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14. ABSTRACT

Military doctrine has incorporated design at the joint and service levels to help commanders deal with complex and uncertain military problems. Despite the doctrinal changes, Marine Corps training and education has not institutionalized a competency for intelligence Marines on design teams. Without institutional training and education objectives for design, intelligence Marines' performance on design teams is likely to be inconsistent. This paper is an analysis of whether the Marine Corps training and education should evolve to include design-specific knowledge, skills, and attitudes (KSA) for intelligence. Subject matter expert interviews revealed a range of KSAs that may inform an institutional competency for intelligence Marine participation in design teams.

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TITLE: A Competency for Marine Corps Intelligence in Design

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EXECUTIVE SUMMARY

Title: A Competency for Marine Corps Intelligence in Design

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Thesis: Intelligence Marines perform a unique role on design teams and institutionalizing this competency through training and education is a combat imperative.

Discussion: Military doctrine has incorporated design at the joint and service levels to help commanders deal with complex and uncertain military problems. Despite the doctrinal changes, Marine Corps training and education has not institutionalized a competency for intelligence Marines on design teams. Without institutional training and education objectives for design, intelligence Marines' performance on design teams is likely to be inconsistent. This paper is an analysis of whether the Marine Corps training and education should evolve to include design-specific knowledge, skills, and attitudes (KSA) for intelligence. Subject matter expert interviews revealed a range of KSAs that may inform an institutional competency for intelligence Marine participation in design teams.

Conclusion: The operational environment is increasing in uncertainty and complexity. Military doctrine has evolved significantly in the last two decades to improve problem-solving by incorporating design as an iterative activity that augments planning. Marine intelligence doctrine remains focused on managing intelligence operations to support planning. The training and education system have not yet assimilated a unique competency required for intelligence Marines on design teams. This research reinforces the hypothesis that a new competency is required for intelligence Marines to successfully participate on design teams. Incorporating theses KSAs is not without risk, yet it is a combat imperative.

DISCLAIMER

OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT

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Preface

My decision to research design and intelligence stems from my desire to better understand the difference between design and planning and to understand how the service can improve intelligence Marines' performance on design teams.

I am grateful to my mentor, Dr. Anne-Louise Antonoff, whose patience and mentorship were integral to this effort. I am forever indebted to my wife, Courtney, whose loyalty and support have allowed me the opportunity pursue my career interests and who always keeps me aware of what really matters.

This paper explores the space between design and intelligence. Military doctrine has incorporated design at the joint and service levels to help commanders deal with complex and uncertain military problems. Despite the doctrinal changes, Marine Corps training and education has not institutionalized a competency for intelligence Marines on design teams. Without institutional training and education objectives for design, intelligence Marines' performance on design teams is likely to be inconsistent. This paper is an analysis of whether the Marine Corps training and education should evolve to include design-specific knowledge, skills, and attitudes (KSA) for intelligence. Subject matter expert interviews revealed a range of KSAs that may inform an institutional competency for intelligence Marine participation in design teams. In the end, this research finds that intelligence Marines do perform a unique role on design teams and argues that institutionalizing this competency through training and education is a combat imperative.

1. Background

As a decision-making process, 'design' began surfacing in the US military planner's lexicon in 2005.[1] Derived from the work of Brigadier General (Retired) Shimon Naveh of the Israeli Defense Force, there have since been a range of joint force and service-level efforts to apply systems theory and systems thinking to the military art of solving complex, ill-defined problems. In 2006, John Schmitt produced a white paper on design for the US Marine Corps that proposed "an iterative, conversational design process based on systems thinking… to build a systemic understanding of the situation."[2]

Marine Corps intelligence is simultaneously a function, an activity, and a product. Its main purpose "is to support the decisionmaking [sic] process."[3] As a warfighting function,

intelligence is a "grouping of like activities" that improve the commander's understanding of the adversary and operating environment.[4] As an activity, intelligence operations include "collection, processing, exploitation, evaluation, integration, analysis, and interpretation of available information about the battlespace and threat."[5] As a product, intelligence is knowledge developed through intelligence operations specifically "in support of commander's decision-making [sic]."[6]

This paper explores the space between design and intelligence. It is obvious from the Marine Corps' planning doctrine that intelligence is critical to both planning and design activities. The IPB process is purpose-built to support planning, but as a rote analytical process it seems contradictory to what design teams require from critical and creative thinking, hypothesis generation, conceptual planning, and visualization to form a systems-based appreciation of a complex problem.

2. Problem Statement

Today's military operating environment is complex and uncertain. It is more complex and uncertain than operating environments of the past, and it will continue to increase in complexity and uncertainty in the future. According to then Chairman of the Joint Chiefs of Staff, General Joseph Dunford,

> Advancements in space, information systems, cyberspace, electronic warfare, and missile technology have accelerated the speed and complexity of war. As a result, decision space has collapsed, and we can assume that any future conflict will involve all domains and cut across multiple geographic regions.[7]

Decisiveness in spite of these conditions is a tenet of the Marine Corps' Maneuver warfare doctrine.[8] As the service updates its operating concepts in response to the 2018 National Defense

Strategy,[910] the Marine Corps needs to evaluate the functional concepts that support Maneuver warfare. Specific to this research is an evaluation of how the Marine Corps can improve its concept for intelligence to support decision-making in an increasingly complex and uncertain environment.

According to then Secretary of Defense James Mattis, "The international situation is the most complex and demanding that I have seen in all my years of service."[11] The 2018 National Military Strategy also "acknowledges an increasingly complex global security environment."[12] Marine Corps Doctrinal Publication 1 (MCDP 1) describes war as a competition between opposing wills where each belligerent is a complex system made of layers of distinct, individual sub-systems.[13] Each system and sub-system accommodate unique variables, uncertainty, and interdependencies. This complexity lends to the nonlinear characteristics of war wherein system inputs and outputs cannot be mapped by linear, causal relationships.

Maneuver warfare doctrine describes uncertainty as another inherent attribute of warfare and military operations. Instead of certainty and predictability, war is fraught with inconstancy and irregularity that make complete understanding unachievable. This uncertainty is attributed to the complexity and nonlinearity of the battlefield.[14] In this environment, commanders must make decisions to prompt military action in pursuit of military objectives. Supporting these decisions in this environment is the role of the Command and Control (C2) warfighting function.

The C2 warfighting function “encompasses all military functions and operations”[15] and it is “about making and executing decisions.”[16] Military decisions are made in competition with a dynamic adversary and in an inconstant environment; as a result, "there is no perfect solution to any battlefield problem."[17] The C2 concept accounts for two models of how decisions are made: intuitive and analytical.[18] Though the two approaches are distinguished by how a decision-maker

chooses a course of action, the concept acknowledges that while "the approaches to decisionmaking [sic] are conceptually distinct, they are rarely mutually exclusive in practice."[19]

Planning is a C2 activity that supports decision-making. In the face of complexity and uncertainty, planning efforts attempt to achieve "a common understanding about the situation."[20] In 2009, General James Mattis identified that the contemporary procedural planning processes were insufficient to solve the complex, ill-structured problems that decision-makers face in an uncertain environment.[21] The *Vision for a Joint Approach to Operational Design* described the challenge best:

> How does the Commander understand the operational environment; frame a complex, ill-structured problem; design a broad, operational approach that gives direction to planning; and know how to adjust the approach when circumstances change in order to achieve objectives and accomplish the assigned mission?[22]

Acknowledging this shortfall, the Marine Corps Planning Process (MCPP) incorporated design to better deal with complexity. As stated in MCWP 5-10, "The goal of design is to achieve understanding gained largely through critical thinking and dialogue – the basic mechanism of design. The ability to address complex problems lies in the power of organizational learning through design."[23]

Nonetheless, a review of Marine Corps Task Lists, Training and Readiness Manuals, and Military Occupational Specialty Manual provides limited guidance or direction for how to prepare Marines to participate on design teams. This paper attempts to fill this doctrinal and organizational gap to support consistent, professional intelligence participation on commander's design teams.

3. Design

Design is touted across joint force doctrine and other documents as an answer to the complexity of military problems in the contemporary operating environment.[24] Beginning in 2005, US Army and Marine Corps planners began to identify the limited applicability of available planning processes to manage complex military problems. The Military Decision-making Process, like the Marine Corps Planning Process, is "effectively a tactical problem solving process… [it] assumes the mission has already been formulated and the tactical problem has already been adequately framed."[25]

Early advocates of Systemic Operational Design advocated for a new approach to planning campaigns at the operational level of war.[26] This approach seeks to update operational art with the application of a systems approach. It argues that "operational art includes a need to place the problem in the broader (geo-political) context before developing campaign design and subsequently informing the planning process."[27] First introduced as early as 1982 in US army doctrine,[28] the joint force has iterated on the application of systems approach to operational art for decades.

Design Doctrine

The doctrine for Operational Design in Joint Publication 5-0 *Joint Planning* describes design as "one of several tools available to help the JFC [joint force commander] and staff understand the OE [operational environment] and develop broad solutions for mission accomplishment and understand the uncertainty in a complex OE."[29] Operational Design is a "continuous and cyclical" methodology made up of four components: understand strategic guidance, understand the operating environment, define the problem, and the operational

approach.[30] In understanding the operational environment, the joint doctrine suggests a wholistic understanding through a systemic approach, specifically the Joint Intelligence Preparation of the Operational Environment (JIPOE). The JIPOE process is "a comprehensive analytic tool to describe all aspects of the OE relevant to the operation or campaign."[31] The JIPOE's holistic view is intended to focus on the relationships, interdependencies, and tendencies of friendly, adversary, and neutral systems "that directly or indirectly affect the problem at hand."[32]

The Marine Corps' formal adoption of design as "a fundamental responsibility of command" was codified in the 2010 Marine Corps Warfighting Publication (MCWP) 5-10 (formerly MCWP 5-1), *Marine Corps Planning Process.*[33] MCWP 5-10 describes design as a continuous process that hopes to "achieve a greater understanding of the environment and the nature of the problem in order to identify an appropriate conceptual solution."[34] In design, the Commander employs a design team through discourse. The supporting logic contends that a design team can "foster a collective level of understanding not attainable by any individual."[35] The design team continues its work throughout the planning-execution-assessment continuum, always looking to improve the commander's conceptual understanding of the problem.

According to MCWP 5-10, the design team uses critical thinking, discourse, and information about operational factors to raise the commander's understanding of the environment. Among the sources of information considered useful to the design team is intelligence, specifically products from the Intelligence Preparation of the Battlespace (IPB) process. With this contextual understanding and a military objective or mission, the doctrine suggests that "participants engaged in design can determine a desired future state."[36]

While MCWP 5-10 is elusive in its description of design when compared to the joint doctrine, the more contemporary Marine Air-Ground Task Force (MAGTF) Staff Training

Program (MSTP) 2017 pamphlet *Marine Corps Design Methodology* provides a practical reference. MCWP 5-10 *Marine Corps Planning Process* makes limited mention of the systems approach necessary for design, instead focusing on the role of critical and creative thinking, discourse, visualization, and hypothesis generation. The MSTP pamphlet describes the design methodology as consisting of "four distinct actions": 1) Describe the Current and Desired States of the Operating Environment, 2) Define the Problem Set, 3) Produce the Operational Approach, and 4) Reframe throughout Planning and Execution.[37]

While both the MSTP pamphlet and the joint doctrine both advocate for a systems approach to problem setting, there are two important distinctions. First, the MSTP pamphlet suggests that design is applicable at any level of planning, regardless of the problem's complexity. Second, where the joint doctrine describes operational design as distinct from operational planning, the Marine Corps approach embeds design in the planning process. The implication for design in the Marine Corps is that commanders and staffs at all levels need to be proficient in a systemic approach to solving complex military problems.

Design Teams

The Marine Corps design doctrine is clear that design is a collective effort. While joint and service doctrine offer few details on the makeup of a design team, the School of Advanced Military Studies' (SAMS) *Art of Design* is pointed in its observation that "design, then, is ideally done by a design team."[38] The design team "enables the commander to leverage the collective intellect of his staff and subordinate commanders."[39] Schmitt reinforces that design should be limited in size and exists to "to produce in the commander the insight that activates intuition."[40] Schmitt suggests that design team members should have a stake in ultimate execution of the plan,

and highlights the advantage of team member diversity in thought and experience. Beyond this broad description of the design team, the literature is scattered with descriptions of knowledge, skills, and attitudes required of design team members.

4. Competency for Design Team Members

Military design doctrine offers a starting point for identifying a competency necessary to perform on a design team. The NAVMC 1553.1A, *Marine Corps Instructional Systems Design/Systems Approach to Training and Education Handbook* defines competencies as "a specific range of KSAs [knowledge, skills, or attitudes] expected of an individual Marine" to perform a given job, in this case the job of a design team member.[41] While the KSA framework is used specifically in NAVMC 1553.1A for learning analysis in instructional design, it is useful in this context to categorize the range of KSAs described in the design literature. While not intended to be a comprehensive list, this review attempts to highlight the KSAs that are repeated across the design doctrine and military literature to build a design-specific competency for Marines on design teams.

Knowledge[i]

The *SAMS* student text *Art of Design* identifies history, theory, doctrine, philosophy, and practice as five pillars that are "useful in design education."[42] From this we can extract four domains of knowledge that are useful for a design team member. The benefits extend beyond acquiring information to gaining a broader worldview.

[i] NAVMC1553.1A, 5-5. Information required to develop the skills for effective accomplishment of the jobs, duties, and tasks. Knowledge involves storing and recalling information and refers to the learning of names, facts, processes, and principles. Examples include "know rifle nomenclature"; "know the format of the operations order"; "know the components of an NSN".

According to the student text, "history shifts and elevates the perspective of the student, resulting in an enlarged experience and expanded horizon."[43] Knowledge of military history gives the designer a perspective of the role of complexity and systemic interdependence in military operations, while general political, diplomatic, economic, and social and cultural history enhance understanding of the operating environment . Knowledge of contemporary interdisciplinary theories from "political science, anthropology, communication theory, historiography, leadership, linguistics, organization theory, and psychology" give the designers a range of perspectives to frame problems and critique the design effort. Doctrine represents the best-known methods of military operations and gives the designer a starting position when approaching complexity in the operating environment. Finally, the study of philosophy "teaches its students to keep an open mind."

Much of the design literature describes the requirement for design team members to understand strategy, strategic guidance, and the strategic environment. In JP 5-0 *Joint Planning*, the first two steps of the Operational Design methodology are 1) understand the strategic direction and guidance and 2) understand the strategic environment.[44] Strategy is a discrete domain that includes the history, theory, doctrine, and philosophy of strategy. The US strategy-making processes are constantly evolving, and knowledge of this domain will aid the designer to frame the military problem in a strategic context.

John Schmitt describes design as the effort to "to formulate operations and campaigns in the face of complexity, uncertainty and novelty."[45] In his white paper he refers to three domains of knowledge useful to the design team: problem types, social complexity, and the human-problem solving process. Schmitt suggests the contemporary operating environment presents military problems with varying degrees of "wickedness" that should inform how they are

framed.[46] Similarly the literature, using various scientific and systems theory terms, refers to military problems as ill-structured, non-linear, or complex-adaptive. An overarching theme is that interdisciplinary knowledge of how problems are classified, described, and conceived is useful to a design team member. In fact, as the joint staff J7 states, "understanding the nature and varying complexities of problems is fundamental to the commander's [and design team's] ability to frame problems, and thus solve them."[47]

Schmitt describes social complexity as "a function of the number of stakeholders and the diversity among them."[48] The idea that military problems and problem solving itself are social problems is also a common theme in the literature. Tied to the need for theoretical and philosophical knowledge, knowledge of human interactions, diversity, and psychology is useful to the designer in problem framing as much as it is in making a contribution to the design team itself.

The need to understand how human beings approach problems enhances the design team member's ability to participate on a design team. Again, tied to a theoretical, philosophical, and historical base, design team members need to be able to distinguish the difference between a design and planning and how each contribute to solving the military problem. Subordinate to this topic are domain-knowledge in decision-making, intuition, and rationalization.[49]

Skills[ii]

The MSTP's *Marine Corps Design Methodology* describes system thinking as "a process of understanding how parts of a system work and influence each other as part of a greater

[ii] NAVMC1553.1A, 5-5. The ability to perform an activity that contributes to the accomplishment of the step, task, event, or job. Examples include "be able to disassemble a rifle"; "be able to organize inventory".

whole."[50] Achieving a system perspective is a central theme across the design literature because it "helps planners break away from linear cause-effect and compartmentalized ways of addressing problems."[51] Through systems thinking the design team member can visualize the operational environment through network analysis diagrams, influence diagrams, and causal loop diagrams.[52] These visualizations help the designer distinguish between the team's understanding of the current system and the desired system. Building visual models based on systems thinking enhances critical and creative thinking.[53]

Critical thinking is another skill that is prevalent throughout the design literature. It is the acknowledgement that human thinking is inherently subject to bias, interpretation, and judgement. As a skill, critical thinking is "purposeful and reflective thought about what to believe or what to do in response to observations, experience, verbal or written expressions, or arguments."[54] Through this reflection, commanders and design teams "increase the organization's shared knowledge base."[55] With design considered as a "a journey of discovery, not a destination," designers must demonstrate the skill to continuously assess, reflect, and update their understanding of the operational environment.

Attitudes[iii]

The idea of design as a continuous learning process is prevalent in the design literature. *Continuous learning* requires certain habits of thought or preferences that may be counterintuitive in a hierarchical military bureaucracy. Because design builds a model of the operating environment, it is inherently incomplete. Designers need to recognize the limitations of

[iii] NAVMC1553.1A, 5-5. An acquired mental state that influences choices for personal action, such as preferences, avoidance, or commitment. Since the majority of these cannot be observed or measured within the confines of the learning setting, they may still be recorded during the learning analysis.

what they can know about the operational environment and the fallibility of their rationalizations. MSTP's *Marine Corps Design Methodology* highlights that designers must "treat all understanding as provisional in order to continuously learn."[56]

Intellectual humility in the face of complexity and uncertainty is another necessary attitude necessary for designers. This trait supports continuous learning and prompts the design team member to constantly reassess what is known and assumed.[57] Further, humility helps the designer "tolerate uncertainty" and create a perpetually incomplete systems perspective of the operational environment.[58]

Finally, the designer needs a penchant for achieving a *holistic understanding* of the military problem including both the internal and external systems. This requirement is derived from design's reliance on framing the military problem through a broader systemic perspective. [59] Instead of adopting a reductionist approach that breaks the problem into smaller pieces and pursues an immediate response to tasking, the designer builds a plan of inquiry that expands beyond the immediate operational factors in effort to better frame the problem. Because "a systems approach is fundamentally interdisciplinary," the designer needs a proclivity to pursue expansive perspectives on the operational environment.[60]

5. Central Idea

Design is a critical activity for military operations in the contemporary operational environment. Complexity and uncertainty are inherent attributes of military problems. Complexity increases the role and unpredictability of endogenous and exogenous factors. Uncertainty establishes the need for a continuous reassessment of what is known and assumed about the operational environment.

Under these circumstances, commanders need intelligence professionals who can consistently contribute to planning and design. The current education and training programs prepare intelligence Marines to contribute to planning but fall short in preparing them as design team members. The Marine Corps can improve how intelligence Marines are prepared for design by adding KSAs to the training and education curriculum specific to the needs of design team members.

6. Subject Matter Expert Interviews

Data collected through semi-structured interviews helped identify whether the service can better prepare intelligence professionals to participate on design teams. On the assumption that commanders and planners would have the most relevant experience concerning design activities and the contribution intelligence marines make to design teams, the interviewees included current and former MAGTF commanders and planners with extensive experience solving complex military problems. Subject Matter Experts (SMEs) were selected based on their operational experience, assignment, and contribution to the Marine Corps' design doctrine.

In order to limit intelligence community bias, intelligence Marines were excluded from this study. This decision was made in order to maximize the perspective of commanders and planners who led, evaluated, benefited from, or suffered under intelligence Marine competency, or lack thereof, for design. The research assumption is that these commanders and planners would be better able to describe the necessary competency based on their experience, rather than institutional bias likely held by intelligence Marines.

Using the interview guide in Appendix A, the researcher completed semi-structured email and face-to-face interviews. After the interview, the researcher developed a research output

summary and sent it by email to each SME with a request to verify that the interview output accurately summarized the SME's perspective. Appendix B includes the interview outputs and feedback provided by the SME on the interview output email.

7. Findings

The five SME interviews conducted for this research provided a wider than anticipated divergence of opinions on whether the service adequately prepares Marines for work in a design team. All but one of the SMEs agreed that the intelligence Marines competency for design teams is unique when compared with other military occupational specialties. Each SME provided specific suggestions that align to the KSA framework and could constitute a competency; most admitted that there was significant overlap with the competency to lead and conduct intelligence preparation of the battlespace or the joint intelligence preparation of the operational environment. There is nonetheless a group of KSAs repeated by multiple SMEs that appear desirable for intelligence Marines' participation in design and that are not explicitly accounted for in the doctrine and policy documents that guide intelligence training and education.

The SME interviews highlighted the critical impact that intelligence Marines have on design at the tactical, operational, and strategic level. It was recognized across the interviews that intelligence Marines may serve on Marine Corps and joint staffs where they will participate in design serving a wide range of problem types. In general, the SMEs agreed that there is a unique competency for intelligence Marines serving on design teams. While some SMEs suggested that the current intelligence doctrine was sufficient to cover this competency, all of the interview outputs included several KSAs that are not accounted for in the current training materials. While several of the KSAs coincide with expectations for intelligence Marines in planning, there are

enough distinctions to suggest a unique competency for intelligence in design and intelligence in planning. The following section outlines the KSAs that highlight a unique competency for intelligence Marine participation in design.

Global Perspective

Several SMEs centered their input on the need for intelligence Marines to know "how the world works." This idea most readily aligns with the knowledge category in the KSA framework. Challenged to pin this idea to an operational objective for training and education, the SMEs commented that intelligence Marines needed to "know what's important", "identify what's important", "be able to identify patterns in complex operating environments", and "be able to fuse multiple information streams and identify the most important trends." Also consistent was the recognized need for intelligence Marines to demonstrate open-mindedness (e.g., "Be open-minded, not one-dimensional in approach"[61], "be able to decenter"[62], and "willing to come off a position, recognizing your assessment is one of infinite possibilities"[63]).

These inputs are strikingly similar to Roland Case's "Key Elements of a Global Perspective."[64] Writing about education, Case describes a global perspective as including two dimensions, "the substantive and the perceptual."[65] The substantive dimension provides knowledge elements that can refine the competency for participation in design. Case provides a range of topics, the understanding of which is integral to a global perspective or a grasp of how the world works. He suggests understanding the difference between human nature and comparative cultures; global economic, political, social, ecological, and technological systems; transnational issues and problems (e.g., "peace and security"); history of the current global

system; and alternatives to the primary features of the global system (e.g., "existing consumption patterns" and "unrestrained economic growth") are all necessary for a global perspective.[66]

The second dimension Case identifies is the perceptual, and it aligns better to the attitudes category of the KSA framework. His description of the perceptual includes attitudes and preferences that are consistent with the definition used for attitudes from NAVMC1553.1A described earlier and used in the interview guide (see Appendix A). For a global perspective and to understand how the world works, Case argues that "open-mindedness, anticipation of complexity, resistance to stereotyping, inclination to empathize, and nonchauvinism [sic]" are necessary qualities.[67] Case goes on to describe how education should allow students to reach their own conclusions, but only after considering multiple perspectives. Again, these traits are consistent with SME inputs that emphasized the need for intelligence Marines to fill in intellectually where Commanders have knowledge gaps and to ensure multiple viewpoints are considered by the design team.

Though not explicitly described as an individual KSA by any single interview, Case's description of the substantive and perceptual elements of a global perspective cover many of the KSAs described by the SMEs. The interviews indicated a range of both fields of knowledge and habits of mind that are helpful traits of intelligence Marines participating in design. As a result, Case's framework provides a useful tool when considering the competency intelligence Marines need for working on design teams.

Know the Adversary

All but one SME specifically pointed out knowledge of the adversary as critical to intelligence Marine participation in design, but each SME provided a slightly different

perspective on the specific kinds of knowledge that was valuable. This input is most readily applied as a specific domain of knowledge in the KSA framework but has implications for skills as well. One SME focused on understanding the adversary's understanding of friendly intentions and capabilities. This SME focused on analysis of what the adversary could know and how it informed his vision of the battlespace. This SME suggested that this understanding was critical to "facilitate deception operations as foundational to the COA [course of action]."[68] A second SME offered that understanding the adversary's theory of war was critical knowledge.[69] Another SME offered that it was necessary to "understand the cognitive, psychological, and cultural factors" specific to the adversary's decision-making.[70] Last, a SME suggested that intelligence Marines needed to bring a systemic understanding of the adversary "in terms of plausible contingencies and responses to system change."[71]

These descriptions highlight a similarity in all of the interviews that suggests an enemy-centered approach and a need to understand the adversary beyond the outputs of the IPB and JIPOE processes. Both intelligence processes require a systemic approach to appreciating the adversary and operational environment requiring particular analytic skills as a component of the KSA framework. However, these approaches are purpose-built to support the planning process by providing adversary and environmental courses of action and the beginnings of a collection plan. Design entails a broader framing of the problem, requiring an understanding of the adversary beyond his immediate tactical choices on the battlefield.

Systems Thinking

All but one interview confirmed the military doctrine's emphasis on systems thinking, or a systemic approach to understanding the adversary and environment. One SME suggested that

Robert Jervis's treatment of systems in politics would be a useful source to inform the design team's systems approach. Systems thinking is most easily categorized as a skill in the KSA framework, but also depends on domain-specific knowledge about common system characteristics and behaviors.

Jervis states that it is commonly recognized that the world is made up of systems, "and that many outcomes are the unintended consequence of complex interactions, [yet] the basic ideas of systems do not come readily to mind and so often are ignored."[72] Jervis uses pithy axioms to operationalize common system characteristics (e.g., "Interactions, Not Additivity" and "Outcomes Do Not Follow From Intentions"). Central to his analysis is the notion that one can "never change just one thing," because any change to one element in a nonlinear, interactively complex system affects every other. In the end, he rejects a "common sense" approach to learning or manipulating complex systems because of their non-linearity.[73] Instead, he suggests an approach that may inform the intelligence Marine's competency for participation on design teams.

Jervis suggests that we can improve our interaction with systems by bounding them, understanding and anticipating them, and working indirectly with them. He writes that even though systems are "always in motion, the degrees of freedom are not unlimited."[74] We can bound or slice systems to understand them and act on them. Since a direct or "common sense" approach is unlikely to provide the desired outcome in a complex system, Jervis advises an indirect approach to understanding and acting on a system. By anticipating system interactions, designers can build concepts that account for and limit unintended consequences. This approach demands a systemic understanding and results in approaches that avoid the pitfalls of the usual or expected solutions based on simple cause and effect relationships. Finally, because no one action

ever results in only a single response, actors must do multiple things to achieve a single desired effect. Because the nature of systems limits our ability have complete knowledge of a problem, designers must use multiple approaches and solutions to achieve understanding and a desired outcome.

Predictive Analysis

Common to the active duty SMEs was the statement that predictive analysis was critical to the intelligence Marine's contribution to the design team. Two of the SMEs observed that an unwillingness to make a predictive assessment in the face of complexity, uncertainty, and limited information was a common shortfall among intelligence Marines on design teams. A review of Richard Heuer's classic *Psychology of Intelligence Analysis* suggests that this observation has implications for the competency across the knowledge, skills, and attitudes framework.

From a knowledge standpoint, intelligence Marines need a working knowledge, if not expertise, in cognitive psychology, heuristics, and biases "to alleviate or compensate for the known cognitive problems encountered in analysis."[75] Heuer suggests that skills in "systemic analytical process" are necessary to facilitate alternative analysis and assessments of likelihood, especially in the face of deception and limited information.[76] Concerning attitudes, Heuer insists that analysts need to demonstrate a "frequent and systematic retrospective evaluation of analytical performance," and he emphasizes the need for open-mindedness.[77]

Creativity and Curiosity

Consistent among the interviews was the need for intelligence Marines to demonstrate active creativity and curiosity. Several of the SMEs identified this as a consistent shortfall in

intelligence Marines, particularly in design settings. This part of the competency most readily translates to a group of attitudes as part of the KSA framework. One SME suggested that intelligence Marines who fail to demonstrate greater curiosity than the commander impose risk on the design process. This idea was reinforced by successive interviews – design work is both practical and abstract, and commanders rely on intelligence Marines to demonstrate a creativity and curiosity that expands the team's area of thought about the problem.

In his book *Curious: The Desire to Know and Why Your Future Depends on It,* Ian Leslie argues for a direct connection between curiosity and creativity. According to Leslie, creative potential is an output of wide-ranging knowledge achieved through habits of curiosity.[78] He contends that people are not only more capable, but also more disposed to creativity when they embody habits of curiosity. Among these habits are attitudes that can inform the competency for intelligence Marines on design teams.

First, the curious mind must "cultivate conscious ignorance -- to be fascinated, even obsessed, by what they don't know."[79] Next, curious people need habits that build a wide and varied database of how the world works through study and interest in any subject. This study is not whimsical, but it is guided by a deliberate strategy to build breadth and depth of a global perspective. Curiosity does not end with the accumulation of concrete facts; instead, Leslie argues that curious people investigate the motives and emotions behind actions. Leslie suggests that the "thinkerer" model is useful for cultivating curiosity and creativity. A thinkerer demonstrates "a style of cognitive investigation that mixes the concrete and the abstract, toggling between the details and the big picture, zooming out to see the wood and back in again to examine the bark on the tree."[80] Finally, Leslie presents the distinction between puzzles and mysteries to demonstrate a curious approach to problem-solving that is compatible with a

systems approach. Where puzzles have discrete solutions, mysteries are unsolvable. Treating problems as puzzles can mislead the uncurious. Attitudes that investigate problems as mysteries give a design team member a better chance of accounting for complexity and uncertainty.

8. Recommendations

The research above supports the hypothesis that there is a unique competency for intelligence Marines participating in design. While this analysis does not provide a complete solution to the competency's required KSAs it does illustrate several areas that can inform updates to the service's Military Occupational Specialty (MOS) Manual and Intelligence Training and Readiness Standards.

Neither the MOS Manual nor Intelligence Training and Readiness Standards account for the competency necessary for intelligence Marines to participate in design. This paper argues that the role of design is important to military problem-solving as the operational environment increases in complexity and uncertainty. Without accounting for a design-specific competency in institutional training and education systems, the service is left with inconsistent, individual-based intelligence capabilities to contribute to design. Based on the importance of design, the service should integrate the competency necessary for design to inform the training and education of intelligence Marines.

A starting point is to integrate that competency by augmenting the already identified KSAs that are necessary for intelligence support to planning. Building training and education standards that improve an intelligence Marine's global perspective, knowledge of the adversary, systems thinking, predictive analysis, and curiosity and creativity would move the intelligence profession toward institutionalizing KSAs that would be beneficial on design teams.

As with any change, this recommendation incurs risk. First, there are limited time and resources for training and education. This recommendation does not suggest that current KSAs for intelligence support to planning should be replaced. Instead, this is a recommendation to add a competency to the current system. There are several ways the institution can manage this risk despite its limitations. First, many of these KSAs can be integrated into existing programs by adding emphasis to specific KSAs that would benefit design and planning – this is the economy of force option. Second, these KSAs could be achieved by augmenting the service's individual education requirement. The service already requires Marines to build and execute an individual professional military education program. Through limited policy changes and formal mentorship, many of these KSAs could be achieved through independent study. Last, if design is as important to the service's mission as described in this analysis, the Marine Corps might consider updating its intelligence personnel model to account for a design-specific competency in additional specialties or rank-specific training and education requirements.

The risk in not evolving the MOS Manual and Training and Readiness Standards is service level. In the face of increasing complexity and uncertainty, design provides an opportunity to improve military problem-solving. As this paper concludes, there is a unique competency required for successful design, at least in the intelligence profession. Failing to institute this competency reduces the potential for successful design and raises the risk of mission failure. Therefore, it is not too ambitious to suggest that improving how the service prepares intelligence Marines for participation on design teams is a combat imperative.

Conclusion

The operational environment is increasing in uncertainty and complexity. Military doctrine has evolved significantly in the last two decades to improve military problem-solving by incorporating design as an iterative activity that augments planning. Design seeks to first determine the problem-setting before adopting a solution. In this manner, design is distinct from planning and requires a unique competency, or set of knowledge, skills, and attitudes, for design team members to achieve consistent, professional performance. However, the training and education system have not yet assimilated the unique competency required for intelligence Marines on design teams.

This paper reinforces the hypothesis that a new competency is required for intelligence Marines to successfully participate on design teams. A review of military doctrine and literature reveals a set of KSAs that are broadly applicable to design team members, but not a specific set of KSAs for intelligence Marines. SME interviews reveal that this is a gap because there is a unique competency expected of intelligence Marines in design. While the KSAs for this competency are not codified in the military design literature, outputs of the SME interviews provide a start in identifying and institutionalizing a competency for intelligence Marines.

The recommendations in this paper are not without risk. They suggest that the already resource intensive training and education systems are insufficient to meet the doctrinal requirements for design. There is also risk in not evolving to meet this gap. Since design is performed in teams distinct from planning efforts, the training and education of intelligence Marines will directly impact the design team's performance. Without an institutionalized competency, performance by intelligence Marines is likely to be inconsistent.

This inconsistency may degrade design team performance, and degraded performance can prevent commanders from building suitable plans to address the military problems they face in an uncertain and complex operational environment. Thus, improving intelligence Marines' performance on design teams by updating training and education to account for the competency identified in this research is a combat imperative. Failing to institutionalize this competency risks mission accomplishment.

Notes

[1] John Schmitt, "A Systemic Concept for Operational Design" (white paper, 2006), Portable Document Format file, 48, https://www.milsuite.mil/book/docs/DOC-720415 (DOD CAC required) or http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.116.6134&rep=rep1&type=pdf; Joint Staff, *Planner's Handbook for Operational Design*, version 1.0 (Suffolk, VA: Joint Staff J7, Joint and Coalition Warfighting, October 7, 2011), I-1; William Sorrells et al., "Systemic Operational Design: An Introduction" (monograph, School of Advanced Military Studies, May 26, 2005), iii, Defense Technical Information Center, https://apps.dtic.mil/dtic/tr/fulltext/u2/a479311.pdf.

[2] John Schmitt, "A Systemic Concept for Operational Design," 2-3. Schmitt's white paper is described on his LinkedIn page as, "A concept paper for the Marine Corps Combat Development Command on a Systems Thinking approach to operational design based on the work of Shimon Naveh." https://www.linkedin.com/in/john-schmitt-588b282a (accessed on January 21, 2020).

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[4] Headquarters US Marine Corps, *Marine Corps Operations*, MCDP 1-0 (Washington, DC: Headquarters US Marine Corps, July 26, 2017), B-3.

[5] Headquarters US Marine Corps, *Intelligence Operations*, MCWP 2-10 (Washington, DC: Headquarters US Marine Corps, April 4, 2018), 1-1.

[6] MCDP 2, 1-8.

[7] General Joseph Dunford, "The Character of War & Strategic Landscape Have Changed," DoDLive, https://www.dodlive.mil/2018/04/30/dunford-the-character-of-war-strategic-landscape-have-changed/ (accessed on March 2, 2020).

[8] Headquarters US Marine Corps, *Warfighting*, MCDP 1 (Washington, DC: Headquarters US Marine Corps, April 4, 2018), 4-18.

[9] US Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America* (Washington, DC, 2018), 7, https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf (accessed on January 13, 2020). "Evolve innovative operational concepts" is one of the sub-objectives for building a more lethal joint force.

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[11] Secretary James Mattis, "Remarks by Secretary Mattis at the Association of the U.S. Army Exposition on Building Readiness in Washington, D.C.," (speech, Washington, DC, October 9, 2017) US Department of Defense, https://www.defense.gov/Newsroom/Transcripts/Transcript/Article/1337675/remarks-by-secretary-mattis-at-the-association-of-the-us-army-exposition-on-bui/ (accessed on January 13, 2020).

[12] *Summary of the 2018 National Defense Strategy*, 2.

[13] MCDP 1, 1-11.

[14] MCDP 1, 1-6.

[15] Headquarters US Marine Corps, *Command and Control*, MCDP 6 (Washington, DC: Headquarters US Marine Corps, April 4, 2018), 1-4.

[16] MCDP 2, 1-5.

[17] MCDP 1, 4-17.

[18] MCDP 6, 2-38.

[19] MCDP 6, 2-40.

[20] MCDP 6, 2-23.

[21] General James Mattis, Commander, US Joint Forces Command, *Vision for a Joint Approach to Operational Design*, memorandum for US Joint Forces Command, October 6, 2009.

[22] General James Mattis, Commander, US Joint Forces Command, *Vision for a Joint Approach to Operational Design*, memorandum for US Joint Forces Command, October 6, 2009, attachment 1, page 2.

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[24] Joint Staff, *Design and Planning*, Insights and Best Practices Focus Paper (Suffolk, VA: Joint Staff J7, Deployable Training Division, July 2013), 1; Joint Staff, *Joint Planning*, Joint Publication 5-0 (June 16, 2017), IV-1; Headquarters US Marine Corps, *Marine Corps Planning Process*, MCWP 5-10 (Washington, DC: Headquarters US Marine Corps, May 2, 2016), 2-1; MAGTF Staff Training Program, *Marine Corps Design Methodology*, MSTP Pamphlet 5-0.1 (Quantico, VA: MAGTF Staff Training Program Division, May 8, 2017), 19.
[25] William Sorrells et al., "Systemic Operational Design: An Introduction" (monograph, School of Advanced Military Studies, May 26, 2005), 11, Defense Technical Information Center, https://apps.dtic.mil/dtic/tr/fulltext/u2/a479311.pdf.
[26] Sorrels, et al., "Systemic Operational Design: An Introduction" (2005), 11.
[27] Sorrels, et al., "Systemic Operational Design: An Introduction" (2005), 15.
[28] Sorrels, et al., "Systemic Operational Design: An Introduction" (2005), 10.
[29] *Joint Planning*, JP 5-0 (2017), IV-1.
[30] *Joint Planning*, JP 5-0 (2017), IV-6.
[31] *Joint Planning*, JP 5-0 (2017), IV-10.
[32] *Joint Planning*, JP 5-0 (2017), IV-13
[33] *Marine Corps Planning Process*, MCWP 5-10, foreword.
[34] *Marine Corps Planning Process*, MCWP 5-10, 1-3.
[35] *Marine Corps Planning Process*, MCWP 5-10, 2-1.
[36] *Marine Corps Planning Process*, MCWP 5-10, 2-3.
[37] MSTP, *Marine Corps Design Methodology*, MSTP Pamphlet 5-0.1 (2017), 1.
[38] School of Advanced Military Studies, *Art of Design*, Student text, version 2.0, Portable Document Format file, 20, https://community.apan.org/wg/aucoi/jadcc/m/mediagallery1/196938 (accessed on January 25, 2020).
[39] Ibid.
[40] Schmitt, "A Systemic Concept for Operational Design" (2006), 22.
[41] Commandant of the Marine Corps, *Marine Corps Instructional Systems Design/Systems Approach to Training and Education Handbook*, NAVMC 1553.1A, September 15, 2016, M-2.
[42] *Art of Design, 28.*
[43] Ibid.
[44] *Joint Planning*, JP 5-0 (2017), IV-6.
[45] Schmitt, "A Systemic Concept for Operational Design" (2006), 8.
[46] Ibid, 9.
[47] Joint Staff, *Planner's Handbook for Operational Design* (2011), II-8.
[48] Schmitt, "A Systemic Concept for Operational Design" (2006), 12.
[49] Ibid, 13-14.
[50] MAGTF Staff Training Program, *Marine Corps Design Methodology* (2017), A-4.
[51] Ibid, A-5.
[52] Ibid, A-7.
[53] Ibid, A-7.
[54] Ibid, A-2.
[55] Joint Staff, *Planner's Handbook for Operational Design* (2011), V-1.
[56] MAGTF Staff Training Program, *Marine Corps Design Methodology* (2017), 15.
[57] Celestino Perez, Jr., "A Practical Guide to Design: A Way to Think About It, and a Way to Do It," *Military Review* (March – April 2011), 45.
[58] School of Advanced Military Studies, *Art of Design*, 13.
[59] Sorrels, et al., "Systemic Operational Design: An Introduction" (2005), 15.
[60] School of Advanced Military Studies, *Art of Design*, 59.
[61] Appendix B, Interview – Active Duty USMC Colonel, MAGTF Planner and Commander - February 12, 2020.
[62] Appendix B, Email Interview – USMC Planner, Concept Developer, and Doctrine Author - February 7, 2020.
[63] Appendix B, Interview – Active Duty USMC Colonel, MAGTF Planner and Commander - February 11, 2020.
[64] Roland Case, "Key Elements of a Global Perspective," *Social Education* 57(6) (October 1993), 318.
[65] Ibid.

[66] Ibid, 320.
[67] Ibid.
[68] Appendix B, Interview – Active Duty USMC Colonel, MAGTF Planner and Commander - February 12, 2020.
[69] Appendix B, Interview – Active Duty USMC Colonel, MAGTF Planner and Commander - February 7, 2020.
[70] Interview – Retired USMC Colonel, MAGTF Planner and Commander, Current USMC Concept Developer - February 5, 2020
[71] Appendix B, Interview – Active Duty USMC Colonel, MAGTF Planner and Commander - February 11, 2020.
[72] Rober Jervis, "Complexity and the Analysis of Political and Social Life," *Political Science Quarterly* 12, no. 4 (Winter, 1997-1998), 570.
[73] Jervis, "Complexity and the Analysis of Political and Social Life" (Winter 1997-1998), 583.
[74] Jervis, "Complexity and the Analysis of Political and Social Life" (Winter 1997-1998), 587.
[75] Richard Heuer, *Psychology of Intelligence Analysis* (Center for the Study of Intelligence, 1999), 178, https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/psychology-of-intelligence-analysis/PsychofIntelNew.pdf (accessed on April 4, 2020)
[76] Heuer, *Psychology of Intelligence Analysis* (1999), 182. Heuer proves the Analysis of Competing Hypothesis as an example of a systemic analytic process. Two of the SMEs interviewed suggested the importance of Key Driver Analysis and Alternative Future Analysis of useful analytic processes for predictive analysis.
[77] Heuer, *Psychology of Intelligence Analysis* (1999), 180.
[78] Ian Leslie, *Curious: The Desire to Know and Why Your Future Depends on It* (New York: Basic Books, 2014), 145.
[79] Leslie, *Curious: The Desire to Know and Why Your Future Depends on It* (2014), 142.
[80] Leslie, *Curious: The Desire to Know and Why Your Future Depends on It* (2014), 166.

APPENDIX A: INTERVIEW GUIDE

The crux of my research is to determine ***whether the Marine Corps should change how we prepare intelligence Marines to participate in design***.

I've reviewed our doctrine, MOS manual, and T&R Standards -- they all seem geared to ensure the IPB process is well-executed. My gut and literature review indicate that IPB products are not the only or even best input an intelligence Marine can bring to a design team.

It seems that intelligence officers are inconsistent in their contribution to design; some are great, others are not, and this depends on personal background/experience rather than a deliberate output of training and education. My hope is to discover some specific KSAs that can be added to the intel training and education pipeline to make the community's contribution more valuable and consistent.

So, here are my initial questions....

1. How should Intelligence Marines participate on Design Teams? Distinct from other MOSs?

2. What unique roles do you expect Intelligence Marines to play as a member of a Design Team?

3. What are the critical Knowledge, Skills, and Attitudes (KSAs) that Intelligence Marines need to successfully contribute to a Design Team?

4. Have you ever worked with an Intelligence Marine on a Design Team that exceeded your expectations?
    a. What was the context?
    b. What unique KSAs did he/she bring to the team?
    c. How did this impact the Design Team?

5. Have you ever worked with an Intelligence Marine on a Design Team that failed to meet your expectations?
    a. What was the context?
    b. What KSAs did he/she lack that you expected him/her to have?
    c. How did this impact the Design Team?

6. How should Marine Corps intelligence training and education change to produce intelligence Marines with the desired KSAs to contribute to a Design Team?

Some Definitions…

By **Design**, I mean the Commander's effort "to achieve a greater understanding of the environment and the nature of the problem in order to identify an appropriate conceptual solution." It is "a way of organizing conceptual work within an organization to assist

commanders in understanding, visualizing, and describing the operational environment and to develop approaches to solving problems." (MCWP 5-10, page 1-4 and 1-5)

By **KSAs**, I am using definitions from NAVMC 1553.1A, *Marine Corps Instructional Systems Design/Systems Approach to Training and Education Handbook*:

Knowledge. Information required to develop the skills for effective accomplishment of the jobs, duties, and tasks. Knowledge involves storing and recalling information and refers to the learning of names, facts, processes, and principles. Examples include “know rifle nomenclature”; “know the format of the operations order”; “know the components of an NSN”.

Skills. The ability to perform an activity that contributes to the accomplishment of the step, task, event, or job. Examples include "be able to disassemble a rifle"; "be able to organize inventory”.

Attitude. An acquired mental state that influences choices for personal action, such as preferences, avoidance, or commitment. Since the majority of these cannot be observed or measured within the confines of the learning setting, they may still be recorded during the learning analysis.

APPENDIX B: INTERVIEW OUTPUT SUMMARIES

Interview – Retired USMC Colonel, MAGTF Planner and Commander, Current USMC Concept Developer
February 5, 2020

Training vs Education: need to train to process, but educate for operational art.

Knowledge

- Understand cognitive, psychological, and cultural factors of friendly and adversary decision-making.
- Know historical examples of "the commander's dilemma" (e.g., Lee at Chancellorsville).
- Know historical examples of military and strategic stratagems/ruses.

Skills

- Be able to create historical analogies and metaphors for military problems, circumstances, and decisions (i.e., "the commander's dilemma").
- Be able to generate options that exploit asymmetries in the cognitive dimension (e.g., Stonewall Jackson provided an option to General Lee at Chancellorsville that split the rebel force when at a distinct disadvantage, but leveraged an asymmetry in knowledge of the local road network).

Attitudes

- Constantly seeking opportunities to apply guile and cunning to operational art.

Email Interview – USMC Planner, Concept Developer, and Doctrine Author
February 7, 2020

Training and educating Marines to the below KSAs could improve their performance on a design team:

Knowledge

- Know background about the situation.
- Understand systems thinking. Although the systemic aspect of design seems to have faded since Naveh first introduced SOD. I personally think it is essential to be able to think systemically even if you are not aware of, or not a fan of, formal systems thinking. But I think it is a shortcoming of the current application of design that it has become largely nonsystemic [sic]. I think a deep understanding of human nature and how the world works, at both the micro and macro levels, is very important. Read Robert Jervis's *System Effects* for a brilliant systemic description of how the political world works. I think the Second Law of Thermodynamics is the governing physical law of the universe. Not in the simple, closed-system sense, but in the far-from-equilibrium, open-system Prigoginian [sic] sense.[12]
- Knowledge of political philosophy in particular would be useful. Our Founding Fathers created a very successful political system based on explicit knowledge of Enlightenment thought through political philosophers like Hobbes, Locke, Smith, Hume, Rousseau, etc.,

whose works they had all read. Based on this, they had an acute understanding of human nature.

Skills

- Be able to synthesize coherent concepts/theories from differing points.
- Be able to think creatively. Specifically, the ability to think synthesistically [sic].[3]
- Be able to decenter. Decenter is a term that comes out of cognitive psychology. It refers to the ability to see things from a different (usually another person's) perspective. We are all naturally self-centered, not in the sense of selfishness but in the literal sense that we see the world as if we are at the center of it, and it takes effort to force yourself to see things otherwise. It is perspective-taking, which might per a better term.
- Be able to "formulate the problem out of the mess."[4]
- Be able to think systemically in time, space and causality.

Attitudes

- Appreciate different perspectives.
- Be curious.
- Be open-minded.

Interview – Active Duty USMC Colonel, MAGTF Planner and Commander
February 7, 2020

Training and educating intelligence Marines to the below KSAs could improve their performance on design teams*:*

Knowledge

- Have a deep understanding of the adversary, including their warfighting theories.
- Have a deep understanding of the terrain we are fighting on.
- Understand all MAGTF and joint force intelligence capabilities.

Skills

- Be able to perform predictive analysis.
- Be able to identify patterns in complex operating environments (i.e., "What's important?")
- Be able to integrate the capabilities of all MAGTF and joint force collection capabilities.
- Be able to leverage a systems view of the operating environment.

Attitudes
(Based on our conversation, I think you would say these are the two greatest discriminators of intelligence Marine performance.)

- Demonstrate unusual curiosity - always ask one more question.
- Demonstrate the moral courage to commit to an analytic position despite uncertainty.

Interview – Active Duty USMC Colonel, MAGTF Planner and Commander
February 11, 2020

Intelligence Marines do provide distinct inputs to the design team based on a unique knowledge of enemy capabilities and contingencies, and the ability to leverage a network of internal and external expertise.

Building on an understanding of the JIPOE and Joint Operational Design doctrine, training and educating intelligence Marines to the below KSAs could improve their performance on design teams:

Knowledge

- Understand systems thinking – relationships in terms of strengths, weaknesses, tensions & competition, opportunities & challenges.
- Understand the adversary in terms of plausible contingencies and responses to system change.
- Understand the strengths and weaknesses of thought as they apply to critical and creative thinking in groups.[5]

Skills

- Be able to build teams and networks to leverage problem-specific expertise and knowledge in support of design team requirements -- when necessary, able to use an indirect approach to develop fused products with experts who may not work for you.
- Be able to provide predictive analysis of system tendencies, potentials, and contingencies.
- Be able to fuse multiple information streams and identify the most important trends.
- Be able to think creatively – the ability to expand the understanding of the problem set and solution set through divergent thinking
-

Attitudes

- See current and desired systems through a cone of plausibility.
- Be sensitive to signals in the environment.
- Acknowledge and respond to the shortfalls and biases inherent in heuristics.
- Be independent and self-motivated in preparation -- intent to go beyond surface level knowledge and analysis.
- Be firm in analytic conviction without derailing discourse.
- Willing to come off a position, recognizing your assessment is one of infinite possibilities -- have the moral courage to qualify analysis.

Interview – Active Duty USMC Colonel, MAGTF Planner and Commander
February 12, 2020

Intelligence Marines do provide a unique input to the design team and the best preparation is foundational knowledge of the design approach.

Training and educating intelligence Marines to the below KSAs could improve their performance on design teams

Knowledge

- Understand how the world works (e.g., international relations theory, game theory, economics).
- Understand the adversary as a system, including how contingencies impact system relationships, actors, functions, tensions, and characterization.
- Understand the adversary's intentions, AND more importantly, what the adversary Commander thinks we will do (to facilitate deception operations as foundational to the COA--rather than a "bolt-on").
- Understand the roles of models and narratives in design.
- Understand the strategic, domestic, international context.

Skills

- Be able to apply judgment in bounding the system - identify what is important.
- Be able to effectively build and communicate mental models.
- Be able to articulate a narrative.[6]
- Be able to perform key driver analysis, describe alternative future scenarios, and identify the zone of tolerance.
- Be able to leverage group dynamics to facilitate creativity.[7]
- Be able to identify trends and system propensity[8].
- Be able to meta-questioning-- ensure a shared understanding of terms and concepts--to facilitate problem setting (Design is about identifying the right problem set)

Attitudes

- Propensity for candor -- demonstrate moral courage in assessment.
- Be open-minded, not one-dimensional in approach.
- Be uniquely curious about how the world works and our perceptions of it.

Notes

[1] SME suggested *System Effects: Complexity in Political and Social Life* by Robert Jervis as reference.
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