Does Design Help or Hurt Military Planning: How NTM-A Designed a Plausible Afghan Security Force in an Uncertain Future, Part I

By **Ben Zweibelson**
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Author's Note: Many military professionals and academics ask for tangible examples in a combat environment of what design theory brings to a military organization conducting planning and decision-making. As an operational-level planner in NATO Training Mission-Afghanistan/Combined Security Transition Command-Afghanistan (NTM-A/CSTC-A) in 2011, I had a unique opportunity to lead a planning team that fused design theory and other non-standard planning techniques into the military decision-making and wargame process. Those results, and our team's precise recommendations, were eventually briefed and approved at the strategic level for our Coalition to implement a change in direction of long-range planning for Afghan security forces. This is part I of a two-part series on how design practitioners produced an output that may shape the future form and capacity of the Afghan forces.[1],[2]

In the summer of 2011, senior leadership asked NTM-A/CSTC-A a series of questions that fit the definition of an 'unfamiliar problem set' for our military organization to grapple with. Using limited intelligence estimates for what the threat environment might look like in the next half decade or so, NTM-A was tasked to determine a size, capability, and cost of an Afghan security force that would be sufficient to function best in this uncertain future. In order to provide an answer that would evoke confidence with senior officers and policy makers, the analysis needed to feature the familiar components of traditional military decision making, to include 'wargaming' and detailed methodology within an overarching narrative. As this was an unfamiliar problem cast in the fog and friction of an unstable conflict environment's emergent state, this became a unique opportunity to apply design theory with military decision making under combat conditions. Yet, our military institution continues to wrestle with whether design helps military planning, and how to properly incorporate it. This is the tale of a design theory integration success.

Army Doctrine Publication 3-0 states that when the US Army faces unfamiliar problems, finding "executable solutions typically requires integrating the design methodology and the [military decision-making process]."[3] In this case, we had a unique opportunity as military planners to explore what security force options would perform best under the highly uncertain future threat environment, and how to evolve the Afghan National Security Forces towards institutions that are sufficient for the security of the Afghan government and Afghan people, while acknowledging the reality of fiscal sustainability. This article intends to demonstrate that design theory, when integrated carefully into our existing military decision-making process, does produce more useful products when facing confusing situations. In this story, I hope to convey our experience in trying to fuse design theory with traditional rational-analytic decision-making.

The planning team identified that resources would be the major planning constraint from the beginning, in that any future security force would be supported largely by the international community. Initial senior military guidance to our planning group, however, was clear; do not let cost constrain planning, as those concerns would be addressed later at higher levels. We based all planning on the likely threat, and let budget constraints be factored in later after we determined the best possible security force option, not merely the cheapest option available.

I tell our story in five phases, hoping to convey how we evolved our concepts, language, and understanding toward design theory in practice. The first phase we called 'DE-TACTICALIZATION' where the team reflected on how we tend to view problems from a reductionist and often tactical worldview. [4] In order to employ design theory, we agreed to see events as *a generalist*, to see things from an abstract level and try to link things together in lieu of focusing on the details. In the second phase, 'CONTEXTUALIZATION', we attempted to describe the larger environment. In the third phase, 'PROBLEMITIZATION, our team framed the 'problem' to generate Afghan security force options. This led to the fourth phase, 'IMPROVISATION', where we shaped an operational approach while continuously cycling back into all earlier phases and sought novel operational approaches. Once we developed an assortment of approaches, we took traditional wargame methodology and fused it with both design and swarm theory. Finally, in our 'FINAL DESIGN' phase we found ways to convey our recommendations as well as present the logic behind them. This article concludes with offering some concerns, criticisms, and remaining questions on how our military institution may continue to evolve novel and more useful infusions between design theory and traditional military planning. Does design help or hurt the current military institution?

'De-Tacticization: Going from the Microscope to Macroscope'

Our planning team consisted of military planners educated through the US Army's School of Advanced Military Studies, career strategic planner specialists, and other personnel with extensive professional and educational experience. [5] Armed with a white-board and the source documents from our superiors to start with, we spent several sessions considering the scope of this wicked problem. Attempting to frame a plausible future threat environment and subsequently wargaming multiple Afghan security force combinations was a formidable problem set. [6] Our first intellectual hurdle was our own predilection as military planners to consider tactical issues with a reluctance to transition to concepts that were more abstract. [7] Design encourages abstract and holistic reflection over tactical thinking, but the majority of our professional military education, doctrine, and vocabulary steered us towards reductionism and tactical focusing.[8]

In the military, some concepts are often beyond reproach; they are core beliefs and values our institution often associates with tradition and identity- termed ROOT METAPHORS in this article. [9] Beyond root metaphors in our organizational logic, we needed to frame the boundaries of what we knew to be within our doctrine and logic, and what did not. This helps differentiate between what an organization understands as 'something known' versus the uncertain 'unknowns' that we face. [10] The vast majority of our military doctrine, language, and concepts rely on the 'interiority' of our organizational knowledge; anything beyond or outside of that frame is quickly labeled crazy, irregular, anecdotal, or an anomaly. These ideas do not *make sense* within our bounded interiority of organizational knowledge; therefore, we cast them off and often ignore or marginalize them. [11] Sometimes, one only needs to help the audience draw the boundary around their organization's interiority to trigger critical inquiry. [12] Design may help military planning processes by encouraging abstraction over tactical reductionism. In order to help bound information between the "known" and "unknown" for the planning team, we introduced some concepts from post-modern philosophy that helped us challenge our own inherent military institutionalism.
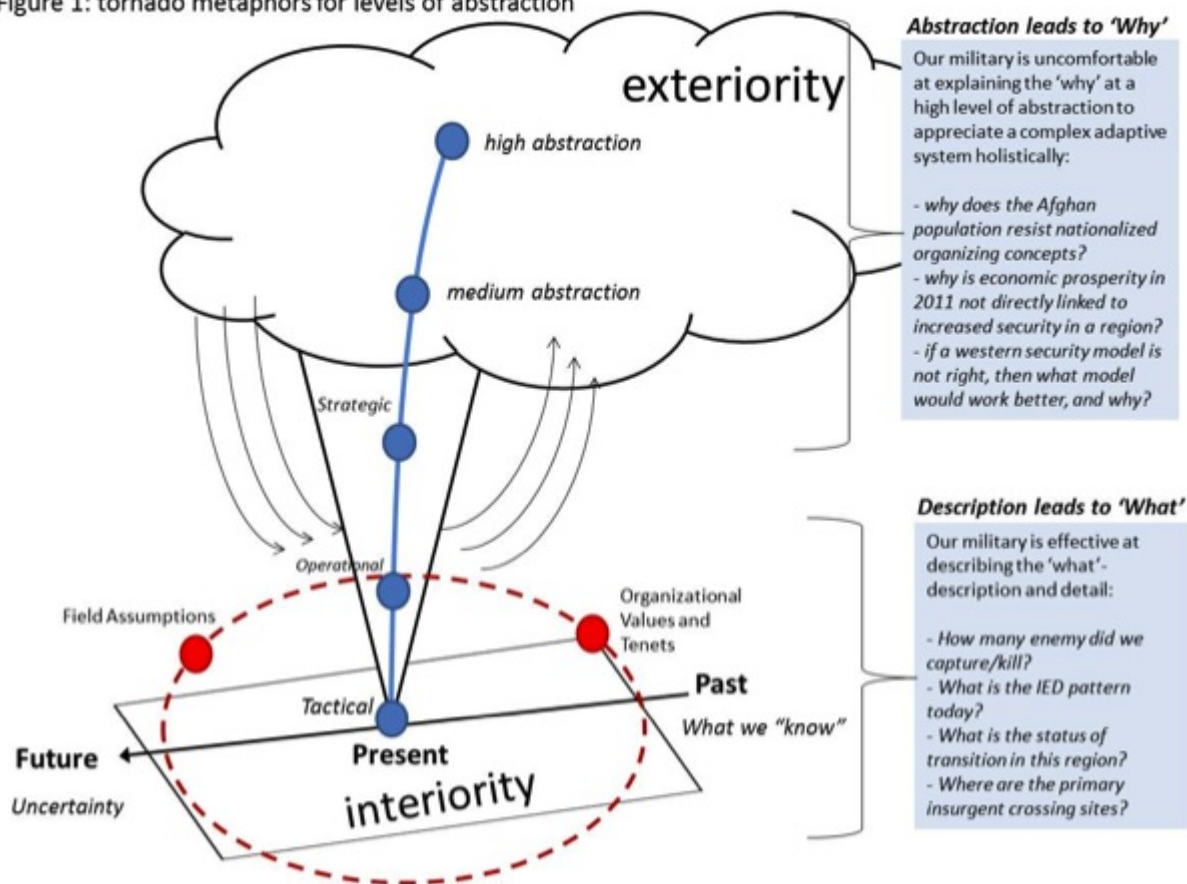
'Applying Post-Modernism to a Tornado'

Design draws from an eclectic range of fields and concepts, to include post-modern philosophy. Post-modern philosophers Gilles Deleuze and Felix Guattari wrote extensively on the complementary concepts of interior and exterior knowledge.[13] To illustrate this post-modern perspective, we applied elements of subjective ontology by blending French post-modernism within a series of white-board drawings using shared metaphors. Subjective ontology offers that the human worldview (reality) is entirely constructed, and can therefore be deconstructed.[14] For this situation, we re-used a metaphor of a tornado due to previous success in conveying some relatively abstract concepts and encouraging subsequent abstract and critical thought about military institutionalism.[15] The tornado itself is a metaphor for what Deleuze and Guattari call their assemblage, or 'war machine.'[16] This phenomenon encompasses the entire transformation of the complex system as time progresses, and interior and exterior knowledge interact.[17] Time moves in a linear manner for us, thus as a tornado forms down from the clouds and moves along a straight yet seemingly chaotic path, it leaves a path (history), engages at a finite point (present), and it's future state is unknown.[18] The tornado metaphor is a useful design improvisation, but would concepts like this help or confuse military planners? In this case, it seemed to help.

Our military organization is capable of producing volumes of detailed description on what has happened in a conflict so far, or reduce components such as numbers of successful improvised explosive device (IED) attacks and enemy casualties down to highly scientific measurements.[19] What our organization prefers not to consider are opposite to the poles of reductionism and detailed description; the synthesist views holistically the entire system as it creates and destroys through interaction across time and space. In our current conflict we spend far less time thinking about the waves of belief flowing through the minds of the Afghan population, and too much time on the situation we are trying to create. These were rather introspective and elusive concepts for military planners to tackle, but our group quickly moved away from tactical considerations and instead began considering more abstract considerations about the Afghan future threat environment. [20]

Seeking 'why' over 'what' became a fixture of our discourse. Figure 1 provides a template of the initial whiteboard drawing that the planning team started with. Again, this is not a procedure on "how to do design- (i.e., step one: draw a tornado…); rather, an example of our particular journey into innovation and discovery. [21] Figure 1 illustrates one approach that worked in this unique situation with our core group.

Figure 1: tornado metaphors for levels of abstraction

Abstraction leads to 'Why'

Our military is uncomfortable at explaining the 'why' at a high level of abstraction to appreciate a complex adaptive system holistically:

- why does the Afghan population resist nationalized organizing concepts?
- why is economic prosperity in 2011 not directly linked to increased security in a region?
- if a western security model is not right, then what model would work better, and why?

Description leads to 'What'

Our military is effective at describing the 'what'- description and detail:

- How many enemy did we capture/kill?
- What is the IED pattern today?
- What is the status of transition in this region?
- Where are the primary insurgent crossing sites?

We began explaining the reflective journey towards meta-cognition (thinking about thinking) and critical/creative consideration using Figure 1 in a very abstract, general perspective before applying Afghan considerations. At first, members of the team found this perplexing. However, given the small size of the group and a process of gradually drawing the group's perspective towards a meta-cognitive one, the team began to accept the concept and move away from tactical rabbit-holes. **[22]** We avoided detailed minutia and categorization of facts and figures. **[23]** Instead, we strove to think bigger, envision broadly a much larger system holistically. This is a design theory strength, yet often a military planning weakness.

Our white-board sessions were iterative, and with each subsequent graphic exercise, members of our team began to hone in on the right harmony of abstraction and bounding for this unique and uncertain Afghan problem. Figure 2 summarizes how our team began to distinguish between overt description within Coalition interiority knowledge and what existed "outside the box" for planners to consider abstractly. Each time a planner attempted to identify a core tension, the team would determine if the tension was indeed a core tension with enough abstraction, or merely a tactical and potentially anecdotal observation that related more to institutionalism and group-think. **[24]** An easy way to frame this process is to determine if the planner is asking a 'what' or a 'why' question.

'Paper Beats Rock; Why Beats What'

Questions dealing with 'what' are ones that lead to description, reductionism, compartmentalization, and linear-causality logic. Our military excels at this method of thinking, and our doctrine builds procedures and linear causality reasoning to reinforce the illusion of progress through body counts, jackpots,

infrastructure projects, and other 'hard data.'[25], [26] A few of the typical 'what' descriptive questions listed below are examples of what-centric thinking that we attempted to steer away from during this planning:

- What terrorist groups will threaten Afghanistan in the future?
- What is the enemy success rate for attacking?
- What threat from neighboring states will threaten Afghanistan in the future?
- What will the Afghan economy produce in the future?
- What will the heroin market and associated criminal activities look like?
- What will the Afghan literacy rate be? Attrition rate? Recruitment rate?
- What is the ratio of enemy actions to enemy losses?

While all of those 'what-centric' questions are useful in other phases of military planning, they generally do not move design practitioners towards generalized appreciation of a dynamic, complex system. Questions that address the 'why' move in the opposite direction away from reductionism and description. [27] Instead, they focus holistically upon more abstract and therefore uncertain concepts. These have been described as making many military professionals distinctly uncomfortable because prescriptive doctrine, reductionist procedures, and over-simplification through quantifying metrics fails to get to 'why' anything occurs in a complex system.[28] However, in our case, the core planning group was very comfortable tackling our wicked problem by considering 'why' Afghanistan is the way it is, and 'why' different futures might form. Figure 1 is a facsimile of our NTM-A CJ5 planner whiteboard drawing from an early planning session. Figure 2 shows the evolution of what the small planning team built upon to iteratively frame some of the core tensions in the Afghan system. Many of the 'why' questions emerge below. [29]

Figure 2: appreciating phenomenon and identifying core tensions
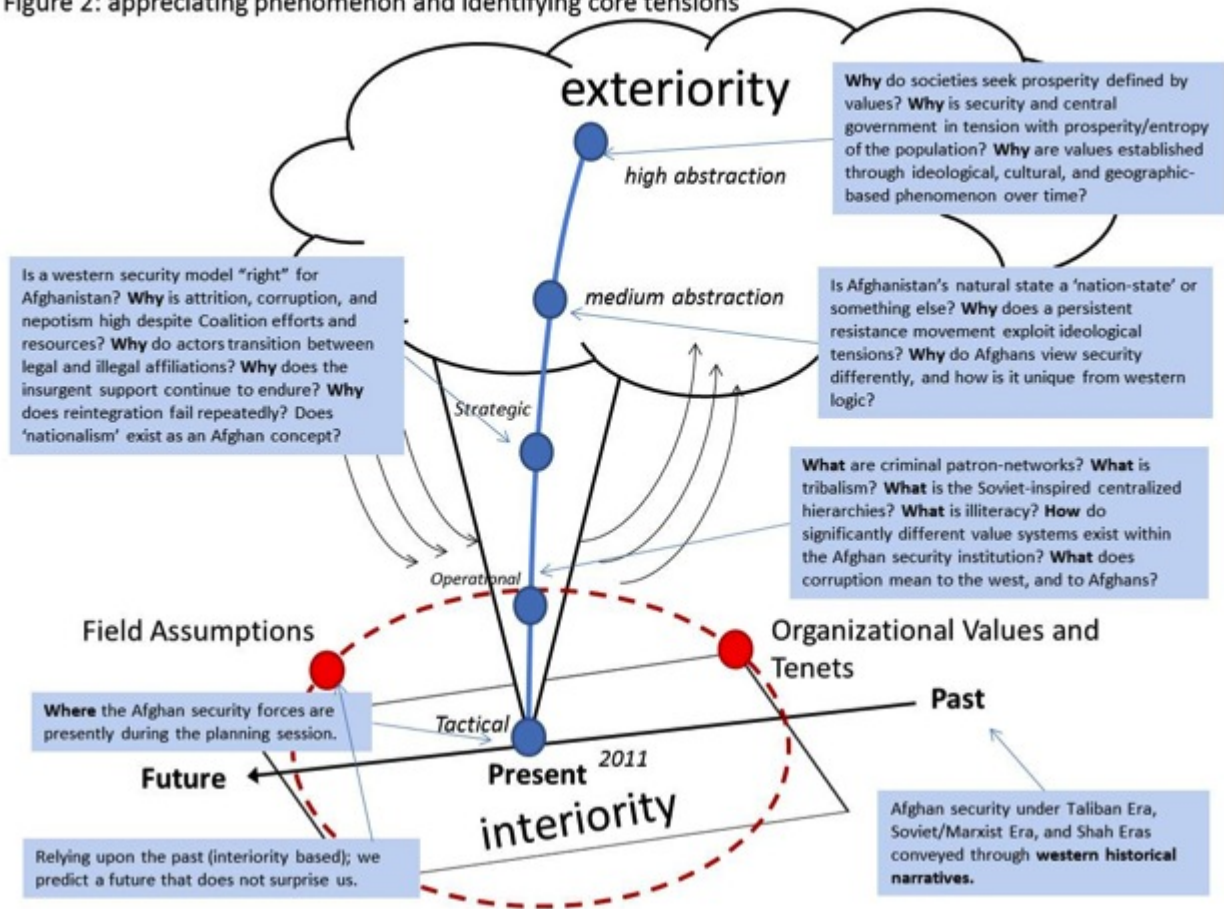
Our planning identified several major tensions that appeared to be primary phenomena that existed within the Afghan security environment in time and space. These phenomena, or tensions, should not be viewed in the reductionist perspective of "good or bad" but from 'instability to steady-state' where even an unstable tension influences a complex adaptive system in myriad ways. These tensions may lead to transformation that eventually accomplishes the objectives of the organization. This is analogous to the Coalition's standing perceptions on the heroin market, radical Islamic ideology, and a democratic Afghan centralized government- we hesitate to question these root metaphors established in our preferred logic and often alienates those that suggest otherwise.[30] Perhaps our very perceptions of what is "good or bad" are flawed? Or perhaps over time, they have changed?[31] Figures 1 and 2 provide useful examples of how our planning team attempted to overcome these root metaphors and fuse design with the more traditional first step of MISSION ANALYSIS. It also provides a cognitive exercise to discard the organizational root metaphors that we identify, to begin to appreciate a complex problem beyond the immediate tactical considerations.

Once again, as a military we are brilliant tactical innovators, but we can often be a very resistant organization when it comes to flexibility and adaptation at the operational and strategic level. [32] Despite these obstacles, our team accomplished DE-TACTICALIZATION sufficiently and moved into the CONTEXTUALIZATION phase.

'Scissors Cuts Paper; Tensions Demonstrate Abstract Appreciation"

Our team identified that at an abstract level, the concepts of national sovereignty, internal Rule of Law,

and both the legitimate and illicit economies were the most significant and influential phenomena observable that would contribute to the security of the Islamic Republic and its people. Those four tensions emerged after vigorous debate on the future threat environment for Afghanistan. Originally depicted horizontally, we determined that the four tensions might visualize better in a 'quad chart' technique that scenario planning often applies. [33]

Quad charts are not doctrinal, but they are frequently used in military planning processes to aid in explaining conceptual or difficult topics to a wide audience. Design rejects 'proceduralization' and embraces persistent innovation across many fields, theories, and schools. The following core tensions graphic is a generic approximation of how the planning team sought to appreciate the future Afghan environment. Tensions are abstract, and therefore the figure below is quite simple; it lacks the intricate and highly detailed composition of most military planning products where PowerPoint slides are crammed with size-8 font text boxes and a kaleidoscope of colorful charts. [34]

Figure 3: identifying the core tensions for ANSF future force
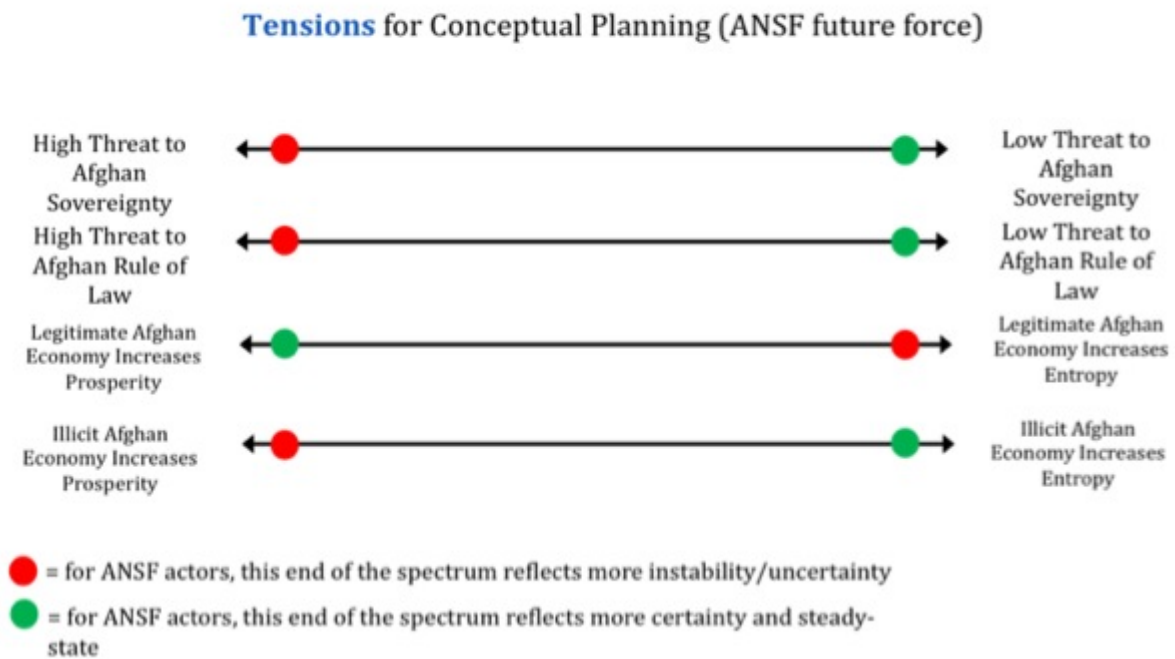
The planning team took the four core tensions from Figure 3 and developed a mutually supportive set of 'quad-charts' in a hybridization of scenario planning methodology. The graphic application of using quad-charts resonated with the planning team, although it is not a defined aspect within any military decision-making process or doctrine. Once again, the planning team broke from doctrine and prior precedent by considering a dual quad-chart concept that helped explain different elements of an emergent state for Afghan Security forces in a future environment.

As these dual quad-charts were developed, the planning team had to take great care when members outside the core team became exposed to the products. Often, when a senior leader inquired to the group's progress, we explained the entire improvisational process rather than simply briefing them the latest dual-quad products. In a few instances where outside members reviewed those products out of context, they had concerns and did not fully understand what the team was doing. This provides an excellent example of what distinguishes planning products from design deliverables. The planning products are explorations in

learning, but not intended for briefing to an audience beyond the planning team. Design deliverables are more polished, and do not have the "here is how we evolved our understanding of this system" feel to them. The deliverables should stand alone, and make sense without the planning team present to walk you through them.   The quad chart examples in this article may be more challenging to understand because they are not supposed to be used as a design deliverable, but the purpose of this article makes their presentation a necessity. The quad charts also demonstrate our team's transition from CONTEXTUALIZATION into PROBLEMATIZATION.

Figure 4: Tension Interaction 1

Quad Chart 1: Scenario Planning Methodology for Anticipated Threat Environments future Afghanistan
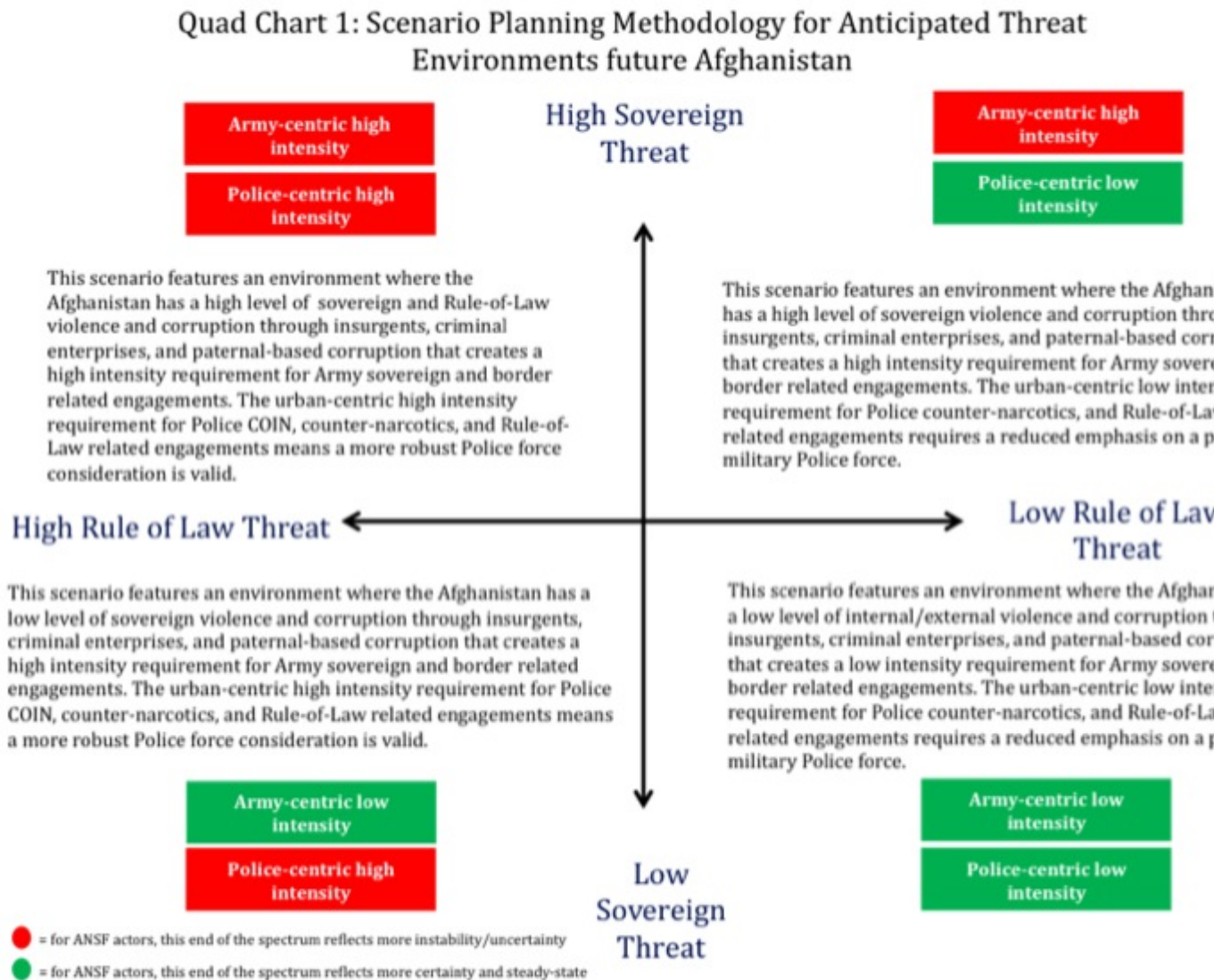
The first quad chart (Figure 4) places the Afghan sovereignty threat (Army-centric) in interaction with the Rule-of-Law threat (Police-centric) threat. These tension overlaps helped our planners discover and improvise a variety of scenarios and future threat environments to consider composite Afghan security forces. Once again, none of these processes or graphic depictions subscribed to military doctrine; they were improvisational and drew from a host of other fields such as scenario planning for inspiration. Design theory encourages improvisation, while military decision making alone often prioritizes doctrinal approaches and repetition instead. Here, fresh perspectives were encouraged and a variety of concepts

were incorporated into novel applications, termed 'bricolage' in organizational theory.[35] This benefited our planning team as we proceeded along in the process.

Continuing the improvisation, our planning team took the remaining tensions comprising the legitimate and illicit economies and developed a second quad-chart that operated in conjunction with the first. Figure 5 illustrates an example of that product which fostered additional understanding and a more holistic synthesis. Figure 5 does lend itself structurally to a more linear approach for the reflective practitioner, however the earlier *'tornado abstraction'* demonstrates the blending of post modernism with military applications in the planning team's overall approach.

Figure 5: Tension Interaction 2

Quad Chart 2: Scenario Planning Methodology for Anticipated Threat Environments future the Afghanistan
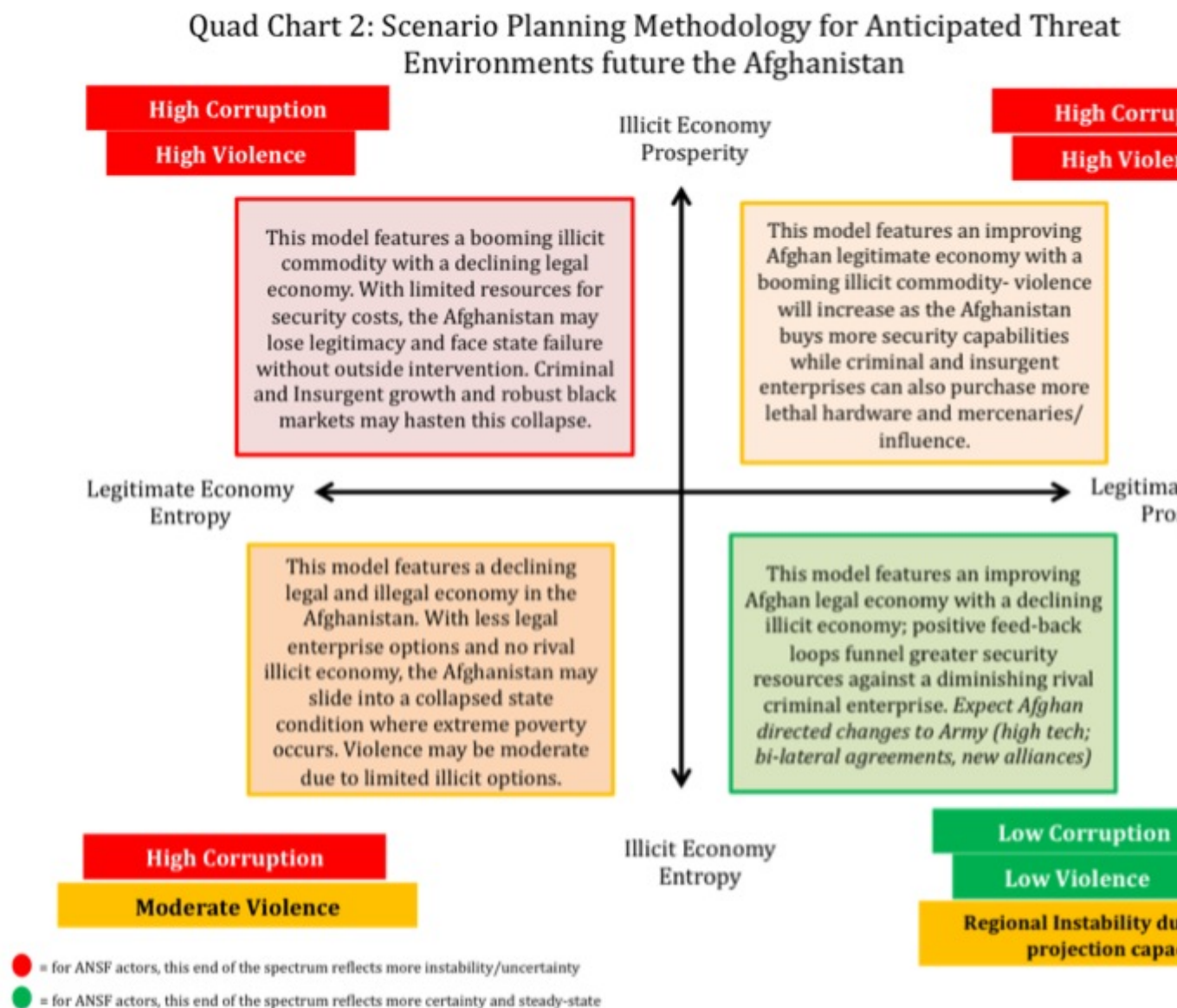
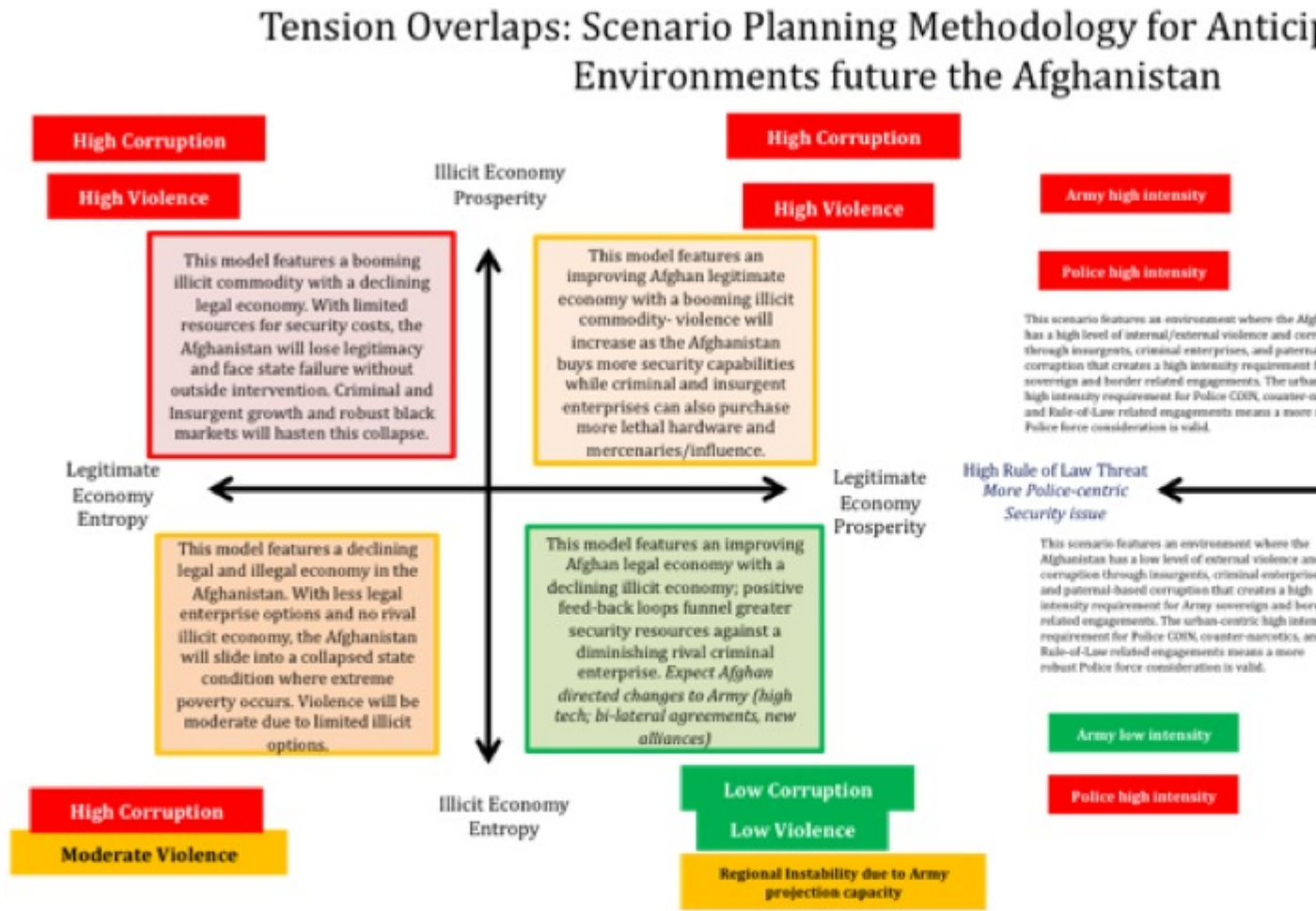Figures 4 and 5 operated together in what the planning team determined were a 'tension-overlap' of two scenario planning quad-charts. This improvisation was another example of unconventional and non-doctrinal processes that the planning team used within a small group to continue to make sense of the uncertain future environment. This addresses the 'why' of critical thinking, and how our design team

recognized an opportunity to improvise away from doctrinal procedures and explore unorthodox approaches. [36]

Figure 6: Tension Overlaps for Conceptual Planning

Tension Overlaps: Scenario Planning Methodology for Antici[...] Environments future the Afghanistan

High Corruption

High Violence

Illicit Economy Prosperity

This model features a booming illicit commodity with a declining legal economy. With limited resources for security costs, the Afghanistan will lose legitimacy and face state failure without outside intervention. Criminal and Insurgent growth and robust black markets will hasten this collapse.

High Corruption

High Violence

This model features an improving Afghan legitimate economy with a booming illicit commodity- violence will increase as the Afghanistan buys more security capabilities while criminal and insurgent enterprises can also purchase more lethal hardware and mercenaries/influence.

Legitimate Economy Entropy

This model features a declining legal and illegal economy in the Afghanistan. With less legal enterprise options and no rival illicit economy, the Afghanistan will slide into a collapsed state condition where extreme poverty occurs. Violence will be moderate due to limited illicit options.

This model features an improving Afghan legal economy with a declining illicit economy; positive feed-back loops funnel greater security resources against a diminishing rival criminal enterprise. *Expect Afghan directed changes to Army (high tech; bi-lateral agreements, new alliances)*

Legitimate Economy Prosperity

Illicit Economy Entropy

High Corruption

Moderate Violence

Low Corruption

Low Violence

Regional Instability due to Army projection capacity

Army high intensity

Police high intensity

This scenario features an environment where the Afg[...] has a high level of internal/external violence and cor[...] through insurgents, criminal enterprises, and paterna[...] corruption that creates a high intensity requirement f[...] sovereign and border related engagements. The urba[...] high intensity requirement for Police COIN, counter-n[...] and Rule-of-Law related engagements means a more r[...] Police force consideration is valid.

High Rule of Law Threat
More Police-centric Security issue

This scenario features an environment where the [...] Afghanistan has a low level of external violence an[...] corruption through insurgents, criminal enterprise[...] and paternal-based corruption that creates a high [...] intensity requirement for Army sovereign and bor[...] related engagements. The urban-centric high inten[...] requirement for Police COIN, counter-narcotics, an[...] Rule-of-Law related engagements means a more r[...] robust Police force consideration is valid.

Army low intensity

Police high intensity

Tension Overlap A:

This aspect of the scenario planning methodology considers the tensions of legitimate and illegitimate economies; any future state for the Afghanistan will feature one combination of this model.
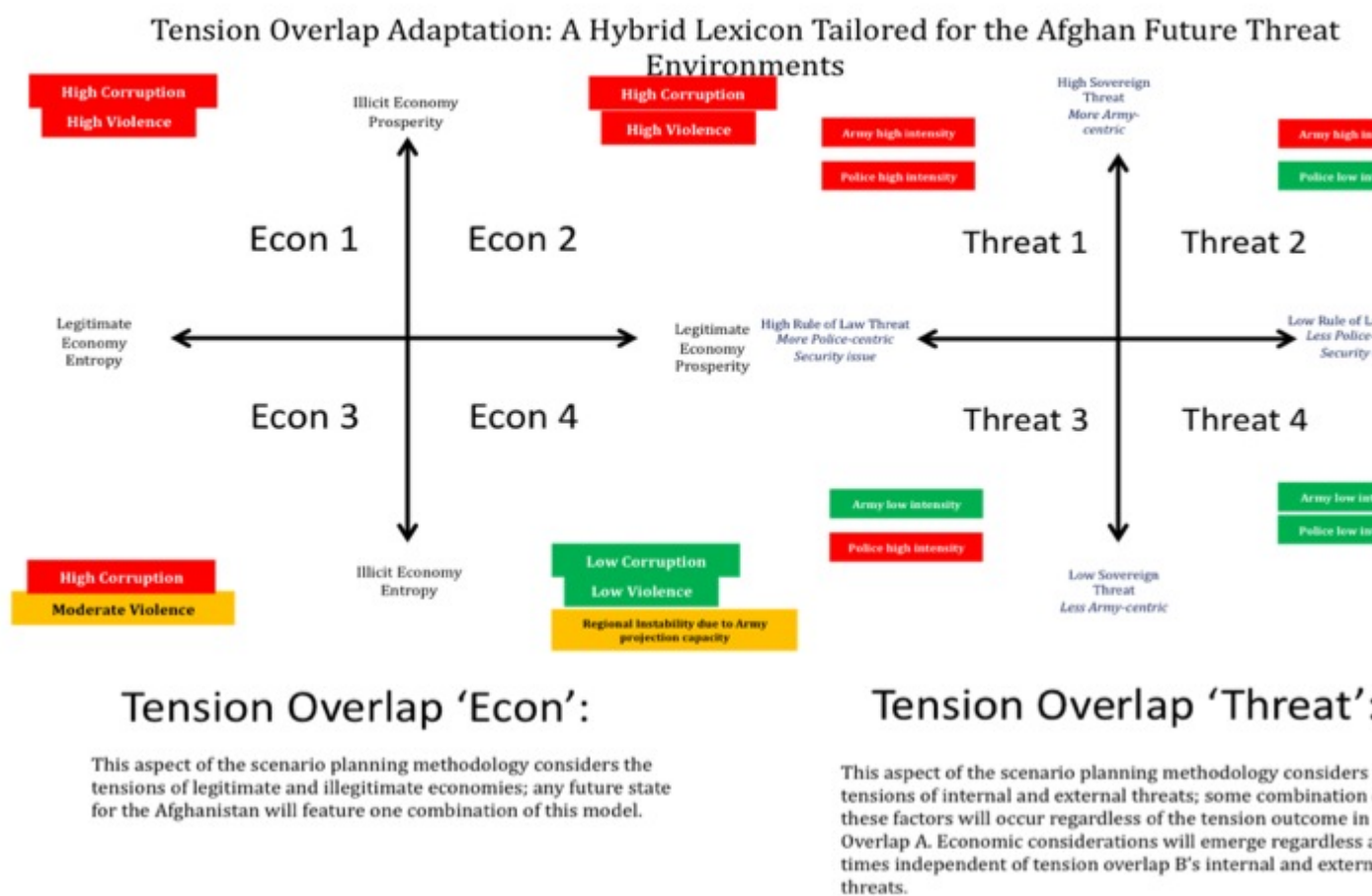
Tensi[...]

This aspect of the scena[...] tensions of internal and [...] these factors will occur [...] Overlap A. Economic co[...] times independent of te[...] Law threats.

In Figure 6, the two quad-charts paired in a symbiotic tension overlap to help explain the breadth of possible future Afghan threat environments. This established a framework for creating the unique wargame environment for each potential Afghan security force composition. These dual quad-charts spanned the range of possible threat environments that intelligence assessments considered as possibly feasible, but shaped the consideration of future environments in a way that facilitated our experimental wargame process. The dual quad-charts enabled us to visualize the four most important dimensions of the

future threat environment in two dimensions by grouping together those dimensions that we considered would have the greatest interaction.

Figure 6 served as an intermediary step for the tension overlap quad-charts to advance into another emergent process for the planning team. Now that our planning team had a shared understanding and conceptual framework, we could adapt our language and narrative to communicate with each other more efficiently to convey new knowledge production and adaptation. [37] Using Figure 6 as a core pillar of our organizing logic, our planning team replaced the narratives within each quadrant with shared symbols to help us improvise with shaping new variations on possible threat environments within the organizing logic of the original core phenomena observed. Figure 7 features a facsimile of the tailored concept that the planning team developed to quickly share innovations and discoveries while understanding what others meant in relation to the core phenomena. For example, a planner might discuss a future environment where the security force faced an 'Econ1/Threat2' model which the planning team could quickly associate with the deeper explanation illustrated in Figures 3, 4 and 5. This allowed planners to quickly navigate conversations across the broad and diverse future threat environment while simultaneously incorporating various fusions of the previous primary phenomena. Again, new concepts and improvisational language reflects the design theory contribution to military planning and how useful it can be when confronted by wicked problems.

Figure 7: Tension Overlaps Adaptation: A Hybrid Lexicon

Tension Overlap Adaptation: A Hybrid Lexicon Tailored for the Afghan Future Threat Environments

Tension Overlap 'Econ':

This aspect of the scenario planning methodology considers the tensions of legitimate and illegitimate economies; any future state for the Afghanistan will feature one combination of this model.

Tension Overlap 'Threat':

This aspect of the scenario planning methodology considers tensions of internal and external threats; some combination these factors will occur regardless of the tension outcome in Overlap A. Economic considerations will emerge regardless times independent of tension overlap B's internal and extern threats.

The conceptual planning work as illustrated in Figures 1-7 illustrate how our planning team attempted to gain sufficient understanding to develop models of tailored Afghan security forces for the range of

uncertain threat scenarios. For instance, planners asked questions such as, "If the future Afghan threat environment features an Econ1/threat3 tension overlap, what composition of Army, Police, and Air Force assets would operate most effectively to accomplish Afghan and Coalition strategic goals?" Figure 8 illustrates the next evolution in the process where planners decided upon five different combinations of the tension overlaps as examples of the future threat environment that would span the breadth of the plausible scenarios. These example futures were then used to envision forces tailored to each of those models. Figure 8 represents an approximation of how this could be done; these sterilized approximations serve as a series of breadcrumbs to mark our intellectual journey. They are but five of many possible approaches in the vast number of possible outcomes, but importantly spanned the breadth of the most plausible given the provided intelligence estimate.

Figure 8: Five Courses of Action Generated through Tension-Overlap Adaptation
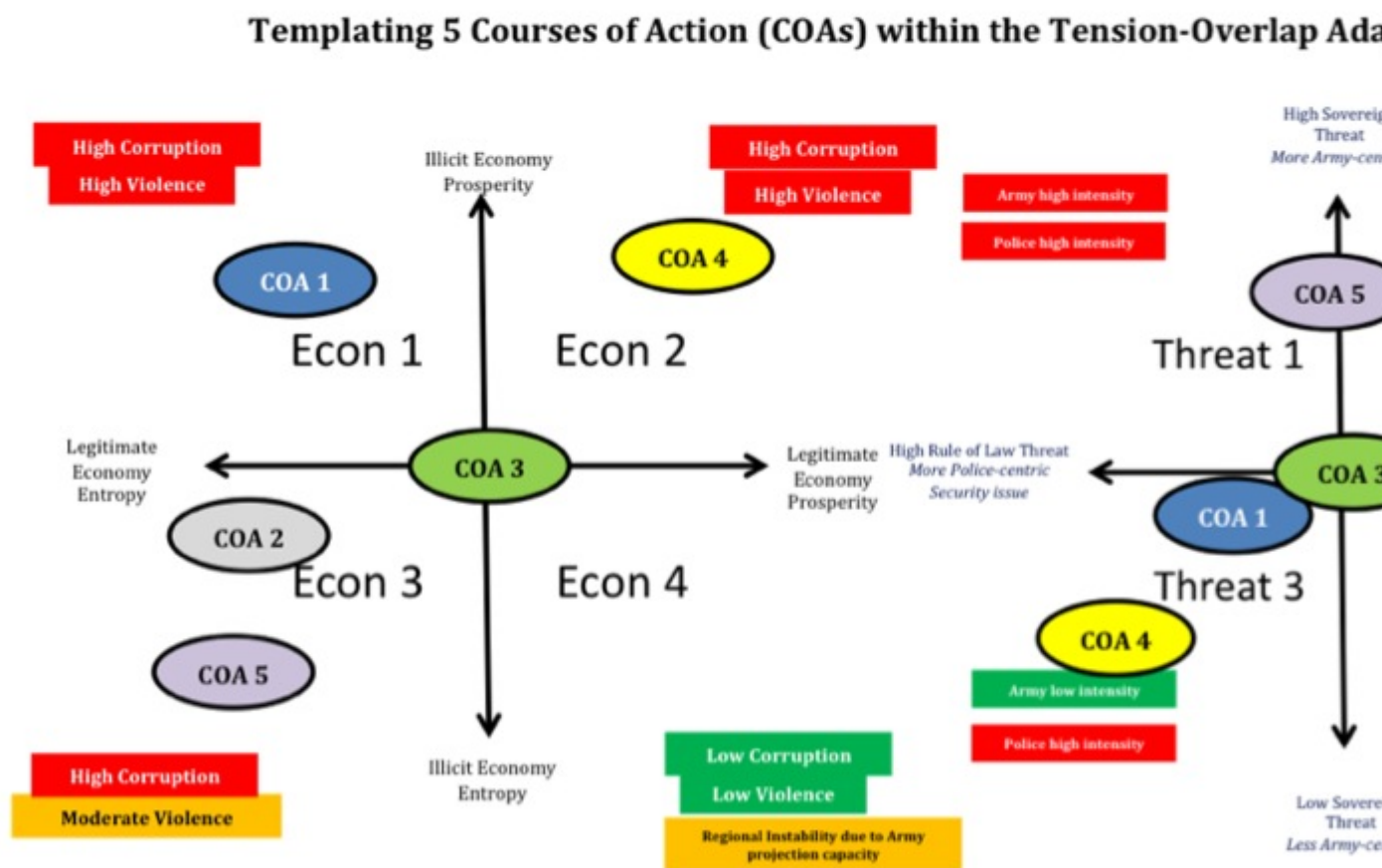
Here we introduce the terminology 'Course of Action' (COA) to describe an approach to a potential threat future. At this stage of the planning we were not developing COAs in the traditional planning sense; rather we conceptually associated that each of the future threat scenarios would evolve towards selection of a force structure most suited to it. Readers may notice that many of the course-of-action combinations clustered along the Econ/Threat 2/3 axis and no combination appeared to utilize the econ/threat 4 quadrant. As our planners explored various tension combinations, we determined that in certain combinations, it became increasingly irrelevant what sort of Afghan security force we developed because any valid security force facing an 'econ4/threat4' scenario would do exceedingly well. This was the 'sunshine and rainbows' band of the future threat spectrum. Similarly, the extremely volatile 'econ1/threat1' scenario was also problematic in that no possible future security force option would

function effectively. We termed this band the 'hell in a hand basket' scenario. As a supplemental planning product, Figure 9 was developed to help our planning team realize these interesting phenomena that the tension-overlap appeared to generate. It aided our planning team in strengthening our organizing logic on why we selected these five particular scenarios against which we would develop five COAs instead of any of the other hundreds of possible combinations. We wanted to illustrate the 'why' instead of merely the 'what.'

Figure 9: How the Tension Overlap Generated a Self-Organizing Logic

Which potential future scenarios are relevant to the Afghan Security Vision?
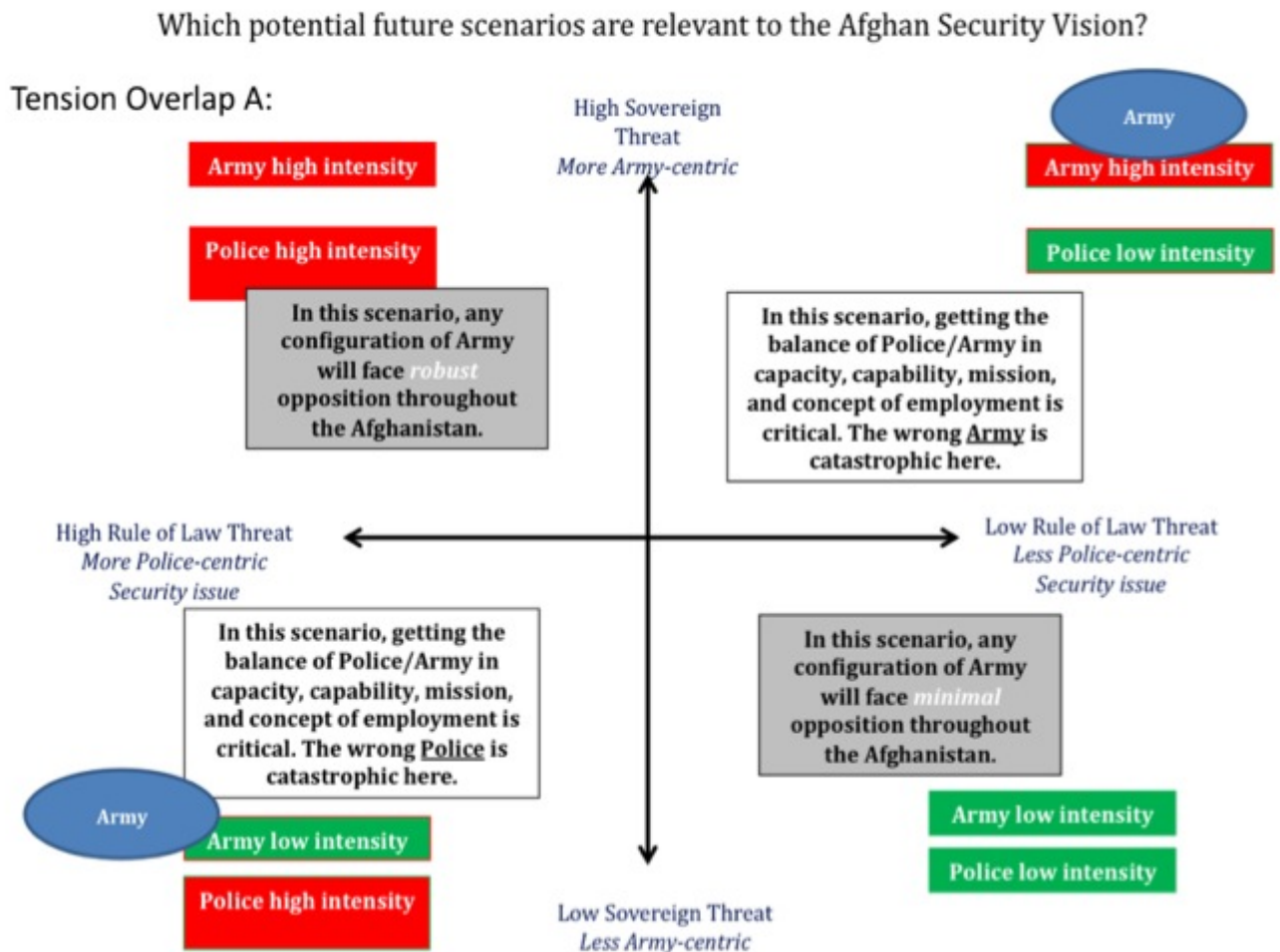
Figure 9 assisted our core planning team as we moved to the next step of developing COAs for each scenario from a variety of 'menu options' of various Army, Police, and Air Force combinations of forces, equipment, and capabilities that were tailored to specific mission requirements. [38] These menu options were another element incorporated into the design process and developed concurrently with the dual-tension quad charts.

'Ordering A la Carte: Security Force Capabilities and Compositions'

Early in the PROBLEMATIZATION phase, each Army, Police, and Air Force planning cell developed, in parallel with the core planning team consideration of tensions, several force concepts that organized according to general planning logic and initial senior leader guidance. Unlike the dual-tension quad charts and post-modern applications which were conceptual, these force concepts provided clear and tangible concepts as building blocks for a future force. These options created packages of force structures for each

service, organized by size and level of sophistication.

For instance, the Army planners had a variety of Army 'menu' options where various force structures considered a small, medium, or large Army force with either a basic, balanced, or advanced level of sophistication.[39] By doing this, Army planners could draw from the menu an Afghan Army force package that was a large and basic force, or opt for an intermediate sized one with advanced capabilities, or some other combination that was most suited to a particular future threat scenario. This coincided for Police and Air Force menu options as well, with Figure 10 illustrating a menu concept.[40] In the actual design concept, each menu option below featured explanation of what the force composition would have in terms of numbers, assets, capabilities, and capacity. Planners could discuss the earlier future threat scenarios (from the dual quad-charts) and then make Army, Police, and Air Force capability and capacity considerations using the menu concept. Together these organizing logics led to our five courses of action, selected by our planning team from literally hundreds of possible combinations.

Figure 10: Sterilized Menu Concept for Force Construction Options

Army, Police, or Air Force Example 'Menu' Options

Size of Force

Level of Sophistication

A1: Smaller force; basic capabilities	**A2:** intermediate force; basic capabilities	**A3:** larger force; basic capabilities	**A4:** Max size force; basic capabilities
B1: Smaller force; intermediate capabilities	**B2:** intermediate force; intermediate capabilities	**B3:** larger force; intermediate capabilities	**B4:** Max size force; intermediate capabilities
C1: Smaller force; advanced capabilities	**C2:** intermediate force; advanced capabilities	**C3:** larger force; advanced capabilities	**C4:** Max size force; advanced capabilities
D1: Smaller force; maximum capabilities	**D2:** intermediate force; maximum capabilities	**D3:** larger force; maximum capabilities	**D4:** Max size force; maximum capabilities

Figure 10 illustrates the menu concept where the planners could assemble a wide variety of security options. Together we tailored that force by considering what combination of Police, Army, and Air Force interacted and mutually supported each other menu option for each of our five threat scenarios. A large yet basic Army might operate more effectively in a particular threat environment, yet due to the size of the basic Army force, the Afghan Air Force menu option that best complements it might be restricted to only the largest Air Force menu options. Similarly, an intermediate-sized Police force with a high level of

sophistication may require the Army menu option to remain a particular size to support the Police in certain mission requirements or national disaster emergency conditions. We were further guided in our selection of force models by an operating concept for the future Afghan security forces.

Figure 11: Sterilized Menu Concept for Army, Police, and Air Force Total Force Construction
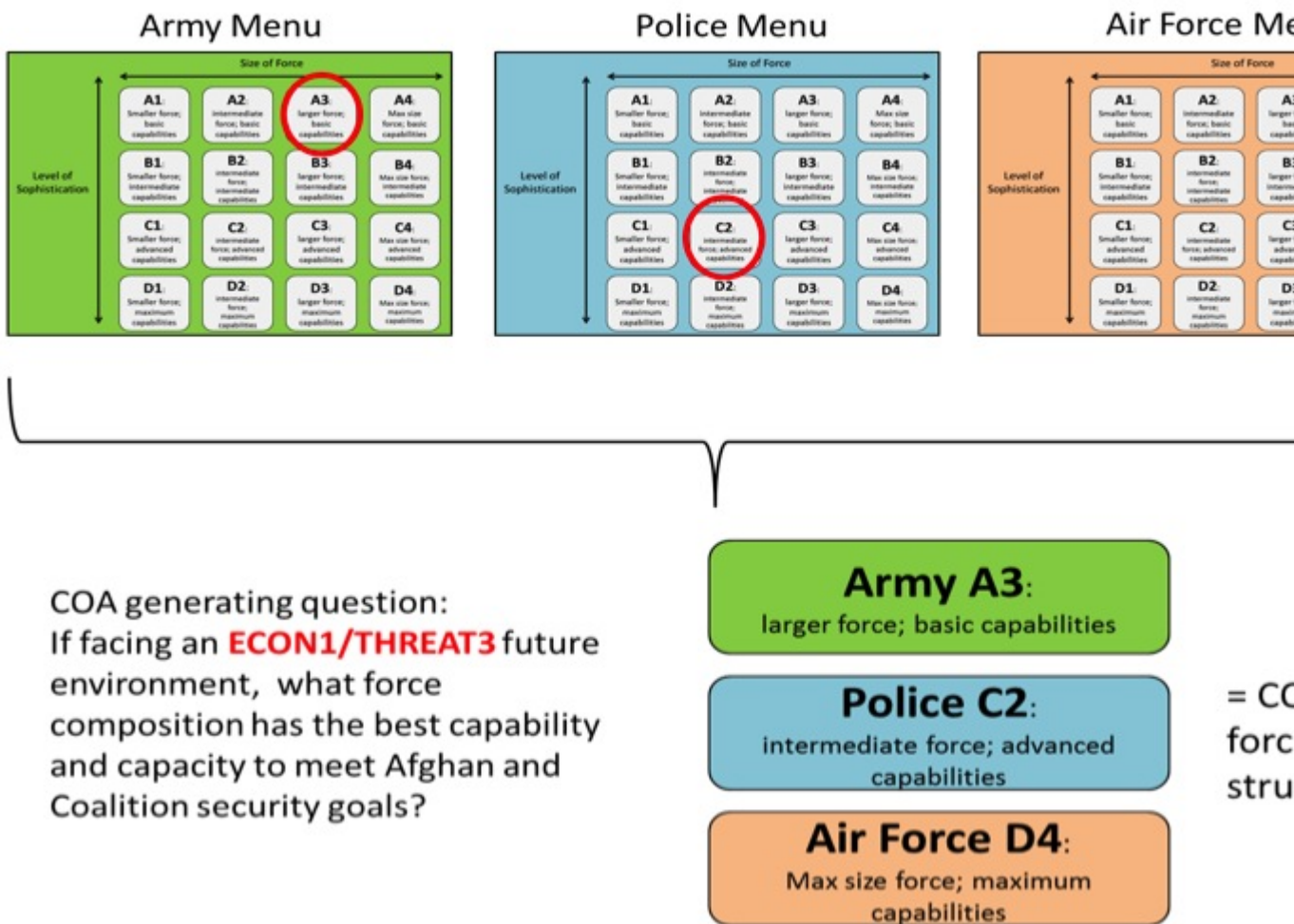

Figure 11 illustrates how each of the menu concepts for Army, Police, and Air Force provided literally thousands of combinations of the Afghan security force. To stimulate planner discussion and focus it on our own future threat scenarios, we used the menu concepts and looked at one particular dual quad-chart combination. In figure 11, course of action 1 (COA 1) takes the economic and future threat quad-chart combination 'ECON1/THREAT1' and presents the question of what Army-Police-Air Force menu combination would be sufficient to accomplish Afghan and Coalition security goals. [41] To illustrate the process, Figure 11 takes a larger basic Army force and pairs it with an intermediate Police force with advanced capabilities, and the largest and most capable Air Force menu option. Planners anticipated that these menu options constituted a sufficient Afghan security force within that particular future threat scenario.

It is significant to note that size and level of sophistication varied across all of the menu options and COA combinations because planners attempted to assemble the sufficient force- not simply the largest or most advanced force available. The Police, Army, and Air Force face different threats and require different capabilities that interact with each other differently depending on the future threat environment.[42]

Returning to our article's facsimile examples from the dual-quad chart process, COA 1 describes threat environment that features a blossoming illicit economy with a faltering legitimate Afghan economy (Econ 1). COA 1 also features a higher 'rule-of-law' threat with a lower sovereign threat than the current threat environment in Afghanistan 2011 (threat 3). The planning team selected specific Army capabilities with assets, form and function based upon an 'Econ1/Threat3' scenario, and then conducted a similar analysis for Police and Air Force. Each course of action thus had uniquely tailored combinations of Army, Police, and Air Force that were best suited for accomplishing strategic goals in a particular future threat environment. This established five courses of action that the planning team could subsequently move to begin analyzing each course of action.

We retained the menu concept throughout the wargame, and continued to adapt and improvise the selected Army, Police and Air Force as the wargame evolved. [43] This methodology, derived from design theory and other fields, fused our group's scenario-planning inspired quad-chart concepts with the force composition menu-concept, and set the conditions for a hybrid military wargame in the IMPROVISATION phase.

At this point, our planning team had used design theory to gain a deeper appreciation of a wicked problem where traditional military decision-making was insufficient. Drawing from holistic and abstract perspectives, we developed a dynamic model and planning logic from which we could subsequently communicate ideas and explore critical features of the future threat scenario for Afghanistan.

In parallel to the core planning team's design theory applications, service planners developed a menu of possible force structures that reflected the tangible resources, numbers, and capabilities of a variety of security force packages. Together, the planning team fused these ideas to choose the five sufficient force structures to continue the wargame process. The challenge now was to identify which force structure was best. We had no way of knowing which future threat scenario was more likely, so we had to apply each force package in a wargame model against each threat scenario. This meant that multiple wargames would occur and each force package would perform against the whole range of future threat scenarios, not just the one it was initially developed against.

In the second part of this two-article series, we explain how our planning team conducted a hybrid wargame session that combined elements of design theory and swarm theory with military wargame doctrine. In particular, swarm theory provided an interesting fusion of non-military considerations where group dynamics and collective decision making relied more on collective intelligence rather than traditional military hierarchical structure and turn-based methodology. After covering the swarm-wargame concept, the second part of this series discusses the design deliverables, and addresses several conclusions on whether design theory helps or hurts military planning overall.

Scissors Cuts Rock: How Design Enhances Military Decision Making

For this first article's focus on military planning leading up to the wargame, I offer the following initial conclusions. Our planning team faced a wicked problem that did not nest well with traditional military decision making alone. The long-range projection and dynamic conflict environment of Afghanistan today makes any forecast into the future problematic, as any military or academic inquiry into a conflict environment would be regardless of setting. Furthermore, existing doctrine and supporting products lacked the necessary customization that this particular problem featured; anticipating multiple threat futures and sense-making the composition and application of a wide assortment of possible Afghan security force solutions required something beyond existing 'on-the-shelf' planning products.

By starting with a small core team, we set the right conditions to introduce non-traditional planning concepts, and drive critical thinking with abstract reflection to perspectives not usually utilized in the

military. Yet some of our approaches involved high levels of uncertainty, and tailoring our approach required a blend of creativity, improvisation, and conscious editing to use what proved useful, and disregard the unnecessary. Introducing abstract and unorthodox concepts requires smaller planning groups with unique vocabulary, concepts, and graphic aids that remain "in-house" for the team to explore together more effectively. As the second part of this article will explain, most of the initial design products should not be mistaken for design deliverables. What makes sense within the planning team should not be forwarded to the larger audience and the decision makers as a final deliverable as it will inevitably cause confusion and doubt.

How our professional military education system approaches design factors in with these conclusions. Improvisation and adaptation drives change, yet our current system features a high degree of codification into doctrine, and we lack the critical editing component of true peer review. Lastly, as this particular wicked problem helps illustrate, generic approaches in military planning lack the essential customization and adaptation that these complex problems require. Part II begins with one such improvisation that led to a more useful wargame output. Yet does our military institution encourage true improvisation in our professional education, or would bee swarms and ant colonies be disregarded in any discussion on military wargame considerations? In this case, NTM-A planners fused design theory with military decision making, and developed planning results that thus far indicate greater utility and understanding than without design fusion.

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[1] The author would like to thank Dr. Christopher Paparone (Colonel, retired, USA), Colonel Ricky Nussio (U.S. Army), Lieutenant Colonel Alistair Dickie (Australian Army), and Major Jason Galui (U.S. Army) for their editing and assistance in preparing this article series.

[2] The examples provided in this article are devoid of any tactical or operationally sensitive material and only provide the conceptual applications of design theory for academic considerations. This is an unclassified account of that planning team's actions, improvisations, and journey to fuse design theory with traditional military decision-making to create a useful output for execution. This article shows one way of applying design theory- one of an infinite variety that transform as our organizational knowledge continues to expand.

[3] Army Doctrine Publication 3-0; *Unified Land Operations,* (Headquarters, Department of the Army, October 2011), 11. As of March 2012, this is the most recent doctrine developed by the US Army and designed to be a 'capstone document' for the US Army at a conceptual level.

[4] Shimon Naveh, Jim Schneider, Timothy Challans, *The Structure of Operational Revolution; A Prolegomena* (Booz, Allen, Hamilton, 2009) 88. According to Shimon Naveh, Army Design doctrine 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: Mats Alvesson, Jorgen Sandberg, *Generating Research Questions Through Problematization* (Academy of Management Review, Vol. 36, No. 2, 2011) 261. "Members have (1) beliefs (2) about attributes of the organization and (3) that these attributes are distinctive, central, and enduring."

[5] Although this might have inhibited group diversity, I found it necessary to share a common language,

shared concepts, and a general understanding of the environment to gain some perspective and consider ideas for the initial core planning group.

[6] For 'wicked problems' concepts, see: Jeff Conklin, *Wicked Problems and Social Complexity* (CogNexus Institute, 2008) **http://cognexus.org/wpf/wickedproblems.pdf** Last accessed 28 January 2012.

[7] Keith Devlin, *The Language of Mathematics,* (New York: W.H. Freeman and Company, 2000) 8. "Indeed, the issue is a deep one, having to do with human cognitive abilities. The recognition of abstract concepts and the development of an appropriate language to represent them are really two sides of the same coin."

[8] James J. Schneider, *Theoretical Implications of Operational Art; On Operational Art*, (Washington: Center of Military History, 1994) 25-29. "The future of operational art depends on today's officer corps understanding the historical and theoretical basis of the concept. Only by knowing what has gone before can it hope to build a doctrine for the future which takes full advantage of the fruits of technology;" See also: Mats Alvesson, Jorgen Sandberg, Generating Research Questions Through Problematization (Academy of Management Review, Vol. 36, No. 2, 2011) 261. "Members have (1) beliefs (2) about attributes of the organization and (3) that these attributes are distinctive, central, and enduring."

[9] By root metaphor, I mean when an organization or field accepts something as true to the point that it cannot be questioned, it is a root metaphor that helps define that organization. See: Mats Alvesson, Jorgen Sandberg, *Generating Research Questions Through Problematization,* (Academy of Management Review, Vol. 36, No. 2, 2011) 254.

[10] Nassim Nicholas Taleb, *The Black Swan,* (New York: Random House, 2007). Taleb's thesis on complexity and unknown radical events (black swans) pairs well with Kuhn's concept of the paradigm shift. See also: Thomas S. Kuhn, *The Structure of Scientific Revolutions, 3rd ed,* (Chicago: University of Chicago Press, 1996).

[11] The Wall Street Journal, *Afghan general sounds alarm on US plan to cut local security forces* (18 February 2012). "Nobody at this moment, based on any type of analysis, can predict what will be the security situation in 2014. That's unpredictable," [Afghan Minister, Gen. Abdul Rahim] Wardak said. "Going lower [in Afghan troop numbers] has to be based on realities on the ground. Otherwise it will be a disaster, it will be a catastrophe, putting at risk all that we have accomplished together with so much sacrifice in blood and treasure."

[12] Jacques Ranciere, *The Ignorant Schoolmaster* (translated by Kristin Ross, Stanford University Press, 1991. Ranciere's thesis centers on intelligence and learning; he argues that all people have equal intelligence, and that once set free to learn on their own, individuals do not need 'masters' or those to spoon-feed them controlled lessons and judge their progress. Instead, one could help another learn something that neither person knows. I consider Ranciere's work highly compatible with the concepts of interiority and exteriority with knowledge.

[13] Gilles Deleuze, Felix Guattari, (translated by Brian Massumi) *A Thousand Plateaus; Capitalism and Schizophrenia* (Minneapolis: University of Minnesota Press, 1987), 360. "The State-form, as a form of

interiority, has a tendency to reproduce itself, remaining identical to itself across its variations and easily recognizable within the limits of its poles…" Deleuze and Guattari's concepts of interiority and exteriority form assemblages which constantly interact. "It is in terms not of independence, but of coexistence and competition *in a perpetual field of interaction*…" The state-form correlates to the military institution, whereas their assemblage concept termed a 'war machine' relates to the meta-themes of human conflict and force of will through violence or obedience/submission.

[14] Post-modernism often is a challenging series of concepts to incorporate into military fields; this article cites a variety of sources that serve as a good starting point for considering philosophies, logics, and worldviews that differ radically from the traditional Clausewitzian military perspective where war is an extension of politics and all human conflict falls within Clausewitz's trinity.

[15] Ben Zweibelson, *Breaking Barriers to Deeper Understanding: How Post-Modern Concepts Are 'Value-Added' to Military Conceptual Planning Considerations* (Small Wars Journal, 21 September 2011) **http://smallwarsjournal.com/jrnl/art/breaking-barriers-to-deeper-understanding-how-post-modern-concepts-are-%E2%80%98value-added%E2%80%99-to-mil** Last accessed: 25 February 2012). I re-applied the tornado metaphor and graphic for our planning team based on previous unclassified work I did for this article. Although select planners received it well for our team, blogger comments at SWJ indicate that the tornado metaphor is not entirely useful for explaining these highly abstract design concepts.

[16] Deleuze, Guattari, 351. Deleuze and Guattari discuss their concept of 'the war machine' and differentiate two rival forces that are "at once antithetical and complementary, necessary to one another…their opposition is only relative; they function as a pair."

[17] Gilles Deleuze, Felix Guattari, (translated by Brian Massumi) *A Thousand Plateaus; Capitalism and Schizophrenia* (Minneapolis: University of Minnesota Press, 1987) 361. "The model is a vortical one; it operates in an open space throughout which things-flows are distributed, rather than plotting out a closed space for linear and solid things."

[18] I used the dark and swirling clouds of a storm system above the ground to represent the uncertain exteriority while the flat terrain represents our interiority. Our institution could use road maps to navigate on the ground within their 'known' knowledge, while things not on the map were obscured beyond the ever-changing cloudscape above.

[19] Gerald M. Weinberg, *Rethinking Systems Analysis and Design,* (Boston: Little, Brown and Company, 1982),121. "Reduction is but one approach to understanding, one among many. As soon as we stop trying to examine one tiny portion of the world more closely and apply some close observation to science itself, we find that reductionism is an ideal *never* achieved in practice." See also: Hayden White, *Tropics of Discourse; Essays in Cultural Criticism,* (Baltimore: The John Hopkins University Press, 1978)

[20] Nassim Nicholas Taleb, *The Black Swan.* (New York: Random House, 2007), 69. "We, members of the human variety of primates, have a hunger for rules because we need to reduce the dimension of matters so they can get into our heads."

[21] Jeff Conklin, *Wicked Problems and Social Complexity* (CogNexus Institute, 2008. http://www.cognexus.org (accessed 05 January 2011) 4. "Traditional thinking, cognitive studies, and the

prevailing Design methods all predicted that the best way to work on a problem like this was to follow an orderly and linear 'top-down' process, working from the problem to the solution." Design does not embrace a particular method, procedure, or theory; design is essentially an ever-changing and adapting bricolage of various theories, with fusion and discovery generating unexpected new directions and perspectives.

[22] Ervin Laszlo, *The Systems View of the World; a Holistic Vision for Our Time,* (New Jersey, Hampton Press, 1996) 2; See also: Ahl, Allen,1. "In all ages humanity has been confronted by complex problems. The difference between then and now is that contemporary society has ambitions of solving complex problems through technical understanding."

[23] Gary Jason, *Critical Thinking: Developing an Effective System logic,* (San Diego State University: Wadsworth Thomson Learning, 2001) 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."

[24] Ervin Laszlo, *The Systems View of the World; a Holistic Vision for Our Time.* (New Jersey, Hampton Press, 1996) 40. "There is coordination in the behavior of all systems, and an overall pattern sooner or later emerges."

[25] Shimon Naveh*, In Pursuit of Military Excellence; The Evolution of Operational Theory* (New York: Frank Cass Publishers, 2004) 220. "Due to a traditionally non-systematic approach in the area of learning and assimilation of operational lessons, field leaders and staff officers lacked uniform conventions in both planning and analysis…in most cases the learning process focused exclusively on the tactical field and technical issues."

[26] The term 'jackpot' is a slang military term used for 'high value' capture/kill operations; however there are concerns over the clarity of this term. See: Alex Strick van Linschoten and Felix Kuehn, *A Knock on the Door: 22 Months of ISAF Press Releases* (Afghanistan Analysts Network, October 12, 2011). **http://aan-afghanistan.com/index.asp?id=2152** Last accessed: March 22, 2012.

[27] Ervin Laszlo, *The Systems View of the World; a Holistic Vision for Our Time.* (New Jersey, Hampton Press, 1996) 16. "Systems thinking gives us a holistic perspective for viewing the world around us, and seeing ourselves in the world." See also: Valerie Ahl and T.F.H. Allen, *Hierarchy Theory: A Vision, Vocabulary, and Epistemology* (New York: Columbia University Press, 1996), 18. "Meaning, and explaining the "why" of a phenomena, come from the context. The lower-level mechanics, the "how" of the phenomena, have nothing to say about "why."

[28] Gerald M. Weinberg, *Rethinking Systems Analysis and Design,* (Boston: Little, Brown and Company, 1982),121. "Reduction is but one approach to understanding, one among many. As soon as we stop trying to examine one tiny portion of the world more closely and apply some close observation to science itself, we find that reductionism is an ideal *never* achieved in practice." See also: Hayden White, *Tropics of Discourse; Essays in Cultural Criticism,* (Baltimore: The John Hopkins University Press, 1978) 6. "Rational or scientific knowledge was little more than the truth yielded by reflection in the prefigurative modes raised to the level of abstract concepts and submitted to criticism for logical consistency, coherency, and so on."

[29] For critical thinking (problematization), see: 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. Published online at: **http://foucault.info/documents/parrhesia/** (accessed 16 December 2010).

[30] Mats Alvesson, Jorgen Sandberg, *Generating Research Questions Through Problematization,* (Academy of Management Review, Vol. 36, No. 2, 2011), 257. Alvesson and Sandberg identify 'field assumptions' and 'root metaphors' as theoretical concepts within an organization's preferred manner of viewing the world that are "difficult to identify because "everyone" shares them, and, thus, they are rarely thematized in research texts."

[31] Azeem Ibrahim, *Afghanistan's Way forward Must Include the Taliban,* (Los Angeles Times Opinion Online; 09 December 2009; **http://articles.latimes.com/2009/dec/09/opinion/la-oe-ibrahim9-2009dec09** (accessed February 2011) Ibrahim quotes General McChrystal's opinion on the past decade in Afghanistan, "looking at the war in simplistic Manichaean terms—save as many good guys as possible while taking out as many bad guys as possible—was a mistake." McChrystal appears to be identifying a root metaphor within ISAF that shaped a decade of planning as a false one.

[32] John Nagl, *Learning to Eat Soup with a Knife; Counterinsurgency Lessons From Malaya and Vietnam* (Chicago: The University of Chicago Press, 2002) 9. "Military organizations often demonstrate remarkable resistance to doctrinal change as a result of their organizational cultures. Organizational learning, when it does occur, tends to happen only in the wake of a particularly unpleasant or unproductive event." See also: Alex Ryan*, The Foundation For An Adaptive Approach; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 70. "With the industrial revolution, the planning and decision-making process gradually built up a well-oiled machine to reduce reliance on individual genius."

[33] The Economist, *Idea: Scenario Planning* (The Economist online; 01 September 2008) **http://www.economist.com/node/12000755** last accessed: 25 February 2012. The Economist provides an excellent summary article on scenario planning and provides some useful sources. "Scenario planning draws on a wide range of disciplines and interests, including economics, psychology, politics and demographics."

[34] Gerald M. Weinberg, *Rethinking Systems Analysis and Design* (Boston: Little, Brown and Company, 1982) 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…" Our western military culture, particularly the US Army, seeks to fill slide presentations with massive amounts of detail that are often descriptively overwhelming yet fail to address the 'why.'

[35] Eva Boxenbaum, Linda Rouleau, *New Knowledge Products as Bricolage: Metaphors and Scripts in Organizational Theory*, (Academy of Management Review, Vol. 36, No. 2, 2011) 280-281. Bricolage is "an assembly of readily available elements."

[36] While combining two quad-charts into a symbiotic application presented a novel approach, our planning team acknowledged that the design deliverable would ultimately not feature many of these

concepts and graphics. These products represented the process, and not the result of the design effort.

[37] Our planning team consisted of several NTM-A staff planners with either an advanced planning school background or strategic planner branch designation, with a wide assortment of military and police professionals, as well as logisticians and intelligence specialists. Our Coalition provided a unique dispersion of personnel hailing from a half-dozen partner nations. With half of the group being law enforcement officers instead of military professionals, our planning group had a very diverse and dynamic composition that proved to be an advantage for improvisation and unique perspectives.

[38] Again, all of the assessments, graphics, and examples in this article series are mock examples and have no relation to actual findings of the planning team due to security considerations.

[39] Small, medium or large when compared to the large 352,000 personnel ANSF force originally planned for and resourced.

[40] Like all graphics in this article series, figure 10 is a simplified facsimile for security reasons.

[41] It is important to note that we deliberately did not consider the 'best' combination; rather we considered what combination would be minimally sufficient to achieve the goals of providing for the security of the Afghan government and its people.

[42] Selecting the largest Army menu option across every COA did not work, nor does selecting the most advanced. This also went for each of the many Police and Air Force menu options. In the mock example with Figure 11, 16 options across three security forces equals 4,096 possible combinations. It is entirely unrealistic for any planning team to attempt to evaluate that many courses of action; thus design theory contributed to selecting the most applicable COAs.

[43] In some cases, we collectively changed a COA force construct by switching menu options or tailoring two of them to meet emergent trends. This allowed us to continue progressing without losing valuable COA developments, and helped our team generate emergent COA options that best explained the cognitive synergy our group achieved during the wargame.

About the Author

Ben Zweibelson

Major Ben Zweibelson is a US Army Infantry Officer with over 18 years of combined service. A graduate of the School of Advanced Military Studies, he is currently deployed to Afghanistan. Ben recently co-authored a design chapter with fellow SJW author Major Grant Martin for Dr. Chris Paparone's upcoming book 'The Sociology of Military Science Prospects for Postinstitutional Military Design' that will be published by Continuum Books in November 2012.

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