



Force Reconnaissance Marine with Command Element, 31st Marine Expeditionary Unit, sets security perimeter on starboard bridge wing during visit, board, search, and seizure exercise aboard amphibious dock landing ship USS *Germantown*, South China Sea, September 6, 2020 (U.S. Navy/Taylor DiMartino)

Toward Military Design

Six Ways the JP 5-0's Operational Design Falls Short

By Andrew L. Crabb

The day after Kabul fell to the Taliban, a combatant commander reportedly went to his J5 and told him to come back within 48 hours with data on the effects that the loss of Afghanistan would have on the future of military planning. While the veracity of this account cannot be directly verified, the rumor—and the speed at

which it spread—speaks to the coming scrutiny that joint planning is sure to undergo from multiple quarters. The refocus on strategic competition/crisis/conflict (among the United States, Russia, and China) and the rise of gray zone operations, along with the persistence of irregular warfare, all demand that our methodologies for conceiving and planning keep pace with the rapid evolution of our operation foci.

Joint Publication (JP) 5-0, *Joint Planning*, is the metronome for conceiving

and planning joint operations. It paces operational thinking and is the go-to resource for all joint force commanders, planners, task leads, and action officers. While JP 5-0 informs curricula at our intermediate-level education and advanced military studies institutions, it also crucially serves to inform and educate those who have not had the opportunity to receive intermediate-level education or advanced military studies. In many joint and unified commands, those individuals make up a sizable portion of typical joint planning groups, operational

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Airman with Joint Task Force–Crisis Response speaks with families who await processing during evacuation at Hamid Karzai International Airport, Afghanistan, August 20, 2021 (U.S. Marine Corps/Davis Harris)

planning teams, and other boards, bureaus, cells, centers, and working groups. Therefore, it is vital that JP 5-0 remains relevant, practical, and creative.

Although the latest version of JP 5-0 (December 2020) has many laudable updates and improvements, the section of chapter 4 (on operational design) that addresses conceiving and expressing our operational ideas falls short in important ways. Simply put, to reach the lofty goals of understanding and addressing complex military problems, while preparing joint planners for the aforementioned challenges, chapter 4 of JP 5-0 must be redesigned and republished.

What follows are six key areas for revision; however, before exploring the shortfalls, we should make certain we understand both how JP 5-0 defines *operational design* and the methodology for its application.

Background

In 2006, when JP 5-0 first added operational design to the planning publica-

tion, it was a huge step forward for joint doctrine. Operational design is envisioned both to precede and to complement the joint planning process (JPP). Whereas JPP applies “procedural rigor” to the planning process, operational design gives joint planners a more flexible tool to initially conceive prospective solutions for complex operational problems.¹ Per JP 5-0, operational design “provides a framework for coordinating the operations and activities of the joint force within space and time to achieve strategic objectives.” Since the introduction of JP 5-0, successive editions—up to and including the December 2020 edition—have continued to refine and improve the operational design concept.

The operational design methodology calls for planners to progress through the following steps:

- understand the strategic direction and guidance
- understand the strategic environment (for example, policies, diplomacy,

and politics) and the related contested environments

- understand the operational environment and relevant contested environments
- define the problem—that is, create shared understanding and plan for uncertainty
- identify assumptions needed to continue planning (for example, strategic and operational assumptions)
- develop options (for example, the operational approach)
- identify decisions and decision points (external to the organization)
- refine the operational approach(es)
- develop planning and assessment guidance.²

In other words, planners must understand the problem within their strategic- and operational-level milieu. They can then develop solutions, drawing on the 13 elements of operational design, to form an operational concept or “operational approach.”³

Shortfalls of Operational Design

Now that we have a basic understanding of what operational design means in the JP, we should examine the six main shortfalls that limit the utility of the chapter on this concept.

Shortfall 1. Operational design does not educate joint members on the history or purpose of design.

Result. Planners unfamiliar with the background or purpose of design will not be able to fully grasp its creative application.

Design movements, sometimes called the applied arts, arose in the late 19th and early 20th centuries to infuse artistic expression and creativity into the dull industrial goods of the era.⁴ The idea of creative processes preceding scientific engineering rapidly spread across many artistic and industrial communities. The goals and purposes of these design movements varied, but the common attribute was a desire to harness creativity and artistic expression to produce things that were beautiful, clever, and useful.

Architectural design, industrial design, and graphic design are a few movements that are at least somewhat familiar to the layperson. Many in the U.S. military, sparked by Israeli General Shimon Naveh, took up the design torch in reaction to what they saw as the limitations of the JPP and its cousins in the branches of the Armed Forces (for example, the U.S. Army's Military Decision-Making Process and the Marine Corps Planning Process). These limitations included a belief that JPP stymied creative thinking, promoted blind adherence to a process, and was a process that was inappropriate for complex, unclear, or unbounded problems.

A short introduction to the purpose and background of design and how operational design evolved from those early concepts would give joint planners of all grades and experience—especially those who have not attended advanced military schools—the necessary context to appreciate its purpose and application. Such an addition would inform and motivate planners as they move forward to creatively solve the daunting challenges that exist in the joint military domain.

Shortfall 2. Operational design does not educate joint planners on the nature of complex problems and problem-solving.

Result. Joint planners will not understand the attributes of complex problems and the general approaches to solving them.

At the joint level, military planners encounter challenges that are complex, diffuse, and opaque. In their groundbreaking 1973 work “Dilemmas in a General Theory of Planning,” Horst Rittel and Melvin Webber described such complex problems as “wicked.”⁵ Wicked problems are characterized by “those complex, ever changing societal and organizational planning problems that you haven’t been able to treat with much success, because they won’t keep still. They’re messy, devious, and they fight back when you try to deal with them.”⁶ Wicked problem sets (as opposed to “tame” or straightforward problem sets) defy easy characterization; solutions are unapparent and elusive, and the challenge itself may even be intractable (conditions changed, but the problem never truly resolved). Often, they are problems that reside in and among human societies and the networks of the human domain. These networked difficulties have links among and between one another that produce direct second- and third-order effects and indirect cascading, compounding, and cumulative effects.⁷

Joint military problems could arguably be among the most wicked problems that humans encounter. In the joint community, action officers are often told to analyze and propose solutions to myriad wicked problems. Just a few examples could include situations as diverse as planning in a time-sensitive crisis, deliberate planning in development of a new regional campaign plan, establishing a partner-nation’s navy, reorganizing a joint command or directorate, or even reconciling two opposing factions in an assigned area of responsibility. All take place in the human domain and deal with complex, fluid, and interconnected problems that may not have a readily apparent solution.

Chapter 1 of the new JP 5-0 dedicates four paragraphs to the topic of

“understanding problems” but is mainly focused on constructing a “problem statement.” Chapter 4 dedicates quite a bit of discussion on how to dissect and analyze the environment that houses the problem. These inclusions are commendable, but our problem-solvers must understand the characteristics and leading scholarship of complex problems and general approaches to problem-solving.⁸ Another short section on the topic would greatly improve chapter 4.

Shortfall 3. Operational design does not educate joint problem-solvers on creative thinking and cognition.

Result. Joint planners will not understand how individuals think, how groups collaborate, and how both are often captive to perspectives and biases.

As noted when discussing the previous shortfall, joint force commanders expect planners to be doctoral-level problem-solvers. Unfortunately, we are asking our planners to think individually and facilitate thinking at the group level without first educating them on the traits of individual and group cognition. There are whole disciplines dedicated to cognitive psychology, design, and problem-solving. A short addition to chapter 4 should include topics such as intuitive vs. cognitive decisionmaking, understanding how biases skew perspectives, cognitive dissonance, the value of intellectual empathy, and even on arcane but interesting topics such as the principles of Gestalt theory.⁹ By thinking about thinking, our planners and problem-solvers would be better prepared individually and collaboratively to lead groups through the cognitive hurdles of joint problem sets.

Shortfall 4. Operational design does not incorporate stratagems and deception as one of its components.

Result. Joint planners will undervalue the use of operational-level deception; planners will be unable to anticipate, identify, and forecast our adversaries’ deception.

The beginning of chapter 4 outlines operational art and the elements that commanders and staff wield in its application. *Operational art* is “the cognitive approach used by commanders and staffs—supported by their skill, knowledge, experience, creativity,

and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, means, and risks.”¹⁰ If operational art is the synthesis expressed in warfare’s application, then the guideposts that structure such thinking are the elements of operational design. Unfortunately, the 13 elements of operational design contain no references to stratagems, deception operations, operational artifices, or military ruses. The idea of confusing the enemy as to our true aims and intentions is entirely absent in the stages of operational conception. At the operational level, actions in the operational environment and military information support operations that use stratagems and deception. The intent is that they lead the enemy to take actions that favor our own ends. Deceiving our enemies and obscuring our intent is a mindset that needs to be developed in all joint force commanders and staffs. Application should happen early in the conception of a campaign, not added as an afterthought or merely a checked box or used as an operational band aid. Although the Joint Staff has placed enough importance on military deception to devote an entire publication to it (JP 3-13.4, *Military Deception*¹¹), JP 5-0 does not include deception in the operational design process.

Our adversaries clearly understand its import—Russian General Valery Gerasimov’s “New Look” doctrine incorporates deception and denial at every level of warfare (for example, the “little green men” who took over the Crimea in 2014).¹² China’s People’s Liberation Army has been long known to incorporate Sun Tzu’s theories into its unrestricted warfare doctrine, including the mantra that “all warfare is based on deception.”¹³ Our military planners should understand that, in every aspect of warfare, stratagems and deception are foundational concepts that must always be considered in the design of our operations. Give stratagems and deception the consideration they deserve by making them elements of operational design so that they are correctly promoted in operational thinking, theory, and the

nascent stages of our commanders’ and staffs’ planning efforts.

Shortfall 5. Operational design is focused on solving operational problems.

Result. Joint planners will not be equipped to resolve nonoperational problem sets.

In a military planning manual, it seems only logical that the authors would present a methodology centered on military operational planning. In the real world of military staff work, joint planners are presented with innumerable complex problems that are not centered on a military operation. Joint force commanders and planners are often tasked to design solutions to address such wicked problems as poverty, lack of a training regimen, and conflict resolution. These are just the tip of the wicked military problem iceberg. Our military problem-solving doctrine (as currently expressed in JP 5-0’s chapter 4) should be broad and flexible enough to allow our planners to assess and reason through any complex problem.

Shortfall 6. Operational design promotes an “operational approach” process that is inadequate for complex operational environments.

Result. This methodology will work well only for binary force-on-force operations in ordered environments.

The operational design process outlined in JP 5-0 culminates in the production of an “operational approach.”¹⁴ Simply stated, the operational approach is the joint force commander’s concept of the operation. JP 5-0 devotes limited discussion to how joint force commanders and planners develop an operational approach, implying that commanders and planners can tap into the “elements of operational design” to conceive one. Chapter 4 does provide a tool for developing an operational approach: the center of gravity (COG) analysis.¹⁵ In a state-on-state conventional conflict, in an ordered operational environment, the COG methodology works well to identify the enemy’s main strength and the critical factors that underpin it. In this situation, the COG identification and analysis is an invaluable means that can lead to the conception of a valid operational approach to defeating the adversary and

achieving the endstate. Unfortunately, the COG process has limited usefulness when it comes to facing and accounting for multiple adversaries, neutral parties, and unknown actors in a disordered and chaotic operational environment.

The COG process assumes that defeating an armed adversary is the central obstacle to achieving the desired endstate. In disordered and chaotic operational environments, defeating an armed adversary may at best be beside the point and at worst counterproductive. In such a situation, centering an operation on the destruction or neutralization of multiple adversaries’ COGs could simply inject more chaos and complexity into a fractured system (for example, Mexico’s “war” on its drug cartels¹⁶). The 2017 JP 5-0 correctly mentioned that COGs exist only for “unitary systems” and also noted that irregular warfare may lead to different analyses about where to focus efforts.¹⁷ While leaving out a detailed examination of ordered vs. disordered environments and references to irregular warfare, the 2020 JP 5-0 does correctly note that “without a well-defined threat, there will often be no enemy or adversary COG.”¹⁸ Unfortunately, the discussion ends there, offering no further guidance for developing operational concepts in these irregular problem sets.

JP 5-0 should keep the COG methodology for binary operational problems, but it needs to address where the COG methodology is appropriate and where it may prove limited or detrimental to our objectives. It also needs to speak clearly and plainly to the challenges of operations in chaotic operational environments and irregular operational problems.

The Solution to the Shortfalls

If we accept that the six shortfalls are valid, then it is clear we need to redesign and republish JP 5-0’s chapter 4. We must not focus solely on operational problem sets; instead, we should adopt a flexible system that encourages creativity, while also developing implementable, practical solutions. In short, we need “military design.”

Military design would provide context on the background of design, educating readers on the nature of complex



Airmen with 5th Aircraft Maintenance Squadron push open B-52H Stratofortress bomb bay door to load weapons, December 7, 2021, at Edwards Air Force Base, California (U.S. Air Force/Michael A. Richmond)

problems and how people reason to resolve them. It would foster creative and practical solutions (for example, incorporation of military deception). Military design would not be limited to solving binary, operational planning problems; instead, it would discuss the planning and problem-solving methods for a wide variety of conventional and irregular operational problem sets. Finally, because military design would be open-ended and flexible, it would enable joint planners to reason through both operational and nonoperational problems.

There are truly dozens of ways to express different design processes. We already have the JPP—do we really need another lengthy, linear, and iterative process? Is there another way we can encourage creative thinking?

A simplified, open-ended problem-solving practice would harness the creative and cognitive abilities of our planners. Like Archimedes in his laboratory, planners—via continuous conscious and unconscious introspection and possibly

through collaborative exploration of the problem—eventually could have their own eureka moment and devise a solution. Building on my previous thoughts on operational design, I would advance that military design be considered a *practice*, not a linear process.¹⁹ In other words, military designers should continuously assess and reassess the problem through what may be five key elements of problem-solving. Planners can visit and revisit these cognitive vantage points sequentially or as the planner gains insights into each:

- contextualize the problem
- conceive the desired condition or outcome
- identify sources of resistance to achieving the outcome
- identify ways to mitigate resistance sources
- express the solution.

JP 5-0's updated chapter 4, "Military Design," could and should keep the excellent contextual information on operational planning while addressing

all the previously mentioned shortfalls. The result would be a military design practice that is simple yet broad enough to address any challenge: operational problems (symmetrical/ordered and asymmetrical/disordered), nonoperational problems, clearly defined problems (told what to do but not how to do it), and opaque and wicked problems (no agreement on the issue's makeup or way forward). The result would be an exponential improvement in joint problem-solving. It would inspire and fire the creative energies of joint force commanders and planners. The only question that remains is should we rename JP 5-0 as *Problem Solving & Planning*. JFQ

Notes

¹ Joint Publication (JP) 5-0, *Joint Planning* (Washington, DC: The Joint Staff, December 1, 2020), III-4, available at <https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp5_0.pdf?ver=us_fQ_pGS_u65ateysmAng%3D%3D>.

² JP 5-0, IV-2–IV-3.

³The 13 elements of operational design are objectives, military endstate, center of gravity, effects, culmination, lines of operation, lines of effort, decisive points, direct and indirect approach, operational reach, arranging operations, anticipation, and forces and functions. See JP 5-0, III-75, fig. III-23.

⁴Deborah Ascher Barnstone, *Beyond the Bauhaus: Cultural Modernity in Breslau, 1918–33* (Ann Arbor: University of Michigan Press, 2016), 81–107, available at <doi.org/10.2307/j.ctt1gk088m.7>.

⁵Horst W.J. Rittel and Melvin M. Webber, “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4, no. 2 (1973), 155–169.

⁶Tom Ritchey, “Wicked Problems: Modelling Social Messes with Morphological Analysis,” *Acta Morphologica Generalis* 2, no. 1 (2013), available at <https://www.researchgate.net/publication/236885171_Wicked_Problems_Modelling_Social_Messes_with_Morphological_Analysis>.

⁷Edward C. Mann III, Gary Endersby, and Thomas R. Searle, *Thinking Effects: Effects-Based Methodology for Joint Operations* (Maxwell Air Force Base, AL: Air University Press, October 2002), available at <https://media.defense.gov/2017/nov/21/2001847048/-1/-1/0/cp_0015_mann_endersby_searle_thinking_effects.pdf>.

⁸Foundation for Critical Thinking Web site, available at <https://www.criticalthinking.org/>.

⁹Max Wertheimer, with a foreword by Kurt Riezler, “Gestalt Theory,” *Social Research* 11, no. 1 (February 1944), 78–99.

¹⁰ JP 5-0, IV-1.

¹¹ JP 3-13.4, *Military Deception* (Washington, DC: The Joint Staff, January 26, 2012), available at <https://jpsc.ndu.edu/portals/72/documents/jc2ios/additional_reading/1c3-jp_3-13-4_mildec.pdf>.

¹²David Kilcullen, *The Dragons and the Snakes: How the Rest Learned to Fight the West* (New York: Oxford Press, 2020), 163.

¹³Sun Tzu, *The Art of War* (New Delhi: Diamond Pocket Books, 2021), 6.

¹⁴ JP 5-0, IV-14.

¹⁵ JP 5-0, IV-25, fig. IV-8.

¹⁶“Mexico’s Long War: Drugs, Crime, and the Cartels,” Council on Foreign Relations, February 26, 2021, available at <https://www.cfr.org/backgrounder/mexicos-long-war-drugs-crime-and-cartels>.

¹⁷ JP 5-0, *Joint Planning* (Washington, DC: The Joint Staff, revised June 16, 2017), IV-43.

¹⁸ JP 5-0, IV-24.

¹⁹Andrew “Buster” Crabb, “Joint Operational Design, Re-Imagined . . .,” *Small Wars Journal*, October 26, 2020, available at <https://smallwarsjournal.com/jrnl/art/joint-operational-design-re-imagined>.

Joint Publications (JPs) Under Revision (to be signed within 6 months)

JP 3-01, *Countering Air and Missile Threats*

JP 3-03, *Joint Interdiction*

JP 3-15, *Barriers, Obstacles, and Mine Warfare in Joint Operations*

JP 3-20, *Security Cooperation*

JP 3-25, *Countering Threat Networks*

JP 3-33, *Joint Task Force Headquarters*

JP 3-42, *Joint Explosive Ordnance Disposal*

JP 3-52, *Joint Airspace Control*

JP 3-68, *Noncombatant Evacuation Operations*

JPs Revised (signed within last 6 months)

JP 2-0, *Joint Intelligence*

JP 3-0, *Joint Campaigns and Operations*

JP 3-04, *Information*

JP 3-07, *Joint Stability*

JP 3-35, *Joint Deployment and Redeployment Operations*