schifferle, p.15-16. The authors propose that design confusion is a result of "well-intentioned efforts to advertise the potential of the concept." This ignores the ontological and epistemological context of how design and detailed planning differ dramatically. The authors suggest a solution that wildly benefits one paradigm that espouses detailed planning as the dominant methodology, where design methodology becomes an optional accessory because "the design methodology does not produce solutions on its own."

[51] Ben Zweibelson, Grant Martin, Christopher Paparone, "Frame Reflection: A Critical Review of U.S. Military Approaches to Complex Situations," *OODA Loop* (September 12, 2013): p. 23. Retrieved on November 15, 2013 from: http://www.oodaloop.com/featured/2013/09/12/frame-reflection/#_methods=onPlusOne%2C_ready%2C_close%2C_open%2C_resizeMe%2C_renderstart%2Concircled%2Cdrefresh%2Cerefresh%2Conload&id=I1_1384528283461&parent=http%3A%2F%2Fwww.oodal

Design and detailed planning present methodologies of incommensurable paradigms that operate under entirely dissimilar (and often antagonistic) ontological, epistemological, and organizational tensions. Forcing them together, particularly in what some have suggested as a 'master and subordinate' sort of relationship serves only to benefit one paradigm over the other, and ultimately confuse the force. [52] Ultimately, we seem to have everything backwards. In other words, detailed planning as a dance partner cannot lead. Design leads, and can also dance individually without detailed planning.

**Conclusions: When the Puppet Notices Strings He Might Cut…**

If design is incompatible with detailed planning with either in a subordinate role, what can the military do about it? As this article offers one of many ways to explore ontological and epistemological tensions in 'thinking about how we think', there is no reason why we as a larger Western military institution cannot encourage more of this at all levels of professional education, and recognize when our own ontological and epistemological choices create incompatible or adversarial approaches to thinking, learning, and acting. We can, as Schön proposed in much of his work, attempt to avoid the institutional pitfalls where those professionals accustomed to the traditional paradigm "tend to become disconnected from what they already know" and when encountering a rival paradigm, follow Kuhn's prediction that many will actively resist it. [53]

Schön's 'reflective practice' or 'reflection-in-action' asks military professionals to continue with what this article has provided on the ontological and epistemological tensions existing in various military planning processes. Schön invites professionals to "react to the inconsistencies in a situation by rethinking one's tacit knowledge" and

oop.com&pfname=&rpctoken=51509055. "Modern military institutions appear to suffer a two-fold problem with frame conflict here because of the centralized decision-making structures and employing the overarching analytic frame for all aspects of military design."

[52] Grome, Crandall, Rasmussen, and Wolters, The very requirement for the Army to direct this research project stemmed from the Army's awareness of design confusion over existing doctrine, education, and practice.

[53] Donald A. Schön, "The Theory of Inquiry: Dewey's Legacy to Education," *Curriculum Inquiry* 22, no. 2 (Summer, 1992), p. 121.

"reframing the situation within one's intuitive understanding in an action experiment that tests possible solutions." [54] The military professional might recognize the situation and acknowledge that in some conditions, a methodology that benefits from technical rationalism and explicit knowledge production is ideal. In these conditions, a form of detailed planning may function effectively or perhaps just part of it, for one phase. Professionals then would conduct action experiments testing combinations of periods with one methodology, another rival one, or elements of both in novel combinations. It rarely is an either-or situation "because for every well-structured system, there are ill-structured aspects." [55] Some military problems respond best to the military decision-making process, while others absolutely defy it; we cannot view the world in a myopic "one size fits all" manner of sensemaking. A reflective practitioner has the opportunity to acknowledge this as it occurs, and anticipate when, where, and why to apply different problem-solving methodologies (or novel fusion of them) to achieve greater outcomes. We are always designing, once we realize the distinction between design and plan.

[54] Schön, *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions* (San Francisco: Jossey-Bass, 1987).

[55] Ian Mitroff, "Systemic Problem Solving," in *Leadership: Where Else Can we Go?* ed. Morgan McCall, Jr. and Michael Lombardo (Duram, N.C.: Duke University Press, 1978), p.131.