The Mumbo-Jumbo of Design:
Is this the Army's EBO?

by Andrew B. Nocks

If the early problems of learning design were hampered by the lack of any written accounts of design methodology, the current problem facing students of design is the proliferation of books, doctrinal manuals, and journal articles on the subject. While these sources share a common core, there is significant divergence in terminology, and varied emphasis on the philosophical versus practical aspects of design. This is actually a very good sign that design discourse is alive and well, but it can make entry into the subject more daunting.[1]

The United States Army (and Joint Community) has been on a Design path before. In 2002, the United States Air Force began its campaign to explain to the broader joint community the power and value of the emergent concept of Effects-based Operations (EBO). In a condition setting white paper, it stated upfront that "…the concept of EBO is not well understood and requires further elaboration to ensure it is used properly. EBO is not a new form of warfighting, nor does it displace any of the currently recognized forms of warfare. EBO is a way of thinking or a methodology for planning, executing, and assessing operations designed to attain specific effects required to achieve desired national security outcomes."[2]

The joint community embraced what the Air Force was selling and EBO began its proliferation across the services, to include the United States Army. "While EBO is not a joint or Army doctrinally approved concept, many commanders have found EBO beneficial, and incorporated aspects of the concept into their decision-making and staff process. Effects-based operations is both a way of thinking about operations and a set of processes and procedures for planning, executing, and assessing operations."[3] After a period of several years and continuous dialogue, discussion and debate internal and external to the Army, in July 2008 General James N. Mattis, USMC, who commanded the U.S. Joint Forces Command (USJFCOM), issued a decree that EBO in and of itself was dead as a foundational concept for joint or service operations. General Mattis stated "After a thorough evaluation, it is my assessment that the ideas reflected in EBO, ONA,[4] and SoSA[5] have not delivered on their advertised benefits and that a clear understanding of these concepts has proven problematic and elusive for US and multinational

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[1] U.S. Army, School of Advanced Military Studies. *Student Text, Version 2.0, Art of Design* (Fort Leavenworth, KS: School of Advanced Military Studies, March 2010): 1.
[2] U.S. Air Force, Air Combat Command. *ACC White Paper: Effects-Based Operations* (Langley Air Force Base, VA: Air Combat Command, 2002): ii.
[3] U.S. Army, Center for Army Lessons Learned. *CALL Handbook 05-19, A Special Study on Effects-Base Approach to Military Operations* (Fort Leavenworth, KS: Center for Army Lessons Learned, 2005): iii.
[4] ONA – Operational Net Assessment
[5] SoSA – System-of-Systems Analysis

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personnel…. It is my view that EBO has been misapplied and overextended to the point that it actually hinders rather than helps joint operations."[6]

While the joint community started to address the confusion caused by EBO as directed by the USJFCOM Commander's issued guidance; it can be argued that unknowingly the Army was simultaneously creating a similar circumstance with its efforts to explore, introduce and formally integrate design and design theory into the Army's foundational doctrine. Over the course of the last several years, just like EBO, design became a "tangential" effort to expand and enhance already known and prevailing doctrinal concepts like operational art and operational design, battle command, the operations process, planning and military decision making. Unfortunately (and unintended), even with the greatest of noble intentions, once again an emergent concept started to gain a foothold in the theorist and tactician communities that has potentially led us back to exactly where we ended up with EBO; a concept that is misunderstood, misapplied and causing confusion within the formation.

As a learning organization, the Army and more specifically the leaders responsible for its direction continually and consistently assess, evaluate and adapt our doctrine to the changing conditions of our world, current and anticipated. In the early 1990s the Army introduced Battle Command as a combat function in FM 100-5, Operations (June 1993). In this early doctrine, Battle Command was qualified as the role of the commander to "visualize the battlefield, assess the situation, and direct the military action required to achieve victory."[7] FM 100-5 (1993) also described decision making and leadership as critical aspects of [battle] command.
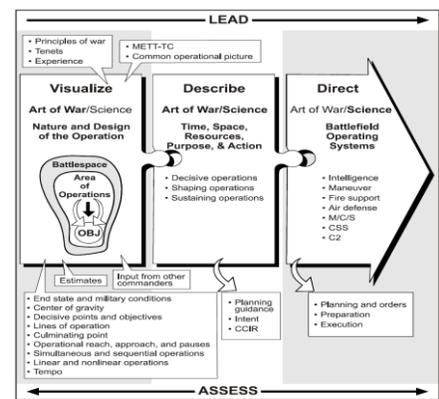

Figure 4-1. Visualize, Describe, Direct, Lead

In the late 1990s and early 2000s, the Army began a major effort to reorganize its formations and codify new foundational doctrine sufficient to the anticipated future operational environments. As part of this effort, a new Battle Command model was introduced in FM 3-0, Operations (June 2001) that deliberately addressed the components of Battle Command as "visualize, describe and direct."[8] In the description of visualize, the doctrine stated that "To visualize the desired outcome, commanders must clearly understand the situation in the battlespace… This framing of the battlespace takes place during mission analysis (see FM 5-0)."[9] Additionally, FM 3-0 (2001) stated that "upon receipt of a mission, commanders consider their battlespace and conduct a mission analysis that results in their initial vision, which they continually confirm or modify. Commanders use the factors of METT-TC, elements of operational design, staff estimates, input from other commanders, and their experience and judgment to develop their vision."[10]

Subsequently FM 6-0, Mission Command: Command and Control of Army Forces (August 2003) deliberately refined the model to "visualize, describe, direct, and lead." FM 6-0 (2003) stated that "Commanders use the activities of visualizing the battlespace, describing their

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[6] General James N. Mattis, USMC, "USJFCOM Commander's Guidance for Effects-based Operations," *Joint Force Quarterly* 51 (4th Quarter, 2008), 105 and 106.
[7] U.S. Army Field Manual (FM) 100-5, *Operations* (Washington, DC: Government Printing Office [GPO], 14 June 1993), 2-14.
[8] U.S. Army Field Manual (FM) 3-0, *Operations* (Washington, DC: Government Printing Office [GPO], 14 June 2001), 5-2.
[9] Ibid, 5-3.
[10] Ibid, 5-3.

commander's visualization to subordinates, directing actions to achieve results, and leading the command to mission accomplishment as their decision making methodology throughout the operations process."[11] FM 6-0 (2003) further amplified the description of visualization and stated that "Military operations never take place in a vacuum; they always occur within a context. Commander's visualization begins with an already established situational understanding."[12] [See Figure 4-1, FM 6-0 (2003) – this is the same chart as Figure 5-1, FM 3-0 (2001)[13]] [For reference in the remainder of this article, it is worth highlighting several points related to battle command's history; first – even though both manuals did not deliberately include understanding as part of the initial battle command models, both acknowledged and addressed the foundational concept of situational understanding in their descriptions and amplification of visualization, second – in both manuals, there was acknowledgement that the anticipated operational environments would be more complex than traditional military tactical problem sets and the aspect of visualization graphically referenced the Elements of Operational Design (EoD), a traditional joint and operational echelon planning construct for use to inform the commander's visualization and development of an operational approach to address the defined military problem, third – even though lead was formally included in FM 6-0's (2003) definition of battle command, it was implied graphically in the FM 3-0 (2001) model, and fourth – both FM 3-0 (2001) and FM 6-0 (2003) graphically portrayed continuous assessment as part of the battle command models]

As we continued to gain operational experiences resultant from our involvement in forward theaters like Afghanistan and Iraq (post-invasion), it became more and more apparent that commanders and staffs at the lower echelons were operating in complex, unfamiliar environments and faced with problem definition traditionally belonging at the strategic and operational echelons. With this growing sense that we needed to equip the lower echelon commanders and staffs with broader thinking models, the first formal introduction of comprehensive design theory in Army doctrine occurred in December 2006 with the publication of FM 3-24, Counterinsurgency. The field manual devoted an entire chapter to design theory entitled Designing Counterinsurgency Campaigns and Operations. Per FM 3-24 (2006), Chapter 4 "… describes considerations for designing counterinsurgency campaigns and operations. For Army forces, this chapter applies aspects of command and control doctrine and planning doctrine to counterinsurgency campaign planning. While campaign design is most often associated with a joint force command, all commanders and staffs need to understand it."[14]

It is important to highlight the specific point made in FM 3-24 (2006) that "campaign design" is most often associated with the joint force command, but all commanders and staffs need to understand it. This caveat stems from a still existent, but dated doctrinal stipulation professed by the U.S. Army Combined Arms Doctrine Directorate (CADD) that only Joint Force Commanders prepare "campaign" plans. The Army has since moved away from this limiting factor and acknowledges that the nature of current operations requires forces at all echelons to have a "campaign mindset" in the sense that they must understand and visualize "complexity over extended time." Our early orientation to facilitate this "understanding of campaign design" focused on two specific aspects of joint doctrine, operational art and operational design. As

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[11] U.S. Army Field Manual (FM) 6-0, *Mission Command: Command and Control of Army Forces* (Washington, DC: Government Printing Office [GPO], 11 August 2003), 4-0 and 4-1.
[12] Ibid, 4-2.
[13] Ibid, Figure 4-1.
[14] U.S. Army Field Manual (FM) 3-24, *Counterinsurgency* (Washington, DC: Government Printing Office [GPO], 15 December 2006), 4-1.

defined in Joint Publication 5-0, Joint Operation Planning, "Operational art is the application of creative imagination by commanders and staffs — supported by their skill, knowledge, and experience — to design strategies, campaigns, and major operations and organize and employ military forces."[15] Concurrently, "operational art encompasses operational design – the process of developing the intellectual framework that will underpin all plans and their subsequent execution. The elements of operational design are tools to help supported JFCs and their staffs visualize what the joint operation should look like and to shape the commander's intent."[16]
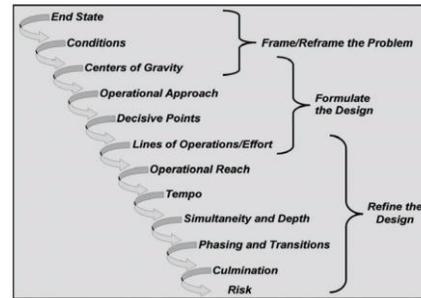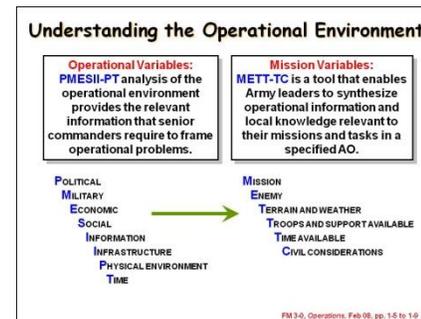

Figure 6-4. Linking the elements of operational design

Informed by this "emergent" direction in FM 3-24 (2006), once again our Army service doctrine began a positive evolution to better prepare leaders at the operational and tactical levels to operate in these complex and ill-defined environmental conditions. Consequently, our capstone doctrine and thinking began to emphasize a more complete and comprehensive understanding of the operational environment as a key and critical aspect of Battle Command in order to inform the commander's visualization. Ultimately, when FM 3-0, Operations (February 2008) was published, the Army redefined Battle Command as, "the art and science of understanding, visualizing, describing, directing, leading, and assessing forces to impose the commander's will on a hostile, thinking, and adaptive enemy. [See Figure 5-1, FM 3-0 (2008)[17]] Battle Command applies leadership to translate decisions into actions—by synchronizing forces and warfighting functions in time, space, and purpose—to

accomplish missions. Battle Command is guided by professional judgment gained from experience, knowledge, education, intelligence, and intuition. It is driven by commanders."[18] Comparable to design thinking, FM 3-0 (2008) specifically stated that "Understanding is fundamental to battle command. It is essential to the commander's ability to establish the situation's context. Analysis of the enemy and the operational variables provides the information senior commanders use to develop understanding and frame operational problems."[19]

Consistent with FM 3-24 (2006), FM 3-0 (2008) also formally included a single chapter devoted to operational art in order to emphasize the importance of design activities in support of the commander's understanding and visualization of complex operational environments. [See Figure 6-4, FM 3-0 (2008)[20]] To that end, both of these additions to our capstone doctrine
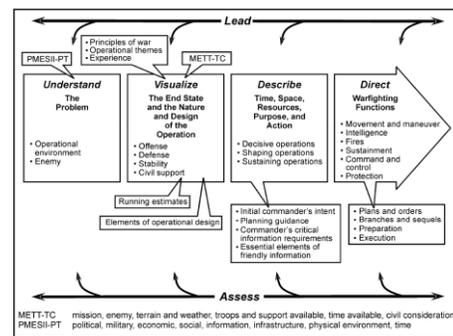

Figure 5-1. Battle command

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[15] Joint Publication 5-0, *Joint Operation Planning* (Washington, DC: Government Printing Office [GPO], 26 December 2006), IV-1.
[16] Ibid, IV-4.
[17] U.S. Army Field Manual (FM) 3-0, *Operations* (Washington, DC: Government Printing Office [GPO], 27 February 2008), Figure 5-1.
[18] Ibid, 5-2.
[19] Ibid, 5-4.
[20] Ibid, Figure 6-4.

were augmented by the introduction of additional planning factors beyond the traditional military planning considerations of METT-TC entitled the Operational Variables. [See CGSC Intermediate Level Education P930 Lesson Graphic – Understanding the Operational Environment[21]] "Military planners describe the operational environment in terms of operational variables…. Joint planners analyze the operational environment in terms of six interrelated operational variables: political, military, economic, social, information, and infrastructure. To these variables Army doctrine adds two more: physical environment and time. As a set, these operational variables are often abbreviated as PMESII-PT. The variables provide a view of the operational environment that emphasizes its human aspects. Since land forces operate among populations, understanding the human variables is crucial. They help describe each operation's context for commanders and other leaders. Understanding them helps commanders appreciate how the military instrument complements the other instruments of national power. Comprehensive analysis of the variables usually occurs at the joint level; Army commanders continue analysis to improve their understanding of their environment. The utility of the operational variables improves with flexible application; human societies are very complicated and defy precise "binning." Whenever possible, commanders and staffs utilize specialists in each variable to improve analysis."[22] This amplification of understanding and operational art within FM 3-0 (2008) became the dominant informing activities of Battle Command and its application in the current, multi-dimensional operational environments for all echelons: strategic, operational and tactical.

As the remainder of the Army began to embrace and internalize the philosophies described by the newly defined Battle Command model (understand, visualize, describe, direct, lead and assess), simultaneously there was an undercurrent of "bigger thinking" and a dominating perception began to develop that our traditional Army problem solving processes informed by Battle Command and operational art were inadequate to sufficiently address the complexities of today's operational environments. The first formal introduction of this "bigger thinking" was described in a newly developed and released U.S. Army Training and Doctrine Command (TRADOC) pamphlet entitled, Commander's Appreciation and Campaign Design (CACD) (January 2008). As stated in the forward, "The complexity of today's operational environment requires a different approach to problem solving. It requires the commander's direct participation in a heavily inductive reasoning process upfront. This process must produce a well-framed problem hypothesis and an associated campaign design—a conceptual approach for the problem. This appreciation of the problem and the design of a solution can then be handed off to a deductive reasoning process executed by the staff under the commander's direction that, in turn, produces executable plans and orders for implementation."[23] The implications within this description that our Battle Command model and standing problem solving processes were lacking are numerous, and thus began the deliberate and snow-balling effort to formally incorporate broader design concepts and design theory into our doctrine.

Led by the U.S. Army's School of Advanced Military Studies (SAMS), multiple writings and descriptions of design and design theory began to openly proliferate across the formation. Most notably, in the March-April (2009) issue of Military Review, the then serving SAMS

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[21] See U.S. Army, Command and General Staff School, Center for Army Tactics, Intermediate Level Education (ILE) P930 Preparatory Course, Supporting Lesson Slides, Lesson_2_US_Army_Doctrine_(Version_11-01 with notes)
[22] Ibid, 1-5.
[23] U.S. Army, Training and Doctrine (TRADOC) Command. *TRADOC Pamphlet 525-5-200, Commander's Appreciation and Campaign Design, Version 1.0* (Fort Monroe, VA: Training and Doctrine Command, 28 January 2008): i.

Director, Colonel Stefan Banach, published two separate articles that became a condition setter for the way forward for deliberate integration of design theory into our capstone doctrine.

In the Art of Design article, Colonel Banach and co-author Dr. Alex Ryan state, "At SAMS, we believe the art of design is a way of thinking more than it is a theory, process, or product."[24] Once again, we were poised to introduce "a philosophy" as opposed to tangible, easily understood concepts and principles beyond those of our current doctrine. Colonel Banach and Dr. Ryan specifically describe how "A philosophy of design tailored to military operations, called systemic operational design, has been developed within a largely verbal tradition by retired Israeli Brigadier General Shimon Naveh."[25] They go on to say that "Systemic operational design provides an important foundation for military design, even if some members of our community of practice have struggled to employ many of its intricacies when faced with real-world problem situations."[26] The inability of "some members of our community" to employ the intricacies of design sounds a lot like the challenges acknowledged by the Air Force as they prepared to better educate and inform the joint community in regards to what EBO was (and was not) as described in the EBO White Paper (2002).

That brings us to where we are today. The recently published FM 5-0, Operations (2010) includes a dedicated chapter that is the formal extension of the design effort from the last several years. The first significant concern is the struggle of Army doctrine traditionalists to understand how the "philosophy" of design enhances and goes beyond our current doctrine. Our problem solving processes as described in FM 5-0 (2005) reinforced by Battle Command and operational art in FM 3-0 (2008) are well-known, time-tested and correctly viewed as a hallmark of the Army's planning and problem solving competencies. However, the formal introduction of design theory is creating a perception that these "new" design concepts are the panacea to our problem solving challenges in complex, multi-dimensional environments.

In the article, Educating By Design, Colonel Banach stated that "Some design concepts have already been written into Army doctrine while others are conflated with planning tasks. Fully developing design theory, separating design tasks from those of planning in doctrine, and implementing new design fundamentals without losing the essence of the art of design is the challenge at hand."[27] The design proponents specifically acknowledge that there must be a distinction between design, its ideas and purpose(s) and those of our standing doctrinal practices. In the companion article, Art of Design, Colonel Banach and Dr. Ryan stated that "For design to be useful in the military domain, it must complement and interact with existing planning doctrine. This means the interface between design and planning needs to be clearly specified."[28]

This concern is well founded. In his Commander's Perspective on Effects-based Operations and Related Concepts, a precursor to the published EBO guidance, General Mattis highlighted the challenge in the joint community to adequately understand the relationship between Effects-based Approach (EBA) and standing doctrinal practices. He described how "In early 2005, USJFCOM began a transition from EBO to effects-based approach (EBA), described in a February 2006 non-authoritative Commander's Handbook for an Effects-based Approach to Joint Operations. The handbook reinforced the importance of understanding the operational

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[24] Stefan J. Banach and Alex Ryan. "The Art of Design: A Design Methodology," Military Review (March-April 2009), 106.
[25] Ibid, 106.
[26] Ibid, 106.
[27] Stefan J. Banach. "Educating By Design: Preparing Leaders for a Complex World," Military Review (March-April 2009), 97.
[28] Banach and Ryan, 106.

environment, setting the correct conditions for success, and relying on the commander's judgment and intuition. But the handbook did not overcome the community's impression that EBA was intended as a replacement for proven planning and intelligence processes."[29] Interestingly, as the serving Army formation studies and becomes familiar with FM 5-0 (2010), we are in fact starting to see similar struggles develop as an outcome of the formal introduction of design into our published doctrine and more specifically, a prevalent lack of understanding of how design informs (and relates to) Battle Command, the operations process, planning, problem solving and decision making.

In an attempt to underscore the friction between design concepts and their relationship to planning and traditional military problem solving, FM 5-0 (2010) describes the design-military decision making process (MDMP) interface as, "Depending on the situation—to include the complexity of the problem—commanders conduct design before, in parallel with, or after the MDMP." [30] FM 5-0 (2010) goes on to further amplify each condition of design and MDMP interface, but does little to specifically inform how one relates to the other. This failure to clearly describe the interaction between the two may have in fact been purposeful. As described by Colonel Banach and Dr. Ryan, "Design as practiced is a creative activity, which draws freely on terminology and a variety of theories unique to an individual problem situation. Whereas our description of design methodology needs to be logical and orderly to be comprehensible, design practice can be much more flexible in implementation. Design is a non-linear, interactive, and continuous cognitive activity."[31] If our doctrine was too specific and distinct in our definition of the relationships between design and planning (i.e., MDMP), it is possible that we would create one of the exact outcomes that design was specifically introduced to overcome, and that is procedural, linear thinking. By qualifying design as occurring before, concurrent with a military problem solving activity and/or during execution of operations, we leave the door open for it to "fit" wherever we want. This is consistent with design being a "way of thinking" as opposed to a tangible process with specific, attainable and qualified outcomes. Even though there have been great efforts to address this particular issue with the introduction and integration of design, the community continues to wrestle with the relationship between design and planning.

This directly results in a related design-planning interface challenge, and that is to answer the question, "how do we effectively communicate the idea of design in contrast to our current planning doctrine?" In the Educating By Design article, Colonel Banach stated "a major criticism and stumbling block in moving design forward has been an inability to define terms and use ordinary language."[32] In an effort to address these challenges, it appears that the design proponents and doctrine writers defaulted to an already understood frame of reference, Battle Command. FM 5-0 (2010) provides the following definitions of planning and design. "Planning is the process by which commanders (and the staff, if available) translate the commander's visualization into a specific course of action for preparation and execution, focusing on the expected results (FM 3-0). Put another way, planning is the art and science of understanding a situation (understand), envisioning a desired future (visualize), and laying out an operational approach to achieve that future (describe). Based on this understanding and operational approach, planning continues with the development of a fully synchronized operation plan or

[29] See Commander's Perspective on Effects Based Operations and related Concepts (Norfolk, VA: U.S. Joint Forces Command, 2008).
[30] U.S. Army Field Manual (FM) 5-0, *The Operations Process* (Washington, DC: Government Printing Office [GPO], 26 March 2010), 2-8.
[31] Banach and Ryan, 108.
[32] Banach and Ryan, 107.

order that arranges potential actions in time, space, and purpose to guide the force during execution (direct) [items in parentheses added by author]."[33] In contrast, "Design is a methodology for applying critical and creative thinking to understand, visualize, and describe complex, ill-structured problems and develop approaches to solve them."[34] Clear and distinct to each definition is the use of Battle Command components which in and of itself has led to some of the confusion in regards to what design is, what it is not and how it compliments and reinforces Battle Command, the operations process, planning and traditional military problem solving.

A final challenge presented to the force in regards to the formal introduction of design is the typical desire to have something tangible for use and application during military problem solving. In other words, "what does right look like?" In the Art of Design article, Colonel Banach and Dr. Ryan state that, "… a methodology for design has not been described in any detail. [Brigadier General (retired) Huba] Wass de Czege rightly declares that there is no formulaic way of presenting design. But a philosophy of design by itself is too broad to function as a guideline for action. What is needed lies between the rigid precision of a technique and the abstract wisdom of a philosophy."[35] Although no usable examples and specifics to this point are provided in FM 5-0 (2010), SAMS spent a lot of time and effort to specifically address this issue resulting in the recently published Art of Design, Student Text Version 2.0. This document is a critical reflection of design and design theory as much as it is an informative reference that may further enhance design understanding. The SAMS Student Text states, "Broadly speaking, the two biggest changes to design since its introduction in 2005 are simplifications of the design lexicon and alternative approaches to the delivery of design education. Both are intended to lower barriers to entry for practitioners by finding easier paths to the same goal: learning a methodology for shared critical and creative thinking and acting within problematic operational situations. While care must be taken not to diminish design to the point where it is neither critical nor creative, there is great merit in improving the accessibility of design, so that more professionals can make use of this approach to coping with complex operational challenges."[36]

This is important because unlike EBO, General Mattis directly embraced design and design theory and issued the following guidance in a USJFCOM memorandum, "Established joint process, such as operational design and joint operation planning, provide a fundamentally sound problem-solving approach. However, staffs have been seen too often apply these processes mechanistically, as if progressing through a sequence of planning steps would produce a solution. I would expect this habit to be common particularly in organizations where a commander reacts to these problems rather than leads them. "Over-proceduralization" inhibits the commander's and staff's critical thinking and creativity, which are essential to finding a timely solution to complex problems. An approach that does not emphasize thinking and creativity is incomplete. My assessment is that our current doctrinal approach to foster clear, careful thinking and creativity, particularly early in design and planning, is insufficient and ineffective."[37] So if we formally "over-proceduralize" the design process, we might find ourselves right back at square one just like we did with EBO.

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[33] U.S. Army Field Manual (FM) 5-0, *Operations* (Washington, DC: Government Printing Office [GPO], 26 March 2010), 2-1.
[34] Ibid, 3-1.
[35] Banach and Ryan, 106.
[36] U.S. Army, School of Advanced Military Studies. *Student Text, Version 2.0, Art of Design* (Fort Leavenworth, KS: School of Advanced Military Studies, March 2010): 4.
[37] See Vision for a Joint Approach to Operational Design (Norfolk, VA: U.S. Joint Forces Command, 2009).

In conclusion, this article is not intended to criticize the efforts of many great Americans to improve upon our U.S. Army service doctrine and its purpose of creating more competent, confident and capable leaders serving in today's and tomorrow's complex operational environments. However, the U.S. Army seems to be creating a similar dilemma just like EBO that is challenging our already understood Battle Command model and confusing our trusted and proven approaches to solving military problems. In response to these growing issues, if we entertain the idea that design is no more than a conceptual (as opposed to tangible) process of identifying and evaluating relevant considerations that help put the situation into context (understanding), ultimately enabling the Commander and staff to make judgment on action(s) required and the application of resources (visualization), then it seems reasonable to conclude that design in simple terms is actually an element of Battle Command. With this perspective, we may be better off placing continued and future emphasis on amplifying Battle Command and its relationship to the operations process, planning and problem solving as opposed to trying to formalize the design process. If not, when we make major adjustments to our core processes to the point of causing confusion, we should remember the USJFCOM Commander's concluding comments in regards to the unanticipated 2nd and 3rd order effects of the proliferation of EBO throughout our joint force, "Concepts and experimentation are intended to be innovative and must be pushed to their extremes. Most experiments fail, yet through failure springs success. That is acceptable and is part of the price we pay for unregimented thinking and open minded, disciplined experimentation. That said, I want us to be mindful of the lessons of the past 7 years. If we made one mistake, it was that we fast-tracked some operational concepts and allowed them to gain inappropriate influence while unproven by history, experimentation, and current operations."[38]

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[38] Mattis,108.