Fortifying Design in the Army Operations Process: An Imperative for Winning in a Complex World

A Monograph

by

MAJ Stephen G. Tyminski Jr.
US Army

MENS EST CLAVIS VICTORIAE

School of Advanced Military Studies
US Army Command and General Staff College
Fort Leavenworth, KS

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14. ABSTRACT

The United States has enjoyed a significant amount of influence in the western Pacific since the end of World War II. The foothold gained for the US military across the region has enabled US power projection throughout the Asia-Pacific region. Recently, China has been encroaching on US influence in the region as part of its expansion policy. To supplant the United States as the preeminent power in the western Pacific, China gained economic leverage over the Pacific island nations through predatory lending and increased diplomatic engagements with the regional leaders. US Indo-Pacific Command is receiving more attention as the nation transitions from the counter-insurgency operations across the Middle East into great power competition with China.

The operational environment is changing from the status quo that enabled the US military's freedom of movement, to one of competition across the Pacific islands. US Indo-Pacific Command faces solving the economic problems of the island nations through the military instrument of power. The challenge is to create incentives that attract allies in the region in the face of Chinese incentives that are enticing in the short-term. The United States can maintain its influence through expanding engagements like Pacific Pathways and finding ways to bolster other sectors of the island nations' economies, like the tourism industry.

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Approved by:

_____, Monograph Director
Anthony E. Carlson, PhD

_____, Seminar Leader
Barton L. Johnke, COL

_____, Director, School of Advanced Military Studies
Brian A. Payne, COL

Accepted this 21st day of May 2020 by:

_____, Acting Director, Office of Degree Programs
Prisco R. Hernandez

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Abstract

Fortifying Design in the Army Operations Process: An Imperative for Winning in a Complex World by MAJ Stephen G. Tyminski Jr, 43 pages.

The recent national-level strategic shift from counterinsurgency operations to a focus on great power competition serves as background for this monograph. Although the US Army has conducted a doctrine overhaul to support the new strategic direction, there were no corresponding changes in the Army operations process. Seemingly, the operations process that incorporated design in 2010 to deal with the complexity of counterinsurgency operations would need a similar overhaul to meet the added complexity of large-scale ground combat or potentially the current adaptation of design, the Army Design Methodology (ADM), will suffice. As a result of this disconnect, this monograph evaluates the US Army operations process doctrine against the academic work on design, highlighting three schools of thought within the design field: sensemaking, decision making, and leadership.

Additionally, the monograph evaluates the thesis that the ADM is not truly a methodology but instead as part of a broken operations process, with shortfalls manifesting in all three schools of thought. The major result from the research finds that the US Army operations process is not so much broken, as a disconnect exists between the Army's espoused theories on design and the design theory in action. This disconnect leads to the main recommendation of explicitly adopting design as the Army initially envisioned in 2010 and in a manner more aligned with Joint doctrine. By taking this step, the US Army will be better prepared for the complexity of great power competition, large scale combat operations, and the future all-domain battlefield.

Contents

Acknowledgements

Abbreviations

ADM	Army Design Methodology
ADP	Army Doctrine Publication
ADRP	Army Doctrine Reference Publication
ATP	Army Technical Publication
CALL	Center for Army Lessons Learned
FM	Field Manual
JP	Joint Publication
MCDP	Marine Corps Doctrine Publication
MDMP	Military Decision-Making Process
SAMS	School of Advanced Military Studies
TLP	Troop Leading Procedures
TRADOC	Training and Doctrine Command

Figures

Introduction

> This difficulty of *accurate recognition* constitutes one of the most serious sources of friction in war, by making this appear entirely different from what one had expected.
>
> –Carl von Clausewitz, *On War*

Since the 11 September 2001 terror attacks, the US military has been consistently engaged in counterinsurgency operations. During this time, other nations strove to advance their interests and military capabilities, reducing or eliminating the gaps between themselves and the US military. In the 2018 National Security Strategy, President Donald J. Trump stated that, this "competition requires the United States to rethink the policies of the past two decades."[1] This stark change in direction caused reciprocal changes throughout the US government, none more so than within the Department of Defense.

The US military responded to the strategic shift directed in the National Security Strategy by issuing nested strategies of its own. The National Defense Strategy distilled the new strategic direction laid out by the President, elevating "inter-state strategic competition, not terrorism, [as] the primary concern in U.S. national security."[2] In the same document, Secretary of Defense James Mattis acknowledged "the increasingly complex global security environment, characterized by overt challenges to the free and open international order and the re-emergence of long-term, strategic competition between nations."[3] In the National Military Strategy, the Joint Staff provided additional guidance. The Joint Staff established a three-part framework for the transition to an "increasingly complex security environment defined by rapid technological change, challenges from adversaries in every operating domain, and the

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[1] Donald J. Trump, *National Security Strategy of the United States of America* (Washington, DC: Government Printing Office, 2017), 3.

[2] Jim Mattis, *Summary of the 2018 National Defense Strategy* (Washington, DC: Government Printing Office, 2018), 1.

[3] Ibid., 2.

impact on current readiness from the longest continuous stretch of armed conflict in our Nation's history."[4]

Projecting into the future, it is clear that the United States acknowledges the next major conflict will be increasingly complex, perhaps more so than ever before. The future's battlefields will be "more lethal and disruptive," and adversaries will compete across all domains.[5] Terms like "grey zone," "hybrid warfare," and "multi-domain operations" are all used to describe different aspects of future conflicts. While their meanings differ slightly, their common feature is complexity.[6] This complexity will require a "clear-eyed appraisal of the threats we face, "acknowledgment of the changing character of warfare, and a transformation of how the Department [of Defense] conducts business."[7]

The US Army responded to the complexity described in the nation's strategic documents by executing a wide-reaching review and revision of its doctrine. Starting in 2017 with Field Manual (FM) 3-0, *Operations,* the US Army established a "doctrinal approach for theater armies, corps, divisions, and brigades to address the challenges of shaping operational environments, preventing conflict, prevailing during large-scale ground combat, and consolidating gains to follow through on tactical success."[8] The basis of the new US Army doctrine is a current strategic environment of great power competition with an eye towards a future multi-domain operational environment. The US Army firmly rooted its doctrine in "be[ing] ready to win with the forces we have" now, while steadily modernizing the force towards dealing

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[4] The Joint Staff, *Description of the National Military Strategy* (Washington, DC: Government Printing Office, 2018), 1; Mattis, *Summary of the 2018 National Defense Strategy*, 1.

[5] Mattis, *Summary of the 2018 National Defense Strategy*, 3.

[6] Kathleen H Hicks et al., *By Other Means Part II: Adapting to the Gray Zone* (Washington, DC: Center for Strategic and International Studies, 2019), 2; Joshua Ball, "What Is Hybrid Warfare? Non-Linear Combat in the 21st Century," *Global Security Review*, August 1, 2018, accessed March 1, 2020, https://globalsecurityreview.com/hybrid-and-non-linear-warfare-systematically-erases-the-divide-between-war-peace/; US Department of the Army, TRADOC Pamphlet (TRADOC PAM) 525-3-1, *The U.S. Army in Multi-Domain Operations 2028* (Washington, DC: Government Printing Office, 2018), Forward.

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

[8] US Army, FM 3-0, Forward.

with the complexity of the future.[9] By 2019, the Army had overhauled the vast majority of Army

Doctrinal Publications (ADP) and FMs to reflect the changing strategic focus.

During its doctrinal review, the Army reviewed its operations process and made only minor

revisions. The most substantial change was the combining of Army Doctrine Reference Publication

(ADRP) 5-0, *The Operations Process*, and ADP 5-0, *The Operations Process*, into a single 2019 edition

of ADP 5-0, *The Operations Process*. Although the two doctrinal manuals were combined, the major

themes and information contained within them remained mostly untouched.[10]

Interestingly, the last major overhaul of the operations process doctrine occurred in 2010 to

address the difficulties brought about by the complexity of counterinsurgency operations. In response to

the complexity of counterinsurgency operations associated with the global war on terror, General Martin

E. Dempsey, then the Commanding General of US Army Training and Doctrine Command (TRADOC),

and the US Army realized that their current analytical method of problem-solving was insufficient. In the

2010 version of FM 5-0, General Dempsey described the complexity facing the Army as "trends of

growing uncertainty, rapid change, increased competitiveness, and greater decentralization."[11] Dempsey

went further to state that the Army's leadership must "be prepared to confront a variety of complex

problems, most of which will include a myriad of interdependent variables."[12] To achieve this, FM 5-0

introduced design into the doctrine. Design is "a critical and creative thinking methodology to help

understand an environment, analyze problems, and consider potential approaches."[13] Academically,

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[9] US Army, FM 3-0, Forward.

[10] US Department of the Army, Army Doctrine Publication (ADP) 5-0, *The Operations Process* (Washington, DC: Government Printing Office, 2019), vii.

[11] US Department of the Army, Field Manual (FM) 5-0, *The Operations Process* (Washington, DC: Government Printing Office, 2010), Forward.

[12] Ibid.

[13] US Army, FM 3-0, Forward.

design is also considered the third revolution of systems thinking, which is a process of examining a problem via its interdependent relationships within its overall context.[14]

By 2012, the Army further codified design into the operations process by incorporating the Army Design Methodology (ADM) in ADP 5-0 "to serve as a methodology for applying critical and creative thinking to understand, visualize, and describe problems and approaches to solving them."[15] In doing so, the Army created the three-part operations process that exists today: the ADM, the military decision-making process (MDMP), and the troop leading procedures (TLPs). Although ADRP 5-0 established an operations process based on three integrated methodologies, the focal point of the operations process remains the MDMP. Indeed, the Army's Center for Army Lessons Learned (CALL) recently stated that a "unit's success is directly related to the ability of the staff to execute the MDMP" and not the entire operations process.[16] In the same MDMP handbook, CALL also noted that "errors committed early in the process become increasingly problematic as planning continues."[17] The errors CALL refers to are errors in understanding after observing units deployed in complex environments and at national training centers. The ADM is designed specifically to reduce errors in framing the environment, but organizations like CALL continue to promote better MDMP at the expense of the ADM.[18]

The most recent revision to the Army operations process doctrine, ADP 5-0, made no significant changes to the operations process despite the Army's acknowledgment that "large-scale combat operations [are] more chaotic, intense, and highly destructive than those experienced in the past several decades," as

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[14] Jamshid Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity: A Platform for Designing Business Architecture*, 3rd ed. (Burlington, MA: Morgan Kaufmann, 2011), 16.

[15] US Department of the Army, Army Doctrine Reference Publication (ADRP) 5-0, *The Operations Process* (Washington, DC: Government Printing Office, 2012), 2–4.

[16] US Department of the Army, Center for Army Lessons Learned (CALL) Handbook, *MDMP* (Leavenworth, KS: Government Printing Office, 2015), iii.

[17] Ibid.

[18] Ibid.

well as, the Joint Staff's charge to "adapt current planning and decision-making" processes.[19] Complexity remains a major factor in large scale combat operations, and the future operational environments will continue to be subject to complexity with the addition of new domains, advanced technology, and weaponry. On the future all-domain battlefield, the successful commander will be one that can not only manage complexity, but the one that has a unit capable of "impos[ing] complexity on the enemy".[20]

The monograph will explore the question of whether or not the structure of the current operations process, specifically the ADM, equips commanders with the intellectual tools the future battlefield will require. In probing this question, the monograph delves into the academic work on design. While doing so, three distinct schools of thought emerged that impinge on the military application of design: sense-making, decision-making, and leadership. The foremost theorists in the field of design do not limit themselves to a singular school of thought, but each have concepts or share concepts that can be grouped into these schools. By using these schools of thought, this monograph argues that ADM is not serving as a methodology, but instead as part of a broken operations process, with shortfalls manifesting in Army sense-making, decision-making, and leadership. Revising the ADM doctrine, and by extension the Army operations process, to better align with academic work on design, will enable self-reflection during sense-making, true iteration in decision-making, and more effective alignment within leadership. These adjustments will ultimately help forge a systemic Army operations process equipped to deal with the complexity of great power competition and future multi-domain operations.

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[19] US Army, ADRP 5-0, vii; US Army, FM 5-0, 1–2; The Joint Staff, *Description of the National Military Strategy*, 4.

[20] US Army, TRADOC PAM 525-3-1, x.
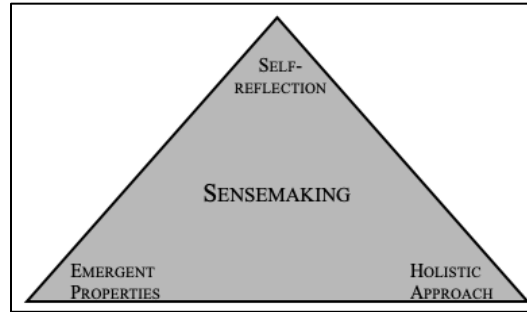
Design Sensemaking Principles

Figure 1: Sensemaking Design Principles. Created by the author.

The ability or skill of sensemaking is "needed now more than ever because humans are becoming overwhelmed by complexity."[21] Peter Senge, a noteworthy theorist in the field of systems thinking and organizational learning, describes the need for systems thinking as a sensemaking tool to deal with "perhaps the first time in history [where] humankind has the capacity to create far more information than anyone can absorb, to foster far greater interdependency than anyone can manage, and to accelerate change far faster than anyone's ability to keep pace."[22] Other leaders in the field of sensemaking, including David Snowden and Cynthia Kurtz, developed a model to help deal with the very problem that Senge describes. Their *cynefin framework* is well known in the field of business and leadership, but has also gained significant traction across many disciplines that deal with complexity.[23] The cynefin framework is a complexity model aimed not at the categorization of problems, but instead on the sensemaking of problems. The distinction between the two helps to explain why the cynefin framework is so important in the fields of sensemaking, complexity, and design thinking. A categorization model is a two by two matrix that compares two distinct variables and allows the user to input data into the framework to categorize the relationship between the variables and make decisions based on the

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[21] Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization*, rev. ed. (New York, NY: Doubleday/Currency, 2006), 69.

[22] Ibid.

[23] C. F. Kurtz and D. J. Snowden, "The New Dynamics of Strategy: Sense-Making in a Complex and Complicated World," *IBM Systems Journal* 42, no. 3 (2003): 467.

perceived relationships. In such models, "the framework precedes the data," enabling the user to exploit the perceived relationship to maximize their desired benefit; however, it does not provide them the capability to explore the relationship or gain a more in-depth understanding of the system in action.[24]

In contrast, the "data precedes the framework" in the cynefin framework.[25] As a result, the patterns emerge from the data rather than from the framework itself, empowering the user to gain a greater understanding of the relationships that exists in an observed system and thus employ a prescribed "decision model" based on the type of environment the user finds themselves in.[26] The benefit gained from using the cynefin model is that a user can conduct informed sensemaking given the level of complexity they and their organization are currently operating in and more rapidly enact their decision-making system. An additional benefit of the cynefin sensemaking model is the definitions it provides the field of sensemaking. Problems range from simple to chaotic, and by using the cynefin definitions of each type, a standardized language is available within the sensemaking discipline.

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[24] David Snowden, *The Cynefin Framework*, Video (Conwy: CognitiveEdge, 2010), accessed November 20, 2019, https://www.youtube.com/watch?v=N7oz366X0-8; Kurtz and Snowden, "The New Dynamics of Strategy: Sense-Making in a Complex and Complicated World."

[25] Kurtz and Snowden, "The New Dynamics of Strategy: Sense-Making in a Complex and Complicated World"; Snowden, *The Cynefin Framework.*

[26] Kurtz and Snowden, "The New Dynamics of Strategy: Sense-Making in a Complex and Complicated World"; Snowden, *The Cynefin Framework.*
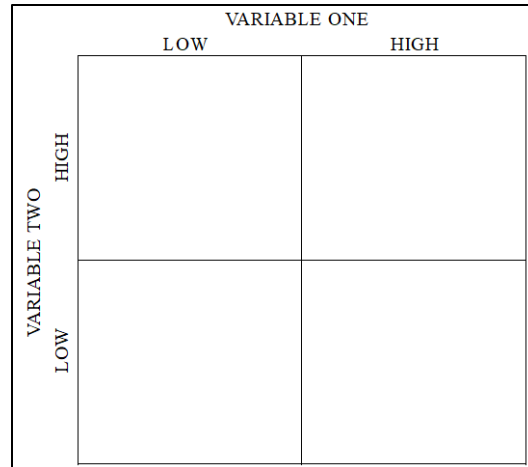
Figure 2: Categorization Model. Created by author derived from *The Cynefin Framework.* David Snowden*, The Cynefin Framework,* Video (Conwy: CognitiveEdge, 2010), accessed November 20, 2019, https://www.youtube.com/watch?v=N7oz366X0-8.
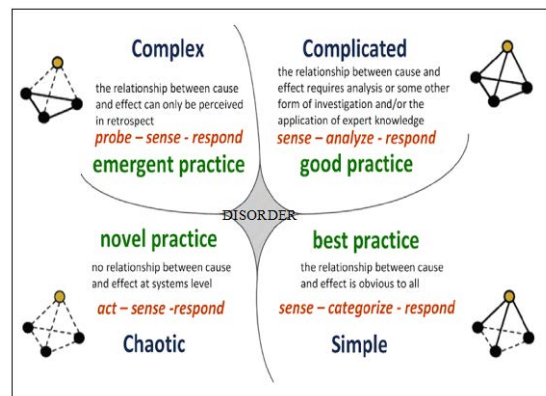
Figure 3: The Cynefin Framework. David Snowden*, The Cynefin Framework,* Video (Conwy: CognitiveEdge, 2010), accessed November 20, 2019, https://www.youtube.com/watch?v=N7oz366X0-8.

The concept of sensemaking in complex environments is one of the foundations of the field of design thinking. As such, scholars in the field dedicate significant effort to detailing methods to distill and simplify the complex. The purpose of these methods is to allow for goal-oriented, informed decision making to occur despite environmental complexity. This monograph will highlight two other frameworks to illustrate the interconnectedness of design and sensemaking.

Jamshid Gharajedaghi's iterative process of inquiry model serves as an example of the interconnectedness of design and sensemaking. Gharajedaghi's model acknowledges the existence of biases in human nature. Another factor of Gharajedaghi's model that makes it important is its ability to

account for the context surrounding a problem. The design principle of openness, that no problem or

solution is valid free of context, is at the forefront of Gharajedaghi's iterative inquiry model, which

accounts for the biases of humans as part of the context of the problem. An assumption that Gharajedaghi

makes explicit before enacting his model is that "all actions are preceded by some mental image, or

theory, about the reality."[27] By causing the sense maker to acknowledge their personal biases that stem

from their institutionalization and use of heuristics, the model accounts for "man's relationship with his

environment [being] characterized by worldopenness."[28] By incorporating the sense maker into the

context that surrounds the system observed, the iterative inquiry model ensures a holistic and systematic

examination of a problem. The emphasis on iteration and context within Gharajedaghi's model ensures

the maximum amount of relationships between the elements making up a given problem set are examined,

accounted for, mapped, and ultimately understood.
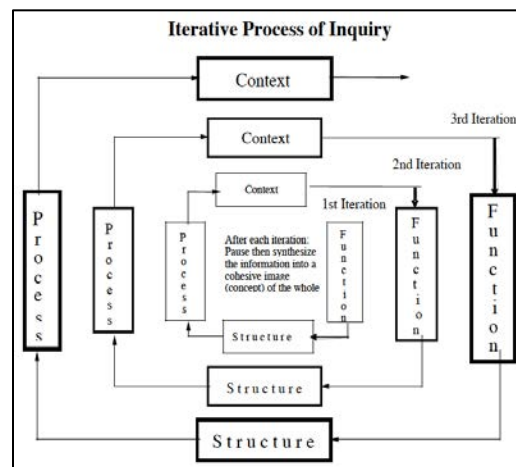
Figure 4: Gharajedaghi's Iterative Process of Inquiry. Gharajedaghi, *Systems Thinking,* 93

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[27] Gharajedaghi, *Systems Thinking*, 135.

[28] The concept of a unique set of experiences from birth onward institutionalizing humans and the quote on man's relationship with the open system of the world is drawn from Peter L. Berger and Thomas Luckmann, *The Social Construction of Reality: A Treatise in the Sociology of Knowledge* (New York: Anchor, 1967); The concept of mental models as heuristics is derived from Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2013).

Another design-based sensemaking model comes from the field of organizational psychology. While researching the emergent property of culture that exists within all organizations, Edgar Schein developed a design-based model for taking a holistic view of an organization to determine the elements that create a culture.[29] In developing and employing his model, Schein overcomes the human nature to apply a reductionist approach aimed at simplifying a problem by breaking it down into its parts rather than examining the entire system.[30] His approach begins by examining the artifacts, the visible organizational structures and processes within an organization.[31] The second level of sensemaking aims to understand the "espoused values" of the organization. At this level, the sensemaker can explore the "why" of the visible artifacts, examining strategies, goals, and philosophies present in the organization's structure, as well as their relationship to the artifacts and the underlying assumptions present.[32] The third iteration of sensemaking targets those very underlying assumptions that were formed at the start of the organization and have become ingrained into the members.[33]

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[29] Edgar H. Schein, *The Corporate Culture Survival Guide*, rev. ed. (San Francisco, CA: Jossey-Bass, 2009), 21.

[30] Ibid.

[31] Ibid., 21–22.

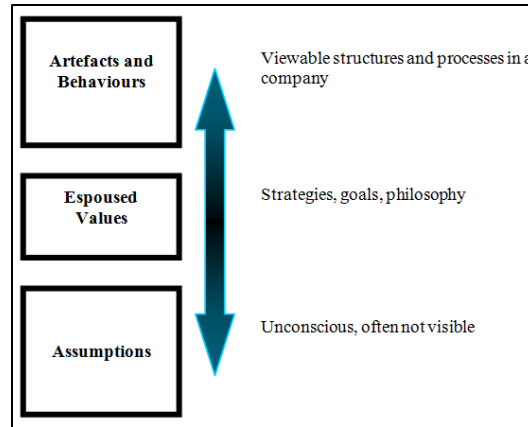[32] Ibid., 23.

[33] Ibid., 21, 25–26.

Figure 5: Edward Schein's systemic observation model. Graphic obtained from Yvonne Ziegler, Regine Graml, and Caprice Weissenrieder, "Gender Diversity Culture Check: Study of the Influencing Factors of the Organizational Culture on the Number and Acceptance of Women in Leadership Positions in the Aviation Industry in Germany," World Academy of Science, Engineering and Technology International Journal of Social, Education, Economics and Management Engineering 6, no. 10 (2012): 381.

Through the iterative application of sensemaking Schein's model can provide a complete picture of an organization and the emergent property of culture that an organization creates. Although Schein created his model to analyze complex organizations, a sensemaker can use the same fundamentals to analyze any complex problem. As Schein acknowledges, "if you really want to understand the culture [emergent properties], you must have a process involving systematic observation."[34] In arguing such, he recognizes the value of design in sensemaking.

Although the different sensemaking models detailed here, as well as many others, are described as individual models for sensemaking, an organization can also adopt them. Whether singularly or in a group, sensemaking is part of the human condition. Analytical thinking has been the "essence of classical science" and served the human race well for over 350 years, but as complexity increases, our sensemaking methods must adapt.[35] Design-based sensemaking provides people and organizations with

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[34] Edgar H. Schein, *The Corporate Culture Survival Guide*, 28.

[35] Gharajedaghi, *Systems Thinking*, 90; Peter Checkland, *Systems Thinking, Systems Practice: Includes a 30-Year Retrospective* (Chichester, NY: John Wiley & Sons, 1999), 45.

the best ability to operate effectively in complexity and make decisions that serve to promote our basic existential needs and our loftier goals of exploration and advancement.

While the actual sensemaking method chosen by any given individual or group can contribute to the quality of sensemaking, the most crucial factor is that any sensemaking effort accounts for self-reflection, emergent properties, and a holistic approach. By utilizing these three design basics during sensemaking, the user has the best chance to make sense of complexity and the best chance to make accurate and value-maximizing decisions.

Design Decision-making Principles
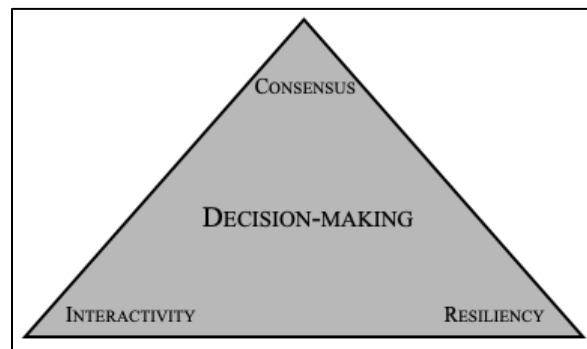
Figure 6: Decision-making design principles. Created by the author.

As presented in the preceding section, the process of sensemaking informs the understanding on which decisionmakers base their options. The greater the level of understanding, the more likely a given decisionmaker will make accurate decisions in the face of complexity. If quality sensemaking occurs, then the decisionmaker can confidently introduce a course of action that will alter the problem environment in desirable ways. Just as in sensemaking, design provides principles to aid decisionmakers in the development and implementation of their desired solution.

The first design principle that decisionmakers should consider during decision-making is interactivity. Gharajedahi describes interactive decision-making as a "type of planning, which assumes that the future is created by what others and we do between now and then; therefore, the objective is to design a desirable future (next generation of the system) and to invent or select ways of bringing it

about."[36] Much like the design principle of openness, decisions will interact with the open problem system. Therefore, decisions must account for the actions not only of the decisionmaker, but of other actors and stakeholders within the problem environment as well. The added complexity of others interacting with the same problem environment, with their unique motivations, desires, and capability, increases the complexity of the problem exponentially.

This increased complexity makes the ability of a decisionmaker to predict the outcome of their choices exceedingly difficult. So difficult, that prediction expert Philip Tetlock concluded, "that the average expert did about as well as random guessing."[37] Although Tetlock's research into prediction revealed that it was exceedingly difficult, he also concluded that "prediction was a skill that can be cultivated."[38] Those who have cultivated the "super forecasting" skill share many of the same traits as design thinkers.[39] Decisionmakers do not need to be superforcasters and, in reality, should not desire to be. A superforcaster attempts to predict the probability of a single event in the future, whereas, a decisionmaker seeks to bring about a particular future through action—their decision. In this way, decisionmakers are designers, "seek[ing] to choose rather than predict the future."[40]

Decisionmakers benefit from embracing some of the forecasting skillsets, but the decisionmaker takes the additional interactive step. Given the low probability of success when making a prediction, any worthwhile decision must remain viable across the entire range of possible outcomes. In short, decisions must be resilient in the face of complexity. Systems thinking scholar Alex Ryan and cybernetics theorist W. Ross Ashby described this principle as the necessity of any solution system "to regulate or absorb

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[36] Gharajedaghi, *Systems Thinking,* 202.

[37] Philip E. Tetlock and Dan Gardner, *Superforecasting: The Art and Science of Prediction*, reprint ed. (New York, NY: Broadway Books, 2016), 4–5.

[38] Ibid.

[39] Ibid., 4, 277-284; Gharajedaghi, *Systems Thinking*, 137.

[40] Gharajedaghi, *Systems Thinking*, 23.

variety introduced by the outside environment" or the "law of requisite variety."[41] Similarly, Gharajedaghi describes the need for organizational decision making to "adapt actively" to the changing requirements of competition.[42] The complexity caused by the interdependency in the environment requires decisions that are able to "keep pace with the pace of change."[43] Therefore, resiliency is the second design principle that decisionmakers must draw upon when utilizing design-based decision-making processes.

Both interactivity and resiliency represent manageable concepts to the individual decisionmaker; however, the ability of one person to make a well informed and viable decision is flawed. According to Gharajedahi, as a society "we have erroneously reasoned that if several functions report to a coordinating boss, he/she will be able to integrate them into the emerging whole and properly connect the dots."[44] Due to the complex nature of the environment, the problem set, and the organizational decision-making processes, decision making is distributed within an organization.

In the context of this monograph, distributed decision-making refers to the ability of many members of a given organization to make decisions that impact the entire organization rather than geographically dislocated decision-making. Systems thinking scholar Peter Checkland's "human activity system," shown in figure 7, illustrates this concept as well as another design principle required within organizational decision-making—consensus.

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[41] Alex J. Ryan, "What Is a Systems Approach?" (September 9, 2008): 13–14, accessed October 1, 2019, http://arxiv.org/abs/0809.1698; W. Ross Ashby, *An Introduction to Cybernetics*, 2nd ed. (London: Chapman & Hall, 2015).

[42] Gharajedaghi, *Systems Thinking*, 191.

[43] Senge, *The Fifth Discipline*, 276.

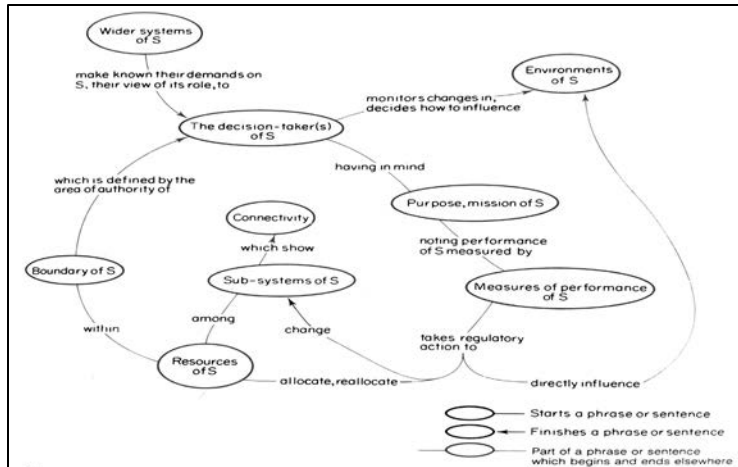[44] Gharajedaghi, *Systems Thinking*, 138.

Figure 7: Peter Checkland's "human activity system" (from the point of view: taking purposeful action in pursuit of a purpose or mission). Checkland's *System Thinking, Systems Practice*, 175.

Consensus, although similar, is not agreement. Agreement implies that members of the organization concur with a particular course of action on principle. In contrast, consensus only requires that members accept a decision and personally carry out their part.[45] In organizations with both vertical hierarchy and horizontal architectures, an additional level of innate complexity is at play. As such, decision-making processes are decentralized and systemic; thus, agreement is an unrealistic goal. Consensus, however, is achievable through the application of design thinking.

For organizations to achieve consensus, alignment of effort is required. Alignment is present when an organization functions as a whole. In an aligned organization, the energies of the individual members share a commonality of direction and are focused on a shared vision of the future.[46] The resulting aligned effort allows for members of the organization to be empowered by the leadership to make decisions and, as a result, makes the organizational decision-making process more robust, resilient, and rapid.

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[45] Donald G. Ellis and B. Aubrey Fisher, *Small Group Decision Making: Communication and the Group Process*, 4th ed. (New York: McGraw-Hill Humanities/Social Sciences/Languages, 1993), 141; Senge, *The Fifth Discipline,* 231.

[46] Senge, *The Fifth Discipline*, 217.
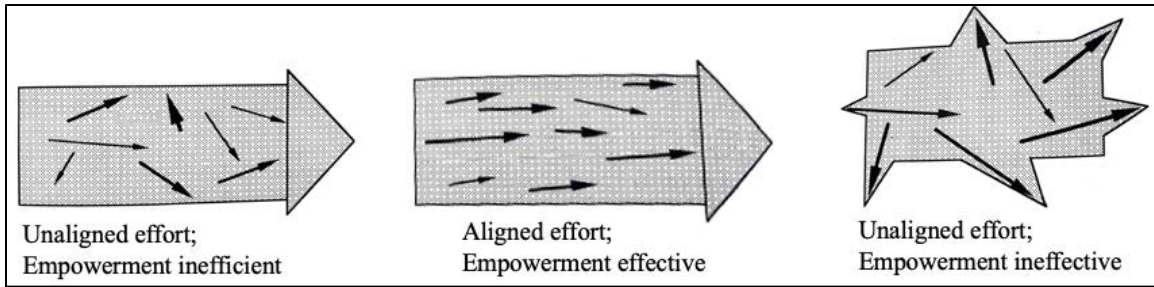
Figure 8: Senge conceptual organizations depicting the effects of alignment and empowerment. Senge's *The Fifth Discipline,* 217-218. Combined by the author.

Strategist and design advocate, Everett Dolman, describes the benefit of an empowered organization conducting design thinking-based sensemaking and decision-making within the realm of war. According to Dolman, "While the tactician struggles to eliminate friction, a practical impossibility that is still worth pursuing, as any limit to the amount of friction favors the side that is more prepared. The strategist embraces friction and surprise. Surprise forces the strategist to look anew at the situation. The superior strategist is the one that recognizes new choices and emerging options faster than the opponent does."[47] In Dolman's description, the tactical level members of the organization continually seek to remove complexity from the environment by eliminating friction. This consensus-based effort leads to achieving greater organizational understanding more quickly than the enemy, which in turn causes increased complexity for the enemy, more options for the organization, and simplifies the tactical member's problems and ability to exploit delay in enemy reaction.

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[47] Everett C. Dolman, *Pure Strategy: Power and Principle in the Space and Information Age* (New York: Frank Cass, 2005), 131.

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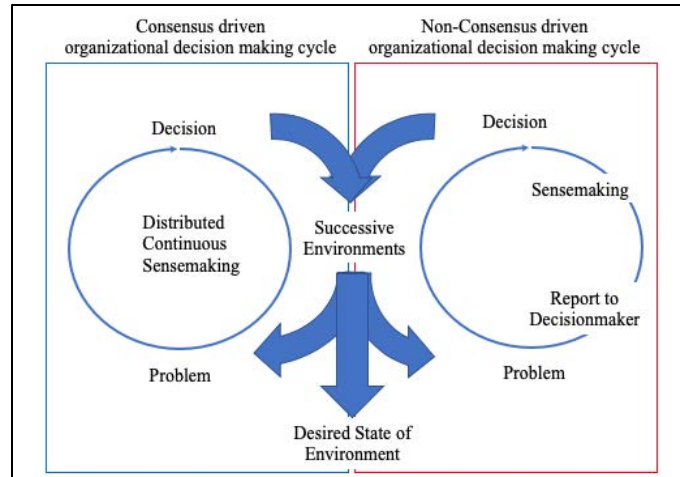
Figure 9: Consensus vs. Non-Consensus driven organizational decision-making cycles. Created by the author.

In achieving alignment, an organization must consider underlying assumptions, espoused values, and artifacts. A self-reflective application of the Schein model described earlier is crucial. Consequently, the self-reflective nature of design-based sensemaking has a direct relationship to the decision-making process. This direct relationship forms two sides of the trinity of schools of thought introduced at the start of this monograph and the following section will discuss the third, leadership, and its connections to the other members of the design trinity.

Design Leadership Principles
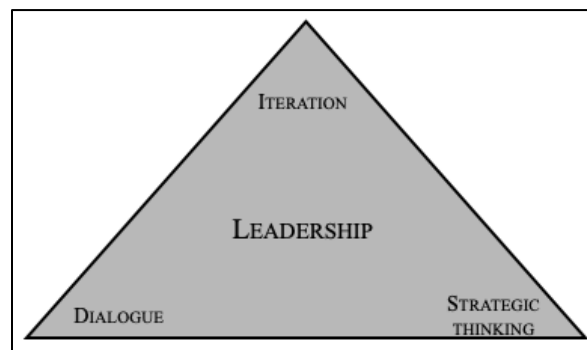
Figure 10: Leadership design principles. Created by the author.

The third aspect of the design trinity is leadership, and although presented third, it is not dependent on the previous two schools of thought. Instead, it is more accurate to think of these schools of thought as a set of interdependent variables—as a system. Because these schools of thought can be

considered a system on their own, there is a factor of internal complexity that a design practitioner must acknowledge in their application. Having read thus far, one likely already realizes the use of the leadership lever within the system is not a straightforward scientific application of a prescribed technique to elicit a given response in an organization. Instead, the application of leadership is more of an art, where varied levels of different design concepts are applied to promote desired actions, both internally and externally.

The first of the applicable design principle is what strategist Peter Schwartz describes as "the art of the long view," and Everett Dolman calls "strategic thinking."[48] For simplicity, this monograph will use Dolman's strategic thinking concepts. Strategic thinking is the ability to think beyond the current problem in favor of a solution to the problems that will arise subsequently. A strategic thinker recognizes the eternal nature of systemic complexity and, therefore, focuses on continuation rather than culmination.[49] In this way, strategic thinking is related to the decision-making concept of resiliency. A leader that is employing strategic thinking leads their organization to design a solution that is viable in the current system and remains so in future generations of the system as well.[50]

The leader's ability to think strategically is critical; however, what makes the strategic thinking design principle valuable to an organization is the ability of a leader to translate their strategic thinking to the entire organization. One method to achieve this is through the use of a vision statement.[51] Simon Sinek, noted leadership scholar, describes a vision statement as an organizational compass that provides direction to the subordinate elements.[52] Sinek's analogy of a vision statement as a compass is a particularly useful one for the leader looking to employ the strategic thinking principle of leadership. It is

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[48] Peter Schwartz, *The Art of the Long View: Planning for the Future in an Uncertain World* (New York: Currency, 1996), 3–7; Dolman, *Pure Strategy*, 1–4.

[49] Dolman, *Pure Strategy*, 4.

[50] Gharajedaghi, *Systems Thinking*, 202.

[51] Senge, *The Fifth Discipline*, 207–215.

[52] Simon Sinek, *The Infinite Game* (New York: Portfolio, 2019), 54.

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easy to visualize how a vision statement clearly describes the overall goal of an organization, such that its members can orient themselves toward achieving it. In this way, a leader's organizational vision statement aligns the effort of its members towards a common enduring goal.

Sinek goes a step further in his application of vision statements within an organization. As a design thinker himself, Sinek describes how a self-reflective vision statement focused on an enduring goal of "better," rather than a fleeting goal of "best," can "suggest a journey of constant improvement that makes us feel like we are being invited to contribute our talents and energies to make progress in that journey."[53] Sinek's design approach to vision statements highlights the interdependence of the three schools of thought detailed in this monograph. A leader utilizing design can employ a strategic and self-reflective vision statement to foster consensus and alignment of effort, transforming the social complexity of their organization into an advantage rather than a hindrance.[54]

A leader that is using the principles of design can find efficiencies within their organization and their actions. When applied to complex organizational systems, leadership has an emergent property of amplification and as such design-based leadership can amplify other variables within a system, both good and bad. Political scientist Robert Jervis describes this concept as "never being able to do merely one thing" when interacting with a system.[55] The nature of systems is that "the effects of actions are always multiple."[56] For leaders, this is an inescapable truth, whether or not they subscribe to design principles. However, for the design leader, the reality of interdependency is not to be feared but rather embraced. Business and organizational scholar John Kotter observed that "if handled in an effective and responsible

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[53] Simon Sinek, *The Infinite Game*, 56-57.

[54] John P. Kotter, *Power and Influence: Beyond Formal Authority* (New York: Simon & Schuster, 2008), 31.

[55] Robert Jervis, *System Effects: Complexity in Political and Social Life* (Princeton, NJ: Princeton University Press, 1998), 10.

[56] Ibid.

way […] diversity and interdependence are essential ingredients in fostering original ideas."[57] The next leadership design principle, dialogue, ensures the effective handling of organizational diversity and interdependence.

Dialogue, as defined by Senge, is "the free-flowing of meaning through a group," which empowers the group to discover insight not attainable individually.[58] It is a method by which a leader can interact with the members of their organization while fostering a climate of design thinking. A leader that employs dialogue creates opportunities to harness the benefits of the innate complexity of organizational problem-solving. Dialogue is a technique praised by retired General Stanley McChrystal. McChrystal used dialogue as a method to generate honest and collaborative sensemaking in his military formations. He acknowledged that briefings, the typical delivery system of information to a commanding officer, were valuable but also incomplete. Briefings from subordinate leaders provided a forum for them to tell him only what they wanted him to know. By engaging subordinates in extended dialogue, he was able to create a more complete picture of the environment for both of them.[59]

McChrystal also utilized dialogue as a leadership technique to communicate his vision and foster strategic thinking in his subordinates. While touring small combat outposts in Afghanistan, McChrystal engaged in dialogues with tactical-level leaders by asking a simple question, "If I told you that you weren't going home until we win—what would you do differently?"[60] This question forced his subordinate leaders to think on a time horizon beyond their tours of duty. McChrystal observed in these short dialogues that his subordinates "recalculated [and] adjusted their approach to take a longer view"; and came to the realization that simple fixes were illusory.[61] McChrystal's dialogues illustrate the

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[57] Kotter, *Power and Influence: Beyond Formal Authority*, 32.

[58] Senge, *The Fifth Discipline*, 10.

[59] Stanley McChrystal et al., *Team of Teams: New Rules of Engagement for a Complex World* (New York, NY: Portfolio, 2015), 230.

[60] Ibid.

[61] Ibid.

effective use of the design principle; and the amplified effect of leadership. McChrystal's design-based leadership allowed him to duplicate his strategic vision throughout his organization, permeating the sensemaking, decision-making, and leadership processes of his subordinate elements.[62]

Another method to operationalize dialogue is through the use of "adaptive space". Michael Arena, a design-based leadership scholar from Ford motor company, describes adaptive space as "the freedom for ideas to flow into and throughout an organization."[63] Unsurprisingly, in these adaptive spaces, genuine dialogue between members at all levels of an organization occurs—effectively bridging the formal and informal operational systems that exist in an organization.[64] To create an adaptive space culture within the subsystems of an organization, a leader must demonstrate the trust required at their level before the members of their organization will reciprocate it. In developing trust within adaptive spaces, a certain level of failure acceptance must exist. Members engaging in dialogue, in or out of adaptive spaces, must feel that their ideas are respected and that their creativity is valued. As novel ideas are submitted, the decision-makers must not dismiss them without testing. Additionally, leaders do not hold those ideas that fail to achieve the desired outcomes under scrutiny against the member that offered it; instead, leaders view failing concepts as contributing to the overall group understanding. Through the amplifying property of leadership, the reciprocal trust built through dialogue extends to the other schools of thought as well. Trust helps to facilitate self-reflective sensemaking by promoting honest assessments of how the organization contributes to the complexity of a given problem. In decision-making, leaders achieve consensus more easily because all members trust that the leadership has genuinely considered all contributions.

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[62] The concept of duplicated knowledge or power will be explored further later in the monograph. The concept is drawn from Gharajedaghi, *Systems Thinking*, 98.

[63] Michael J. Arena, *Adaptive Space: How GM and Other Companies Are Positively Disrupting Themselves and Transforming into Agile Organizations* (New York: McGraw-Hill Education, 2018), 8.

[64] Ibid., 9.

The same acceptance of failure concept present within dialogue facilitates the third leadership design principle, iteration. The iterative application of leadership applies in many aspects of traditional leadership. Still, within design based leadership, the iterative nature applies directly to the actions a leader takes to facilitate the other two schools of thought. Through iteration, a leader can effectively inoculate their organization against complexity. By applying design in all problem-solving endeavors, a leader creates an emergent culture that thrives within complexity. Essentially, iterative leadership empowers an organization to practice regularly and cultivate a design skill set.[65] Design-based leadership frames individual problem solving as learning and organizational problem solving as institutional learning.[66] Through iterative institutional learning, leaders can ensure their organizations rapidly acknowledge and manage all categories of problems, from simple through chaotic.

Ultimately, the interdependency of leadership, sensemaking, and decision making, as well as their respective design principles, enables a design thinking leader to harness the collective power of complexity to improve the quality of organizational problem solving while simultaneously inflicting emergent complexity on their competition.
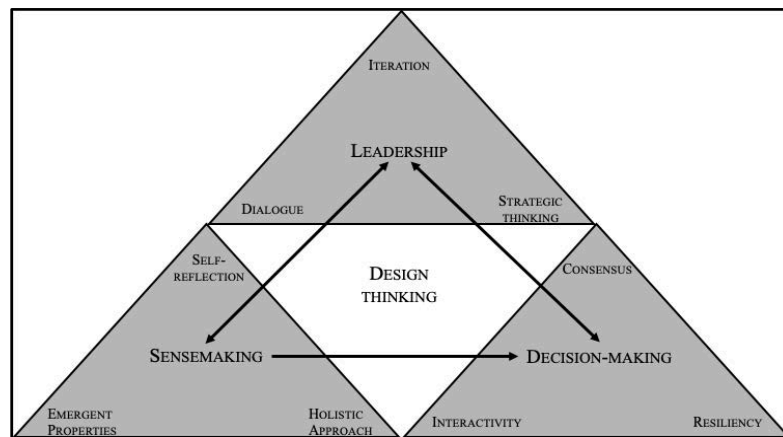

Figure 11: Design thinking "trinity." Created by the author.

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[65] Senge, *The Fifth Discipline,* 174.

[66] Ibid.

US Army Sensemaking Doctrine

Although the US Army distributes its sensemaking doctrine across multiple manuals, the enterprise of sensemaking decidedly facilitates the operations process. ADP 5-0, *The Operations Process*, provides the doctrine for the effective planning, preparing, executing, and assessing of Army operations. ADP 5-0 describes how commanders, supported by their staffs, employ the operations process to understand situations, make decisions, direct action, and lead forces to mission accomplishment.[67] Additionally, ADP 6-0, *Mission Command: Command and Control of Army Forces,* ADP 3-0, and FM 3-0 *Operations,* provide further context to the broad concepts of the US Army sensemaking process covered in ADP 5-0. Army techniques publication (ATP) 5-0.1, *the Army Design Methodology*, and FM 6-0 *Commander and Staff Organization and Operations,* offer additional detail to the Army sensemaking processes. All combined, ADP 5-0, ATP 5-0.1, and FM 6-0 serve as the basis of sensemaking within US Army doctrine, and one must compare the body of doctrine to the academic sensemaking principles of self-reflection, emergent properties, and a holistic approach.

Self-reflection within sensemaking, as described earlier, must account for the complexity introduced by the sense maker as part of the context of the problem. Much of that added complexity is due to the underlying human biases that exist in the normal execution of sensemaking. ATP 5-0.1 dedicates an entire appendix to these "thinking challenges" and methods to address those challenges during the ADM and more broadly throughout the operations process.[68] What ATP 5-0.1 does not address is including one's organization and its actions in assessing the complexity of a problem. ADP 5-0 does provide additional guidance for sensemaking, such as the use of operational and mission variables to assist in understanding an operational environment; however, both sets of variables focus mainly

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[67] US Army, ADP 5-0, Preface.

[68] US Department of the Army, Army Technique Publication (ATP) 5-0.1, *The Army Design Methodology* (Washington, DC: Government Printing Office, 2015), Appendix A; Many of the same concepts are also described in Kahneman, *Thinking, Fast and Slow.*

externally.[69] ADP 6-0 even defines situational understanding as the product of applying analysis and

judgment to relevant information to determine the relationships among the operational and mission

variables.[70]

It is not until the evaluation phase of the operations process, during execution, where

commanders and their staffs consider "the question of whether or not changes in the

situation can be attributed to friendly actions."[71] While this causes units to assess if changes in the

operational environment are a result of their actions, ADP 5-0 details this process as post decisional and

not during the initial sensemaking phase of the operations process.

The second design sensemaking principle, emergent properties, is not mentioned by name in

either core sensemaking nor in the supporting base doctrines, but is briefly touched upon within ATP 5-

0.1 during an overall explanation of systems thinking. Specifically, ATP 5-0.1 states, "when teams adopt

a system-level view, members see subtleties, indirect influences, and interactive effects important to

understanding the complexity of problems and anticipating second and third-order effects of possible

actions."[72] ADP 5-0 also acknowledges the emergent properties of the operational environments the US

Army expects to operate in its description of the "dynamic and uncertain" nature of war.[73] By

acknowledging that through complexity interactive effects occur, the operations process accounts for the

design principle of emergent properties indirectly at best.

Within the same section of the ADM doctrine mentioned above, ATP 5-0.1 describes the third

design principle of a holistic approach by detailing how systems thinking equips problem solvers "to

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[69] US Army, ADP 5-0, 1–2, 2–3.

[70] US Department of the Army, Army Doctrine Publication (ADP) 6-0, *Mission Command: Command and Control of Army Forces* (Washington, DC: Government Printing Office, 2019), 2–3.

[71] US Army, ADP 5-0, 5–3.

[72] US Army, ATP 5-0.1, 1–8.

[73] US Army, ADP 5-0, 1–2.

develop a holistic approach to solving or managing identified problems."[74] While the ADM doctrine does mention holistic approaches to problem-solving, it does not employ it in the sensemaking portion of the operations process. Instead, the ADM seeks to enable holistic operational approaches to solve problems. Unlike the ADM, the academic sensemaking school of work describes the application of a holistic approach and emergent properties earlier on in the problem-solving process.

This distinction between the ADM and the rest of the operations process causes conflict within US Army doctrine. One place that this is evident is in the US Army's application of a holistic approach. Before developing solutions to problems, ADP 5-0 states that a process of understanding must occur. ADP 5-0 describes that understanding as a combination of analysis, "the division of a problem into its component parts and addressing each part in turn," and synthesis, "the thinking of how these parts work together as a whole."[75] While this description seems holistic, it conflicts with the systems approach espoused in the ADM doctrine and the academic work on the topic of sensemaking. To truly make sense of the complex interdependent relationships that characterize the nature of war, the parts must be considered in context rather than in turn to be considered holistic.[76]

This distinction between problem-solving methods in US Army doctrine results in conflicting approaches to problem-solving. Also, because the doctrinal sensemaking process for well-structured problems differs from that of medium and ill-structured problems, an added level of complexity is introduced by the doctrine.[77] As such, the importance of self-reflection within the sensemaking process becomes even more critical.

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[74] US Army, ATP 5-0.1, 1–7.

[75] US Army, ADP 5-0, 2–3.

[76] Gharajedaghi, *Systems Thinking*, 90–92.

[77] US Department of the Army, Field Manual (FM) 6-0, *Commander and Staff Organization and Operations* (Washington, DC: Government Printing Office, 2014), 4–1.

US Army Decision-making Doctrine

Similar to sensemaking, the US Army does not have a doctrine manual dedicated solely to decision-making. Unlike sensemaking, the US Army does have a dedicated and detailed process for decision-making. The MDMP is "an iterative planning methodology to understand the situation and mission, develop a course of action, and produce an operation plan or order. It is an orderly, prescriptive, and analytical process that integrates the activities of the commander, staff, and subordinate headquarters in the development of a plan or order."[78]

Given the analytical description of the MDMP, one would not expect design principles to be present; however, one can see their influence in certain aspects of the process. The US Army doctrine builds the first design principle of interactivity into a subprocess within step two of the MDMP, mission analysis.

Steps of the Military Decision-making Process	
1	Receipt of Mission
2	Mission Analysis
3	Course of Action (COA) Development
4	COA Analysis
5	COA Comparison
6	COA Approval
7	Orders Production, Decimation, and Transition

Figure 12: Steps of the MDMP. Created by the author with information derived from FM 6-0, *Commander and Staff Organization and Operations.*

Mission analysis constitutes an assessment of the given situation. During mission analysis, commanders, supported by their staffs, "gather, analyze, and synthesize information to orient themselves on the current conditions of the operational environment."[79] Within this analysis, the subprocess known as intelligence preparation of the battlefield (IPB) focuses on the adversaries and other actors' actions towards the same situation. Specifically, FM 6-0 described IPB as is the "systematic process of analyzing the mission

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[78] US Army, ADP 5-0, 2–17.

[79] US Army, FM 6-0, 9–6.

variables of [the] enemy, terrain, weather, and civil considerations in an area of interest to determine their effect on operations."[80] IPB, and by extension mission analysis, is done in the spirit of interactivity such that it calls for the commander to make "assumptions about how friendly and threat forces will interact in the operational environment."[81]

Though doctrine describes IPB and mission analysis in the spirit of the interactivity design principle, they are done so specifically with an analytic thinking mindset. As such, they employ the scientific method to look at the independent and dependent mission variable relationships and determine the likely courses of actions of other actors.[82] One might argue then when paired with step four of the MDMP, course of action (COA) analysis, and its sub-step of wargaming, the MDMP does become an interactive decision-making process. This argument is valid because wargaming calls for the commander and staff to consider the interactivity of their actions and those of other actors.

Although seemingly a valid argument, at best, the MDMP is done in the spirit of the interactivity and not in accordance with the design principle itself. The sensemaking completed during IPB and the analytical nature of IPB serves as the basis of wargaming. Therefore, wargaming does not account for the emergent characteristics that can occur due to interactions between actors. Thus, even when combining subsystems, the MDMP does not truly achieve interactivity.

Wargaming within COA analysis plays a part in the evaluation of the MDMP against the design principle of resiliency as well. The goal of resiliency is a plan that can remain viable after implementation and throughout interactions with the operational environment.[83] Wargaming assists commanders and their staff in achieving resiliency within a COA by considering the COA against those of other actors. By

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[80] US Army, FM 6-0, 9–8.

[81] Ibid.

[82] The definition of analytical thinking is adapted from Gharajedaghi, *Systems Thinking*, 90.

[83] Ryan, "What Is a Systems Approach?," 13–14.

conducting wargaming, the staff refines initial COAs and develops potential branch plans and sequels.[84]

By adding contingency actions into the COAs before the COA approval step of the MDMP, it makes the

final COA more resilient and helps to ensure the COAs have an element of strategic thinking applied to

the solution.

In evaluating the application of the third design principle distributed decision-making, one must

first consider that, as part of the overall operations process, the MDMP occurs within the context of

"mission command."[85] "Mission command is the Army's approach to command and control that

empowers subordinate decision making and decentralized execution appropriate to the situation."[86]

Furthermore, as ADP explains:

> Mission command is based on the Army's view that war is inherently chaotic and uncertain. No
> plan can account for every possibility and most plans must change rapidly during execution if
> they are to succeed. No single person is ever well-enough informed to make every important
> decision, nor can a single person manage the number of decisions that need to be made during
> combat. As such, mission command empowers subordinate leaders to make decisions and act
> within the commander's intent to exploit opportunities and counter threats.[87]

The empowerment of subordinate decision making and the doctrinal admission that no single person can

make all the decisions required during combat are the key aspects of mission command that relate to the

design principle of distributed decision-making.

Within the MDMP, two distinct concepts account for the context of mission command: the

development of a commander's intent within mission analysis and the creation of decision support

templates during COA analysis.[88] The "commander's intent is a clear and concise expression of the

purpose of the operation and the desired military end state that supports mission command, provides

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[84] US Army, FM 6-0, 9-26-9–27.

[85] US Army, ADP 5-0, 1–1.

[86] US Army, ADP 6-0, 1–3.

[87] US Army, ADP 5-0, 1–3.

[88] US Army, ADP 6-0, 9–6, 9–26.

focus to the staff, and helps subordinate and supporting commanders act to achieve the commander's desired results without further orders, even when the operation does not unfold as planned."[89] The development of a commander's intent during mission analysis serves as an anchoring purpose for which the MDMP develops a solution. Additionally, by acknowledging the commander's intent in the final COA approval and orders dissemination steps of the MDMP, it provides subordinates the purpose they must achieve if the dynamic nature of war overcomes the resilient COA the MDMP sought to create.

The decision support template created during COA analysis is a "combined intelligence and operations graphic based on the results of wargaming that depicts decision points, timelines associated with the movement of forces and the flow of the operation, and other key items of information required to execute a specific friendly course of action."[90] As such, it can serve to empower subordinates to make decisions at their level that support the expected critical decisions and potentially make planned decisions for the commander if they are unable to do so.

While neither the commander's intent nor the decision support template specifically aligns with the design principle of distributed decision-making, they do help to achieve a limited degree of decentralized decision-making. This decentralized decision-making within the context of the US Army doctrine of mission command is a critical component of the doctrinal application of leadership, which this monograph will discuss in the following section.

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[89] US Department of Defense, Joint Staff, Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Government Printing Office, 2017), GL-7-GL-8.

[90] Department of Defense, Joint Staff, *DOD Dictionary of Military and Associated Terms* (Washington, DC: Government Printing Office, 2020), 58.

US Army Leadership Doctrine

Unlike the previous design schools of thought, the US Army has dedicated extensive doctrinal manuals to leadership. ADP 6-0, *Mission Command: Command and Control of Army Forces,* ADP 6-22, *Army Leadership and the Profession*, FM 6-0, *Commander and Staff Organization and Operations*, and FM 6-22, *Leader Development,* cover the entire range of leadership from the control of forces to the development of subordinates. In evaluating the US Army doctrine against the design principles highlighted earlier, this monograph covers the entire leadership spectrum within each principle.

The first leadership design principle, strategic thinking, requires a leader to develop and instill a long-term perspective towards problem-solving. As ADP 6-22, *Army Leadership and the Profession* explains, "Leaders must consider systems within their organizations—how they work together, how using one affects others, and how to get the best performance from the whole. They must think beyond their organization and consider how the actions of their organization influence other organizations as a whole."[91] This self-reflective and systemic application of leadership described in ADP 6-22 contributes to the implementation of strategic thinking on both ends of the leadership spectrum. As a leader charged with driving the operations process, it is the commander's responsibility to provide the strategic guidance that directs the staff's planning efforts.[92]

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[91] US Department of the Army, Army Doctrine Publication (ADP) 6-22, *Army Leadership and the Profession* (Washington, DC: Government Printing Office, 2019), 8–5.
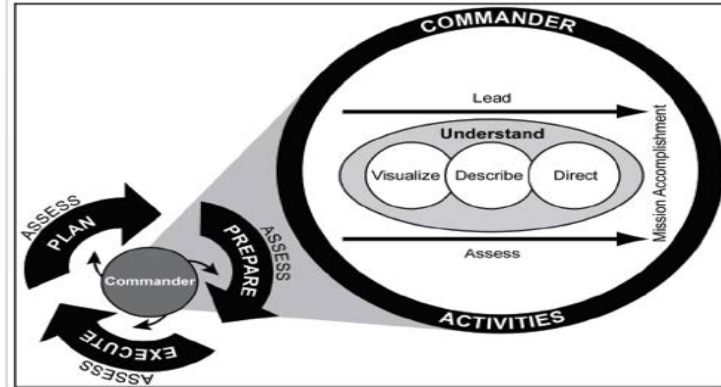
[92] US Army, ADP 5-0, 1–5.

Figure 13: The operations process. The Operations Process. US Department of the Army, Army Doctrine Publication (ADP) 5-0, *The Operations Process* (Washington, DC: Government Printing Office, 2012), 1-4.
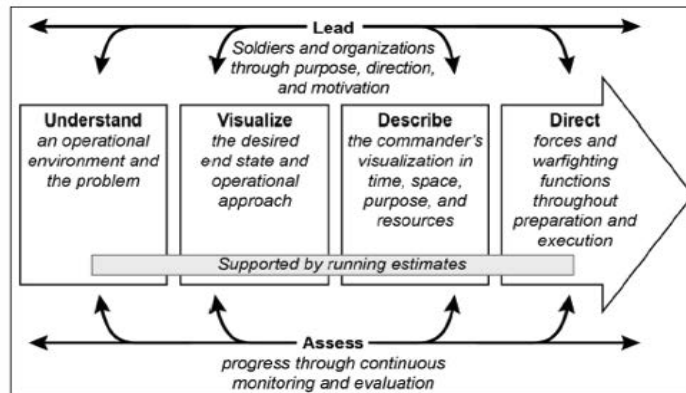
Figure 14: Commander's role in the operations process. The Operations Process. US Department of the Army, Army Doctrine Publication (ADP) 5-0, The Operations Process (Washington, DC: Government Printing Office, 2012), 1-8.

The doctrinal method to convey a commander's strategic thinking is the commander's intent.

According to ADP 5-0, "during planning, the initial commander's intent guides COA development during

the MDMP. In execution, the commander's intent guides initiative as subordinates make decisions and act

when unforeseen opportunities arise or when countering threats."[93] Much like the design concept of a

vision statement, the commander's intent serves to direct the action of subordinate elements. While the

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[93] US Army, ADP 5-0, 1–9.

commander's intent does provide a leader with a vehicle with which to provide a long-term outlook on solutions to their organization, it does not directly satisfy the requirement to develop subordinates' abilities to utilize design individually.

For future leaders to effectively operate within the complexity of great power competition and large-scale combat, they must have a level of professional expertise that enables cognitive overmatch of the enemy.[94] To achieve this level of proficiency, proper coaching and mentoring in strategic thinking by the commander is required. By acting as a coach for their staff and subordinates, a commander can systemically leverage their expertise to provide both a guiding, strategic thinking-based commander's intent and develop that same strategic thinking within their subordinates.[95] The technique of coaching to develop a specific behavior within a subordinate can also be used to develop the second leadership design principle, dialogue. The two-way exchange of ideas that occurs during dialogue is critical in the application of leadership. In the control of operations, dialogue provides the commander with the ability to share information throughout his or her formation. By engaging in dialogue, the commander can increase the quality of the organizational sensemaking due to improved shared understanding.[96]

Along with increased shared understanding, commanders and their subordinates develop an emergent property of mutual trust.[97] By increasing the level of trust within their organization, commanders can instill a culture where failure is seen as a learning opportunity rather than a weakness or flaw in a team member's value, ensuring the next leader in the chain is sufficiently prepared to take over,

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[94] US Army, ADP 6-22, 8–4.

[95] ADP 6-22 details the role of a leader as a coach and mentor for their subordinates. Doctrinally, leaders use coaching to develop the techniques used for a skill, task, or specific behavior. In this case, the specific behavior that must be developed by the commander is strategic thinking. Ibid., 6-10.

[96] Ibid., 5–15.

[97] Ibid.

if required.[98] Ultimately, the design principle of dialogue is woven throughout US Army leadership doctrine and aligns directly with the academic work in the field.

Unsurprisingly, because leadership doctrine incorporates the design principle of dialogue so completely, there is an inherent alignment of iterative leadership as well. Through repetitions of the operations process, a commander seeks to improve the ability of his or her organization to conduct sensemaking and decision-making within the entire range of structured problems.[99] By providing opportunities for subordinates to work through problems of varying complexity, a commander can use their level of expertise to coach, mentor, and assess their unit and subordinates. In doing so, a commander seeks to develop junior leaders to become effective commanders that benefit the entire US Army in the long term. The short terms gain of iterative leadership also facilitates the application of mission command. Through practice, subordinates gain confidence in their sensemaking and decision-making processes, while the commander gains the confidence needed to exercise mission command in large scale ground combat.

US Army leadership doctrine broadly supports the design principles of strategic thinking, dialogue, and iteration, enabling commanders to fulfill their doctrinal leadership roles of controller and developer. Furthermore, because leadership doctrine accounts for the design principles, there is an inherent basis for design to drive the entire operations process as well.

Conclusion: Relevance and Recommendations

As the US Army goes through a shift from primarily counterinsurgency-based operations in favor of large-scale ground combat, it acknowledges that there is an increase in the level of complexity. In emerging doctrine, the US Army recognizes that the future battlefields will be exceedingly complex due to the adoption of multi-domain operations.[100] To deal with the increased complexity and competition

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[98] US Army, ADP 6–22, 9–4.

[99] US Army, FM 6-0, 4–1.

[100] US Army, TRADOC PAM 525-3-1, v.

inherent in an era of great power competition, the US Army methods of sensemaking, decision-making, and leadership must remain viable. To achieve this, the Army must refine its doctrine to embrace design further.

One step in refining the US Army doctrine should be the removal of the ADM. This revision is not as drastic a step as it may seem on the surface. When the Army initially introduced design into doctrine, it was to serve as the conceptual methodology to aid commanders in understanding complex problems.[101] With the creation of the ADM in 2012, design was transformed from a conceptual methodology into a process reserved for the most complex of problems. While ATP 5-0.1 espouses "employ[ing] the ADM before, in parallel with, or after the MDMP," FM 6-0 reserves the ADM exclusively for ill-structured problems.[102] These conflicting doctrines induce an additional level of complexity that results in units focusing on the more familiar and analytical MDMP and largely avoiding the ADM. Some of the earliest developers of the Army design concept from the School of Advanced Military Studies (SAMS) warned against this separation. They remarked that separating the conceptual thinking in design and the detailed planning of the MDMP is done "at our own peril."[103] That warning remains true today and should serve as marching orders for a revision of the Army operations process.

By using design as the doctrinal sensemaking method for the entire range of problem types, it would allow for the Army to organically employ a "cynefin-like" sensemaking model to military operations rather than the categorization one it currently employs. Adopting this construct is particularly advantageous considering the requirement for the US military "to respond to a wide variety of challenges along conflict continuum" with a "range of military operations."[104] A sensemaking model applied to all problems would provide much-needed repetitions for commanders, staffs, and units in sensemaking

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[101] US Army, FM 5-0, Preface.

[102] US Army, ATP 5-0.1, 2–1; US Army, FM 6-0, 4–1.

[103] Wayne Grigsby et al., "Integrated Planning: The Operations Process, Design, and the Military Decision Making Process," *Military Review* 91, no. 1 (January/February, 2011): 29.

[104] US Army, FM 3-0, 1–1.

across different environments and thus achieve a higher level of proficiency with the fog, friction, and varying levels of complexity that characterize military operations.[105] Additionally, reverting to the original Army design concept would help to reduce the added complexity that exists currently due to having a distinctly different use of design in joint operations than in the Army. The result would be a more capable Army operations process that better aligns with the Joint planning process doctrine, as well as, Army officers that are more comfortable with planning in the joint environment.[106]

Some specific aspects of joint operational design that should be adopted into Army doctrine are tendencies and potentials.[107] These two concepts exist within the joint operational design to help aid commanders and their staffs in the production of "a holistic view of the relevant […] systems" within an operational environment.[108] "Tendencies reflect the inclination to think or behave in a certain manner," while potentials are "the inherent ability or capacity for the growth or development of a specific interaction or relationship."[109] Both represent emergent properties within a self-reflective sensemaking model that allows for the "relevant relationships within and between the various systems" in the operational environment to be examined holistically and incorporate all of the design sensemaking principles.[110]

A second recommendation is to adjust the mission command philosophy within leadership doctrine. Currently, doctrine describes mission command as decentralized execution facilitated by the

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[105] Senge, *The Fifth Discipline*, 221; Donald A. Schon, *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions* (Jossey-Bass, 2009), 32–36; The concepts of fog and friction as characteristics of war is drawn from Carl von Clausewitz, *On War*, ed. Michael Howard and Peter Paret, trans. Peter Paret and Michael Howard, Indexed edition. (Princeton, NJ: Princeton University Press, 1989).

[106] US Department of Defense, Joint Staff, Joint Publication (JP) 5-0, *Joint Planning* (Washington, DC: Government Printing Office, 2017), V–II.

[107] Ibid., IV–13.

[108] Ibid.

[109] Ibid.

[110] Ibid.

"delegation of decision-making authority."[111] This paradigm implies that a commander has the ability or time to accurately predict all of the decisions that a subordinate leader must make and then can delegate the authority required for those decisions through the formal orders or the established chain of command. This added step increases the level of complexity within the operations process unnecessarily. Distributed decision-making, rather than delegated, more accurately describes the type of decision making that occurs within a complex operational environment. Distributed decision-making empowers subordinates to make the necessary decisions at the point of friction as rapidly as possible. Moreover, such a doctrinal revision will allow for the formal education of leaders through professional military education institutions to adjust and better facilitate mission command in contested domains. By formalizing design principles within leadership doctrine, the formal and informal education of leaders at all levels will be better equipped to handle complexity throughout the range of military operations and directly link leadership design principles to the sensemaking and decision-making principles.

The more explicit connections between leadership, sensemaking, and decision making would better facilitate commanders taking a more active role within the operations process. In this aspect, the doctrine adjustments already recommended would suffice; however, the culture of commander time management must change. Currently, US Army doctrine describes the importance of the commander in the operations process; however, the is a disconnect between the espoused theory in doctrine and the theory in action.[112] Doctrinally, commanders interact with their operational planning teams and staffs through formal briefings and sporadic planning reviews to establish shared understanding in short touchpoints. However, the shared understanding built from these sessions is static and fleeting. By changing the culture of taking briefings from the staff in favor of shared sensemaking sessions, the staff can recover valuable time for the overall operations process. The resulting shared sensemaking would facilitate enduring and resilient understanding across the entire formation. Commanders should think of

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[111] US Army, ADP 6-0, 1–5.

[112] Senge, *The Fifth Discipline*, 177; Schon, *Educating the Reflective Practitioner*, 255–256.

These shared sensemaking sessions as dialogues similar to those described by Gen. McChrystal. Additionally, this shared sensemaking concept would better enable alignment and consensus by including subordinate leaders in decision-making, ultimately achieving a more holistic and self-reflective approach to sensemaking, and truly strategic thinking-based leadership.

A supporting adjustment to the doctrine would be the revision of ATP 5-0.1. Rather than scraping the ATP, the Army should revise it to something similar to Marine Corps Doctrine Publication (MCDP) 7, *Learning*.[113] While the stated purpose of MCDP 7 is to establish "learning [as] an institutional priority and a professional expectation for all Marines," what it effectively does is establish organizational intellect as a priority.[114] The Army needs a similar intellectually based doctrine centered upon sensemaking. A sensemaking doctrine that focuses on design principles would complement the existing robust decision-making doctrine and would serve to codify the requirement of intellectual capacity on future battlefields. This stand-alone sensemaking doctrine would serve as the forcing function for leaders to incorporate the sensemaking coaching and mentorship espoused in ADP 6-0, and acknowledge sensemaking as the first weapon against complexity.

Ultimately, moving forward, the US Army must reconcile its understanding of the complexity of large-scale ground combat and its operations process. The Army has rightly observed that "our adversaries watched, learned, adapted, modernized and devised strategies that put us at a position of relative disadvantage in places where we may be required to fight."[115] "However future adversaries will likely also adopt insurgent tactics, if not entire insurgent groups, in concert with their own modernizing forces in any conflict with the US;" thus pushing hybrid, gray-zone, and multi-domain complexity

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[113] US Department of the Navy, Marine Corps Doctrine Publication (MCDP) 7, *Learning* (Washington, DC: Government Printing Office, 2020), Forward.

[114] Ibid.

[115] US Army, FM 3-0, Forward.

increasingly higher.[116] To remain viable on future battlefields, the Army must adapt its operations process to deal with increased complexity by holistically incorporating design.

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116 Stephen Tyminski, "Preparing for the Future: Insurgents Get a Vote," *Small Wars Journal*, January 27, 2019, accessed January 27, 2019, https://smallwarsjournal.com/jrnl/art/preparing-future-insurgents-get-vote.

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