



# SMALL WARS JOURNAL

---

smallwarsjournal.com

## To Design or Not to Design: In Conclusion

by Ben Zweibelson

*Editor's Note: The essay is the final of six in a series on design.*

*Systems analysis is a new wine in an old bottle.*

- Gerald Weinberg, *Rethinking Systems Analysis and Design*<sup>1</sup>

*Any operational system that does not possess an initial textual frame of theory will be incapable not only of creating knowledge relevant to a concrete circumstantial context, but also of rationalizing retrospectively its actions in relation to the results it has achieved. This is an exact reflection of a non-learning organization.*

- Shimon Naveh, *Asymmetric Conflict*<sup>2</sup>

Is Design a necessary methodology for the U.S. Army? By codifying into service doctrine an entire chapter on design in FM 5-0, the Army appears to acknowledge the need for ontological approaches to complex systems. FM 3-24, *Counterinsurgency* also featured a new Design chapter when updated in 2006. Although the presence of design in doctrinal form validates a substantial requirement for alternative methodologies to JOPP and MDMP, Army design in current form suffers from an identity crisis as well as extensive *tacticization* via institutional bias. To take higher guidance without critical thinking and launch into MDMP prioritizes analysis and description over synthesis and explanation. Today's increasingly complex conflict environments cannot function without Design consideration prior to any detailed planning processes initiating.<sup>3</sup> Yet Design by its logic is a cumbersome and problematic methodology when applied to traditional military planning processes.

Design methodology represents a military paradigm for the modern era of increased globalization, the 'cyber-age' of society, and the overall trend towards greater complexity. Scientific endeavors continue to advance technology and human society through a largely reductionist and descriptive approach to knowledge. "Science and technology have colonized the planet, and nothing in our lives is untouched. In this changing, they have revealed a complexity with which they are not prepared to deal."<sup>4</sup> Whereas previous eras of human conflict demonstrated strategic and tactical relationships that afforded localized and teleological dynamics, the Scientific and Industrial Revolutions ushered forward a more complex era where

---

<sup>1</sup> Gerald M. Weinberg, *Rethinking Systems Analysis and Design* (Boston: Little, Brown and Company, 1982) 3.

<sup>2</sup> Shimon Naveh, *Asymmetric Conflict; An Operational Reflection on Hegemonic Strategies* (Tel Aviv: The Eshed Group for Operational Knowledge, 2005) 14.

<sup>3</sup> Trent Scott, *Adapt or Die; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 123.

<sup>4</sup> Gerald M. Weinberg, *An Introduction to General Systems Thinking* (New York: John Wiley and Sons, 1975) 3.

an operational level of conflict emerged.<sup>5</sup> Today's battlefield reflects an environment where traditional procedures and lockstep methodology alone are generally unable to translate the pursuit of strategic aims into tactical action. Our enemies and rivals no longer "play ball" with any regard for rules; most adapt and innovate at exceptional rates.

This operational level of warfare resists reductionism and teleological approaches; holistic and ontological methods featured in Design offer greater potential for explanation and understanding of complex adaptive systems. At times, reducing things down is immensely beneficial for military operations, yet organizations should think critically about whether they should or should not apply the same logical constructs and procedures to all future conflicts. "Reduction is but one approach to understanding, one among many."<sup>6</sup> *FM5-0 Chapter 3 Design* describes Design's purpose as a methodology used to "make sense of complex, ill-structured problems."<sup>7</sup> Making sense of open systems requires a holistic and abstract mode of thinking that avoids reductionism, linear causality, and non-explanatory description.<sup>8</sup> Unfortunately, military institutions have a strong propensity for *describing* an open system instead of *explaining* it. "In the analytic, or reductionist approach, the parts themselves cannot be analyzed any further, except by reducing them to still smaller parts."<sup>9</sup> Explanation requires an entirely different line of questioning; *problematization*.

The concept of *problematization* requires an emphasis on explanatory questions over descriptive ones; the additional component of heretical querying makes design methodology antagonistic towards institutional self-preservation and doctrinal dogma. Institutional factions discredit design methodology either by dismissing the entire concept as '*mission analysis on steroids*' or '*Effects Based Operations with another name*.' Both of these critical positions reflect a fundamental misunderstanding of how holistic and ontological approaches towards open systems yield greater understanding over reductionist and teleological methodologies espoused in detailed planning.<sup>10</sup> The greatest burden military design faces in doctrine codification is the overt *tacticization* to convert design theory into the confusing and brief design chapter of FM 5-0.

By employing dual-use vocabulary terms instead of unique Design lexicon, Design doctrine does not convey the deep understanding of complex systems synthesis to the military audience; attempting to perform this feat with a mere fifteen pages and one non-specific graphic seems almost absurd. Perhaps some of design doctrine's identity crisis has to do with design

---

<sup>5</sup> Ibid, 160. "The scientific revolution, based on a strategy of reduction, has made enormous contributions to our understanding of the universe. In doing so, it has worked well on certain systems, poorly on others, and remains untried on many more."

<sup>6</sup> Weinberg, 121.

<sup>7</sup> United States Army Training and Doctrine Command, *Field Manual 5-0; The Operations Process*. (Headquarters, Department of the Army, 2010), 3-6.

<sup>8</sup> Shimon Naveh, *In Pursuit of Military Excellence; The Evolution of Operational Theory* (New York: Frank Cass Publishers, 2004) 306. "The mechanistic approach that perceived the operational context as a distinctive level of activity is replaced by a new approach...thus, whereas military strategy and tactics strive, through the calculated investment of resources and optimization of their employment, to support the politician's intention to produce a new reality, the operational art interprets, through dialectical thinking, the military implications resulting from the political decisions, and initiates future situations to lead to the materialization of the desired reality."

<sup>9</sup> Fritjof Capra, *The Web of Life*. (New York: Doubleday, 1996), 29.

<sup>10</sup> Chris Smith, *Solving Twenty-First Century Problems with Cold War Metaphors; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 99-100. Smith argues in his paper that EBO is primarily influenced by the targeting process; the reductionist and prescriptive nature of targeting "generates seemingly purposeful action in a simple and holistic manner...[this] highly structured approach [is] antithetical to creativity, which is an important function of effective adaptation."

legacy. Is Army Design doctrine the spawn of General Systems Theory, or is design a military adaptation of postmodernist fields of philosophy, economics, or social science? Although the interests of continued relevance prevent the U.S. Army from acknowledging Israeli *Systemic Operational Design* or Soviet *Deep Operational Shock* as paternal methodologies for design, the complete absence of any theoretical foundation leaves design doctrine in an awkward state.<sup>11</sup> Without a theoretical bedrock, vocabulary and structure lack origin.

The lack of prescriptiveness in this case creates a hodge-podge of meaningless concepts that potentially do more damage to an organization attempting to “understand, visualize, and describe complex, ill-structured problems.”<sup>12</sup> Fifteen pages of doctrine does not begin to address the unique vocabulary essential for learning, applying, and communicating military design methodology, and FM 5-0’s underwhelming brevity in design doctrine content in some respects explains how the Army is hardly dithyrambic in accepting design as a new methodology.

One expects institutional resistance to change in all manners of social organization. Potentially, the antithetical nature of ontological methodology appears unwieldy to an organization comfortable with tacticizing virtually all aspects of planning and executing. Of the many tacticized structures within operational art, the continued emphasis for linear worldviews in the form of ‘lines of effort,’ ‘logical lines of operation,’ and the more conventional ‘physical line of operation’ form the institutional bedrock of reductionist hubris at the operational level of conflict. *FM5-0 Chapter 3 Design*’s reliance on ‘lines of effort’ and other linear processes inhibits military organizations from reaching metacognition and realizing fundamental phenomenon within open systems. “Linear chains of cause and effect exist very rarely in ecosystems.”<sup>13</sup> Although in retrospect, nearly all observations of activity follow a linear causality where there is a beginning, middle, and an end, more complex phenomenon are difficult to predict in an open system where adaption and interconnectivity create uncertainty.<sup>14</sup>

To apply reductionism and model a linear transformation approach that links a pre-defined ‘end-state’ to a series of reverse-engineered objectives in time and space is not a recipe for holistic system understanding. Instead, ‘To Design or Not to Design’ advises non-teleological and holistic transformation approach through *non-linear processes* at the operational level. Subsequently, detailed planning methodology will tacticize these non-linear processes into reductionist smaller-scale linear applications in order to link strategic aim down to tactical action.

In order for *problematization* and non-linear transformative approaches to work, design methodology must take a different road to doctrinal codification for the military institution. FM 5-0’s fifteen pages of design doctrine require a significant modification; this series of design articles proposes some asymmetrical design doctrine options that deviate from traditional institutional dogma. Military institutions prefer doctrine to remain consistent for uniformity and

---

<sup>11</sup> John Brown, (Edited by Michael Krause, Cody Phillips), *The Maturation of Operational Art: Historical Perspectives of the Operational Art* (Center of Military History, United States Army, 2007) 439-441. “The belated American doctrinal recognition of the operational level of war in 1982 and operational art in 1986 was part of an overall post-Vietnam renaissance in the United States’ military thinking that focused heavily on a Soviet adversary and took Soviet doctrine into account.”

<sup>12</sup> United States Army Training and Doctrine Command, *Field Manual 5-0; The Operations Process*. (Headquarters, Department of the Army, 2010), 3-1.

<sup>13</sup> Fritjof Capra, *The Web of Life*. (New York: Doubleday, 1996), 299.

<sup>14</sup> Justin Kelly and Mike Brennan, *OODA Versus ASDA: Metaphors at War; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 44. “The more interconnections there are between the elements of a system, the more dynamic it is. The more elements there are in a system, the less predictable its total behavior.”

repetition. However, creativity and adaptation run counter-culture to these tenets, as Nassim Taleb relates with a story about a writer attending a famous writing workshop in *The Black Swan*. The instructors wanted the students to imitate successful stories out of *The New Yorker Magazine* so that they would become better writers, “not realizing that most of what is new, by definition, cannot be modeled on past issues of *The New Yorker*.”<sup>15</sup> Similarly, military organizations should not expect design teams to imitate any narrative or graphical depiction examples in a future form of design doctrine and expect greater understanding of the system under observation. Complexity refuses to be tamed by formulas, principles, or well-meaning doctrine. Metacognition offers the general cognitive tools from which a Design team may apply creativity and adaptation to address the unique open system under observation. Since the military organization turns to doctrine for instruction and synchronization of forces, such non-prescriptiveness appears counter-intuitive.

A non-prescriptive methodology that emphasizes creativity, adaptation, and non-conformity is the best doctrinal approach for military design. “*Complex War* is therefore a competitive learning environment.”<sup>16</sup> A revised Design product requires unique vocabulary, non-linear approaches, and appropriate examples of metaphor and analogy in narrative and graphic depiction so that as an institution, the military can conceptualize ill-structured problems and transform a system towards the desired state. FM 5-0’s recent attempt at codifying military design into doctrine represents an initial foot forward for holistic approaches in dealing with complexity; as unwieldy and ambiguous a product it represents, it is nonetheless a step in the right direction.

Design’s logic may work with social production models of new knowledge such as Wikipedia, but they also reflect the flaws of self-organization without hierarchical control measures. Although discounted by academia, social production models such as Wikipedia reflect the dynamic and self-organizing narrative form that Design would potentially lend itself to instead of a formal codification.<sup>17</sup> In regards to a military social production model for Design, how does the organization measure success or failure? Can the military “control” where Design logic moves the organization? What does the military do to prevent radical divergences into faulty logic? Additionally, how can the military teach and maintain standards and objectives in a self-organizing production model? These questions and others demonstrate the continued discourse that the military should pursue on how Design contributes to understanding complexity, and where detailed planning logic still maintains institutional relevance in the 21<sup>st</sup> century.

Many intellectual roadblocks litter the road between Design logic and the reductionist and mechanistic worldview. Reductionism, a preference for linear causality, and an emphasis on description over ontological explanation provide a framework for tactical vocabulary, educational processes, and planning logic that resists Design. Military doctrine such as FM5-0

---

<sup>15</sup> Nassim Nicholas Taleb, *The Black Swan*. (New York: Random House, 2007), 24.

<sup>16</sup> Australian Head Modernisation and Strategic Planning- Army, *Australian Army’s Future Land Operating Concept* (Australian Army Headquarters, Canberra, September 2009) 4.8-4.10. “In order to gain and retain the initiative, the Land Force must be constantly and rapidly learning and, as required, adapting to the emerging situation... Problems tend to change over time as new situations emerge from within the complex adaptive system. The adaptation cycle helps to ensure that the Land Force is solving the right problem (original emphasis).”

<sup>17</sup> Paris Tech Review Editors, “It’s a Wiki Wiki World, Wikipedia and the Rise of a New Mode of Production,” *Paris Tech Review*, (<http://www.paristechreview.com/2011/02/18/wiki-world-wikipedia-new-mode-production/> accessed 19 April 2011). The editors of this article use the term ‘social production model’ to define how social networks collaborate anonymously to generate new knowledge in a self-organizing non-hierarchical fashion.

Chapter 3 attempts no small feat in its brief fifteen pages, and the Army's decision to explore Design logic and attempt to write Design doctrine represents the acknowledgement that existing system of logic based in detailed planning is insufficient in the 21<sup>st</sup> century of warfare. Perhaps instead of writing Design in doctrine, the military could consider social production models as a future form for Design narratives and organizational discourse as recommended by this monograph.

Army doctrine's definition of Design implies that critical thinking is essential for understanding a complex system.<sup>18</sup> Instead of seeking a 'problem' with a corresponding 'end-state', Design teams should unshackle themselves from the linear and reductionist terminology and conceptual structures of detailed planning logic.<sup>19</sup> In order to become a critical thinker, one should consider that even hallmark processes and terminology of the host institution may potentially cause an organization to 'solve the wrong problem.' Sometimes, detailed planning alone will continue to function; however, applying it to all future challenges in the 21<sup>st</sup> century will increase the military's frequency of solving wrong problems effectively while missing the right problem entirely.

In order to communicate about Design within a new system of logic, the military could abandon the vocabulary restrictions of the obsolete and inadequate detailed planning system of logic. In other words, one cannot begin to talk about complexity when one lacks the very words to do so. The challenges of understanding and employing unique and appropriate operational language reflect an understated point of friction in U.S. Army doctrine concerning conceptual and detailed planning.<sup>20</sup> Design requires unique and descriptive lexicon to foster greater understanding of complex adaptive systems, and the military should allow its lexicon to expand as needed for Design discourse.

When the military conducts detailed planning, they have every valid expectation that in the end, that unit (or subordinate unit) will *execute* the plan. This nests in the reductionist system logic of detailed planning, and caters to institutional self-preservation and relevance among rival military components and other instruments of power. Yet when the military conducts Design, the heretical nature of true problematization may result in operational approaches and Design deliverables that expand far beyond the limited boundaries of a military organization's sense of purpose, capacity, and capabilities. Design's holistic approach to dynamic and complex systems avoids the pigeonholing procedures that streamline detailed planning into precise action- while dismantling critical innovation and creativity. Design's system of logic delivers solutions that often are uncomfortable. Instead of rejecting them, military organizations should think critically about why the solutions are uncomfortable to begin with.

---

<sup>18</sup> FM 5-0, 3-1.

<sup>19</sup> Gary Jason, *Critical Thinking: Developing an Effective System Logic*, (San Diego State University: Wadsworth Thomson Learning, 2001) 114. "There are good reasons for introducing new terminology. For one thing, a judicious use of new words can increase the readability of the writing, by shortening many of the sentences involved;" See also: Deleuze, Guattari, 374. "The ambulant sciences confine themselves to *inventing problems* whose solution is tied to a whole set of collective, nonscientific activities but whose *scientific solution* depends, on the contrary, on royal science and the way it has transformed the problem by introducing it into its theoretical apparatus and its organization of work." Deleuze and Guattari make the case that military institutions seek to label 'problems' based on familiar structures and containers that integrate with institutional practices. When military organizations face asymmetrical phenomena that reject or challenge these structures and containers, many institutions ignore them or misidentify them.

<sup>20</sup> White, I. "It is here that discourse itself must establish the adequacy of the language used in analyzing the field to the objects that appear to occupy it." White's introduction on Tropology and discourse offer tremendous insight into how human beings understand and articulate meaning through various contents and forms.

Design presents novel and asymmetric approaches to solving a complex problem that go out of an organization's boundaries and may incorporate actions and efforts of numerous actors within the system that hardly match the detailed planning task organization chart. At the same time, Design may marginalize or even eliminate military organizations from the lead role in execution, or recast their actions in unfamiliar and unorthodox processes that conflict with institutional relevance and identity. In closing, Design presents a different opportunity in gaining 'deep understanding' of a significant phenomenon of a complex system by explaining the propensity of observed rivals and phenomenon. This explanation comes with the danger that the practitioner may outrage the organization because the Design deliverable does not take the familiar *form* that the organization identifies with. Again, the military could invite new forms such as social production models where self-organization, adaptation, and innovation generate persistent creativity and learning.

Currently, detailed planning assimilates chunks of Design logic into chapters of Army doctrine and reduces Design theoretical concepts into procedures and checklists. Instead of detailed planning performing bricolage and assembling components of Design into detailed planning logic, the military might consider reversing this process and assimilating detailed planning concepts into the overarching framework of Design logic.<sup>21</sup> Understandably, this is a bold recommendation and will face significant resistance due to institutional self-interests.<sup>22</sup> Detailed planning still works in many applications, and would continue to do so while incorporated into Design's holistic worldview. The process of bricolage would subsequently reverse, and those relevant components of detailed planning doctrine would assemble within the Design system of logic. In other words, people can still own volumes of Encyclopedia Britannica in their house, while referring to Wikipedia online for other needs as the conditions warrant. The social production model of Design would perpetually adapt and change through self-organization and innovation like a swarm of ants. Within this conceptual framework, the military could continue to publish volumes of doctrine within the hierarchical and reductionist logic that supports linear approaches. Sometimes MDMP is still the most effective means to accomplishing strategic goals through tactical applications. However, Design's logic potentially provides the military a different and innovative process for making sense of highly complex and dynamic systems. While a new edition of a printed encyclopedia takes months, a newly observed concept or identified 'unknown' is quickly contributed to the collective through social production by anyone. There are strengths and weaknesses for both logics; military leadership need to think critically about whether the Army is able to do both, or is still preventing Design from functioning at the expense of detailed planning logic.

---

<sup>21</sup> Boxenbaum, Rouleau, 280-281. This process of knowledge production, defined as "bricolage" in organizational theory circles, turns one into 'a handyperson who, rather than inventing a new theory or a new paradigm, repairs or remodels existing theories by combining various theoretical concepts.' See also: Thomas Schelling, *Arms and Influence*, (New Haven, Yale University Press, 1966) 66-68. Schelling's work dates from the 1960s and is a Cold War document concerning nuclear deterrence; however his concept on 'gradual erosion' that he captures in his salami slice metaphor also applies to what detailed planning is doing to dismantle Design.

<sup>22</sup> Alvesson, Sandberg, 259. Alvesson and Sandberg ask "how can assumptions be challenged without upsetting dominant groups, which hold them so strongly that they ignore the critique or even prevent one's study from being published?"

## ***Bibliography (for entire 'To Design or Not to Design' Series)***

### **Primary Sources:**

- Ahl, Valerie and Allen, T.F.H. *Hierarchy Theory: A Vision, Vocabulary, and Epistemology*. New York: Columbia University Press, 1996.
- Alvesson, Mats. Sandberg, Jorgen. *Generating Research Questions Through Problematization*. *Academy of Management Review*, Vol. 36, No. 2, 2011.
- Antoninus, Marcus Aurelius. *Meditations*. New York: Penguin Classics, 1964.
- Aristotle. *The Works of Aristotle: Volume 1, Metaphysics*. *Great Books of the Western World*: University of Chicago, 1952.
- Australian Head Modernisation and Strategic Planning- Army. *Australian Army's Future Land Operating Concept*. Australian Army Headquarters, Canberra, September 2009.
- Bar-Yam, Yaneer. *Making Things Work; Solving Complex Problems in a Complex World*. NECSI: Knowledge Press, 2004.
- Bertalanffy, Ludwig von. *General System Theory*. New York: George Braziller, 1968.
- . *General System Theory- A Critical Review*. Edited by Open Systems Group. *Systems Behavior*, 3<sup>rd</sup> edition. London: Harper & Row Publishers, 1981.
- Bousquet, Antoine. *The Scientific Way of Warfare; Order and Chaos on the Battlefields of Modernity*. New York: Columbia University Press, 2009.
- Boxenbaum, Eva. Rouleau, Linda. *New Knowledge Products as Bricolage: Metaphors and Scripts in Organizational Theory*. *Academy of Management Review*, Vol. 36, No. 2, 2011.
- Brown, John. Edited by Krause, Michael. Phillips, Cody. *The Maturation of Operational Art; Historical Perspectives of the Operational Art*. Center of Military History, United States Army, 2007.
- Buckley, Walter. *Society as a Complex Adaptive System*. Edited by Open Systems Group. *Systems Behavior*, 3<sup>rd</sup> edition. London: Harper & Row Publishers, 1981.
- Builder, Carl H. *The Masks of War; American Military Styles in Strategy and Analysis*. RAND Corporation: John Hopkins University Press, 1989.
- Capra, Fritjof. *The Web of Life*. New York: Doubleday, 1996.
- Checkland, Peter and Poulter, John. *Learning for Action; A short Definitive Account of Soft Systems Methodology and its use for Practitioners, Teachers, and Students*. England: John Wiley & Sons Ltd, 2006.
- . *Systems Thinking, Systems Practice*. New York: John Wiley and Sons, 1981.
- Clausewitz, Carl Von. *On War*. Edited and translated by Howard, Michael and Paret, Peter. New Jersey: Princeton University Press, 1989.
- Dale M.B. Edited by Open Systems Group. *Systems Analysis and Ecology, Systems Behavior*, 3<sup>rd</sup> edition. London: Harper & Row Publishers, 1981.

- Davison, Ketti. From Tactical Planning to Operational Design. *Military Review*, September-October 2008.
- De Greene, Kenyon B. *Systems and Psychology*. Edited by Open Systems Group. *Systems Behavior*, 3<sup>rd</sup> edition. London: Harper & Row Publishers, 1981.
- Devlin, Keith. *The Language of Mathematics*. New York: W.H. Freeman and Company, 2000.
- Deleuze, Gilles. Guattari, Felix. Translated by Massumi, Brian. *A Thousand Plateaus; Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press, 1987.
- Diamond, Jared. *Guns, Germs, and Steel; the Fates of Human Societies*. New York, W.W. Norton and Company, 2005.
- Fullan, Michael. *Leading in a Culture of Change*. San Francisco: Jossey-Bass, 2001.
- Fussell, Paul. *Wartime; Understanding and Behavior in the Second World War*. New York: Oxford University Press, 1989.
- Gerhardt, Heinz-Peter. Paulo Freire (1921-1997); *Prospects: the quarterly review of comparative education*. Paris: UNESCO: International Bureau of Education, 1993. vol. XXIII, no 3/4.
- Gharajedaghi, Jamshid. *Systems Thinking: Managing Chaos and Complexity; second edition*. Elsevier: Butterworth-Heinemann, 2006.
- Gillespie KJ, *The Adaptive Army Initiative; Australian Army Journal For the Profession of Arms, Volume VI, Number 3*. Duntroon: Land Warfare Studies Centre, 2009.
- Grisogono, Anne-Marie. Ryan, Alex. *Adapting C2 To The 21<sup>st</sup> Century; Operationalising Adaptive Campaigning*. Edinburgh: Australian Department of Defence, Defence Science and Technology Organization, 2007.
- Gray, Colin S. *Modern Strategy*. Oxford University Press, 1999.
- Guerlac, Henry. *Vauban: The Impact of Science on War*. Paret, Peter (editor). *Makers of Modern Strategy; From Machiavelli to the Nuclear Age*. Princeton: Princeton University Press, 1986.
- Hughes, Richard. Ginnett, Robert. Curphy, Gordon. *Leadership; Enhancing the Lessons of Experience, Fourth Edition*. McGraw-Hill Irwin, 2002.
- James, Glen. *Chaos Theory; The Essentials for Military Applications*. Newport: Naval War College, Center for Naval Warfare Studies, Newport Four article series on Army Design Number Ten, October, 1996.
- Jenkins, Gwilym M. *The Systems Approach*. Edited by Open Systems Group. *Systems Behavior*, 3<sup>rd</sup> edition. London: Harper & Row Publishers, 1981.
- Johnson, Steven. *Emergence; The Connected Lives of Ants, Brains, Cities, and Software*. New York: Scribner, 2001.
- Joint Publication 3-0, *Joint Operations*. 17 September 2006, incorporating Change 2, Final Coordination 02 October 2008.
- Joint Publication 5-0. *Joint Operation Planning*. 26 December 2006.



- Jullien, Francois. Translated by Lloyd, Janet. *A Treatise on Efficacy Between Western and Chinese Thinking*. Honolulu: University of Hawai'i Press, 1996.
- Kast, F. E., and Rosenzweig J.E. Edited by Open Systems Group. *The Modern View: A Systems Approach, Systems Behavior*, 3<sup>rd</sup> edition. London: Harper & Row Publishers, 1981.
- Kauffman, Jr, Draper L. *Systems 1, An Introduction to Systems Thinking*. The Future Systems Series: T. Lance Holthusen, 1980.
- Kelly, Justin. Brennan, Mike. *OODA Versus ASDA: Metaphors at War*; Australian Army Journal For the Profession of Arms, Volume VI, Number 3. Duntroon: Land Warfare Studies Centre, 2009.
- Kem, Jack. *Campaign Planning: Tools of the Trade*. Department of Joint, Interagency, and Multinational Operations, U.S. Army Combined Arms Center, Fort Leavenworth, Kansas, 2009.
- Kilduff, Martin. Mehra, Ajay. Dunn, Mary. *From Blue Sky Research to Problem Solving: A Philosophy of Science Theory of New Knowledge Production*. Academy of Management Review, Vol. 36m No. 2, 2011.
- King, Richard. *How the Army Learned to Plan but Forgot How to Think*. Australian Army Journal, Volume V, Number 3, 2011.
- Krause, Michael. Phillips, Cody. *Historical Perspectives of the Operational Art*. Center of Military History, United States Army, 2007.
- Kuhn, Thomas S. *The Structure of Scientific Revolutions*, 3<sup>rd</sup> ed. Chicago: University of Chicago Press, 1996.
- Lakoff, George. Johnson, Mark. *Metaphors We Live By*. Chicago: University of Chicago Press, 1980.
- Laszlo, Ervin. *The Systems View of the World; a Holistic Vision for Our Time*. New Jersey, Hampton Press, 1996.
- Linn, Brian. M. *The Echo of Battle; The Army's Way of War*. Cambridge: Harvard University Press, 2007.
- Nagl, John *Learning to Eat Soup with a Knife; Counterinsurgency Lessons From Malaya and Vietnam*. Chicago: The University of Chicago Press, 2002.
- Naveh, Shimon. *Asymmetric Conflict; An Operational Reflection on Hegemonic Strategies*. Tel Aviv: The Eshed Group for Operational Knowledge, 2005.
- . *In Pursuit of Military Excellence; The Evolution of Operational Theory*. New York: Frank Cass Publishers, 2004.
- . *Operational Art and the IDF: A Critical Study of a Command Culture*. Center for Strategic & Budgetary Assessment (CSBA), contract: DASW01-02-D-0014-0084, September 30, 2007.
- Naveh, Shimon. Schneider, Jim. Challans, Timothy. *The Structure of Operational Revolution; A Prolegomena*. Booz, Allen, Hamilton, 2009.
- Nelson, Thomas. *Metacognition Core Readings*. Boston: Allyn and Bacon, 1992.

- Newell, Clayton R. *On Operational Art*. Washington: Center of Military History, 1994.
- Northouse, Peter. *Leadership: Theory and Practice*, Third Edition. California: Sage Productions, 2004.
- Novick, Peter. *That Noble Dream*. New York: Cambridge University Press, 1988.
- Otis, Glenn K. *The Ground Leader's View- I; On Operational Art*. Washington: Center of Military History, 1994.
- Reilly, Jeffrey. *Operational Design: Shaping Decision Analysis through Cognitive Vision*. Department of Joint Warfare Studies, Air Command and Staff College, Maxwell AFB, Alabama, 2009.
- Ricoeur, Paul. Translated by Blamey, Kathleen and Pellauer, David. *Time and Narrative*, Volume 3. Chicago: University of Chicago Press, 1985.
- Romjue, John L. *American Army Doctrine for the Post-Cold War*. Fort Monroe: Military History Office, United States Army Training and Doctrine Command, 1997.
- Ryan, Alex. *The Foundation For An Adaptive Approach; Australian Army Journal For the Profession of Arms*, Volume VI, Number 3. Duntroon: Land Warfare Studies Centre, 2009.
- Ryan, Mick. *Measuring Success and Failure in an 'Adaptive' Army; Australian Army Journal for the Profession of Arms*, Volume VI, Number 3. Duntroon: Land Warfare Studies Centre, 2009.
- Saint, Crosbie. *The Ground Leader's View- II; On Operational Art*. Washington: Center of Military History, 1994.
- Schelling, Thomas. *Arms and Influence*. New Haven, Yale University Press, 1966.
- Schneider, James J. *Theoretical Implications of Operational Art; On Operational Art*. Washington: Center of Military History, 1994.
- Schon, Donald A. *Educating the Reflective Practitioner*. San Francisco: Jossey-Bass, 1987.
- Scott, Trent. *Adapt or Die; Australian Army Journal For the Profession of Arms*, Volume VI, Number 3. Duntroon: Land Warfare Studies Centre, 2009.
- Shy, John. Jomini. Paret, Peter (editor), *Makers of Modern Strategy; From Machiavelli to the Nuclear Age*. Princeton: Princeton University Press, 1986.
- Singleton, W.T. *Man-Machine Systems*. Edited by Open Systems Group. *Systems Behavior*, 3<sup>rd</sup> edition. London: Harper & Row Publishers, 1981.
- Slipchenko, Vladimir. *Future War Lecture Series: For What Kind of War Must Russia Be Prepared?* Polit.ru Public Lecture Series transcript C47, November 11, 2004.
- Smith, Chris. *Solving Twenty-First Century Problems with Cold War Metaphors; Australian Army Journal For the Profession of Arms*, Volume VI, Number 3. Duntroon: Land Warfare Studies Centre, 2009.
- Stewart, Ian. *Nature's Numbers*. BasicBooks, 1995.
- Taleb, Nassim. *The Black Swan*. New York: Random House, 2007.

- Thayer, Lee. *Communication and Organized Theory*. Edited by Dance, Frank E.X. *Human Communication Theory; Original Essays*. New York: Holt, Rinehart and Winston, Inc. 1967.
- United States Army Training and Doctrine Command. *Field Manual 3-0; Operations*. Headquarters, Department of the Army, 2001.
- . *Field Manual 3-24; Counterinsurgency, Final Draft*. Headquarters, Department of the Army June 2006.
- . *Field Manual 5-0; The Operations Process*. Headquarters, Department of the Army, 2010.
- . *Field Manual 6-22; Army Leadership; Competent, Confident, and Agile*. Headquarters, Department of the Army, October 2006.
- United States Marine Corps, Department of the Navy. *Marine Corps Doctrinal Publication (MCDP) 5, Planning*. Headquarters, United States Marine Corps, Washington D.C. July 1997.
- Warden, John *The Air Campaign; On Operational Art*. Washington: Center of Military History, 1994.
- Weigley, Russell F. *The American Way of War*. New York: Macmillan Publishing Co., 1973.
- Weinberg Gerald. *An Introduction to General Systems Thinking*. New York: John Wiley and Sons, 1975.
- . *Rethinking Systems Analysis and Design*. Boston: Little, Brown and Company, 1982.
- White, Hayden. *The Content of the Form*. Baltimore: The John Hopkins University Press, 1987.
- . *Tropics of Discourse; Essays in Cultural Criticism*. Baltimore: The John Hopkins University Press, 1978.
- Winter, Scott. *Fixed, Determined, Inviolable*; *Australian Army Journal For the Profession of Arms*, Volume VI, Number 3. Duntroon: Land Warfare Studies Centre, 2009.
- Yukl, Gary. *Leadership in Organizations, Sixth Edition*. New York: University at Albany State University, Pearson, 2006.

#### **Unpublished Sources:**

- Hirsch, Gal. *Operational Concept Development- the Way to ‘Defensive-Shield’ Operation*. Unpublished (as of March 2011), provided to the author in March 2011 at the School for Advanced Military Studies, Fort Leavenworth, KS through the Design program.
- Naveh, Shimon. *Between the Striated and the Smooth: Asymmetric Warfare, Operational Art and Alternative Learning Strategies*. Unpublished, provided to author by Shimon Naveh in January 2011 in hardcopy.
- . *The Australian SOD Expedition: A Report on Operational Learning*. Unpublished, provided to author by Shimon Naveh in January 2011 in hardcopy.

#### **Digital Media Sources:**

- Abbott, Bud and Costello, Lou. <http://www.baseball-almanac.com/humor4.shtml>. Last accessed 28 December 2010.
- Bruno, Greg. Finding a Place for the 'Sons of Iraq.' Council on Foreign Relations; January 9, 2009. <http://www.cfr.org/publication/16088/>. Last accessed: 03 January 2011.
- Conklin, Jeff. Wicked Problems and Social Complexity. CogNexus Institute, 2008. <http://cognexus.org/wpf/wickedproblems.pdf> Last accessed 05 January 2011.
- Editors, Paris Tech Review. It's a Wiki Wiki World, Wikipedia and the Rise of a New Mode of Production. Paris Tech Review. (<http://www.paristechreview.com/2011/02/18/wiki-world-wikipedia-new-mode-production/> accessed 19 April 2011).
- Fastabend, David. That Elusive Operational Concept. Army Magazine: Association of the United States Army, <http://www3.ausa.org/webpub/DeptArmyMagazine.nsf/byid/CCRN-6CCRXX> last accessed: 14 February 2011.
- Foucault, Michel. Discourse and Truth: The Problematization of Parrhesia. Originally covered in six lectures given by Michel Foucault at the University of California, Berkeley in October-November, 1983. Published online at: <http://foucault.info/documents/parrhesia/> last accessed 16 December 2010.
- Gallais, Marie. Fabbri, Remi. Schmitt, Christophe. Problematization and Translation of the Vision: Toward New Entrepreneur's Competences. Colloque: En route vers Lisbonne, 4 et 5 decembre 2008, [http://www.tudor.lu/cms/lu2020/publishing.nsf/0/FDECF548D12BC30BC12575140048AB73/\\$file/16h15\\_GALLAIS\\_FABBRI\\_SCHMITT.pdf](http://www.tudor.lu/cms/lu2020/publishing.nsf/0/FDECF548D12BC30BC12575140048AB73/$file/16h15_GALLAIS_FABBRI_SCHMITT.pdf) Last accessed: 17 December 2010.
- Greenwood, T.C. Hammes, T.X. War Planning for Wicked Problems; Where Joint Doctrine Fails. Armed Forces Journal: <http://www.armedforcesjournal.com/2009/12/4252237/> Last accessed: 03 January 2011.
- Ibrahim, Azeem. Afghanistan's Way forward Must Include the Taliban. Los Angeles Times Opinion Online; 09 December 2009; <http://articles.latimes.com/2009/dec/09/opinion/la-oe-ibrahim9-2009dec09> last accessed February 2011.
- Lange, Alex. From Problem-Solving to Problematizing; Questions in the Writing Classroom. Fablex Linguas, Campina Grande, Paraiba, Brasil, 2009: <http://freireproject.org/forum/problem-solving-problematizing%3A-questions-writing-classroom> Last accessed 17 December 2010.
- Michaels, Jim. Behind Success in Ramadi: An Army Colonel's Gamble. USA Today, October 30, 2009, <http://usatoday.printthis.clickability.com/pt/cpt?action=cpt&title=USATODAY.com&ex;> last accessed: 03 January 2011.
- Terdiman, Daniel. Study: Wikipedia as accurate as Britannica CNET News. December 15, 2005, [http://news.cnet.com/2100-1038\\_3-5997332.html](http://news.cnet.com/2100-1038_3-5997332.html) accessed 19 April 2011.
- United States Army Chief of Staff's professional reading list for field grade officers, [http://www.history.army.mil/html/reference/reading\\_list/list3.html](http://www.history.army.mil/html/reference/reading_list/list3.html). Accessed: 27 December 2010. The Chief of Staff reading lists for the Navy, Air Force, Marines, and Coast Guard are also available online at:

<http://www.ndu.edu/Library/index.cfm?secID=217&pageID=126&type=section> Last accessed: 27 December 27, 2010.

U.S. Army SAMS archive blog: The students of Seminar 1, School of Advanced Military Studies Class 10-01, posted blog entries concerning Design doctrine and how the Army as an institution is significantly confused on how to apply FM 5-0.

<http://usacac.army.mil/blog/blogs/sams/archive/2010/02/04/improving-the-army-s-Design-approach.aspx> (last accessed 03 January 2011).

Vego, Milan. A Case Against Systemic Operational Design, "Joint Forces Quarterly." Issue 53, 2<sup>nd</sup> Quarter 2009,

<http://www.google.com/search?hl=en&q=a+case+against+systemic+operational+design&aq=f&aqi=g1&aql=&oq> Accessed 18 April 2011.

Wass de Czege, Huba. Thinking and Acting Like an Early Explorer: Operational Art is Not a Level of War. Small Wars Journal,

<http://smallwarsjournal.com/blog/2011/03/operational-art-is-not-a-level/> last accessed: 28 March 2011.

*Major Ben Zweibelson is an active duty Infantry Officer in the US Army. A veteran of OIF 1 and OIF 6, Ben is currently attending the School for Advanced Military Studies at Fort Leavenworth, Kansas. He has a Masters in Liberal Arts from Louisiana State University and a Masters in Military Arts and Sciences from the United States Air Force (Air Command and Staff College program). Ben deploys this June to support Operation Enduring Freedom in Afghanistan as a planner.*

This is a single article excerpt of material published in [Small Wars Journal](#).  
Published by and COPYRIGHT © 2011, Small Wars Foundation.

Permission is granted to print single copies for personal, non-commercial use. Select non-commercial use is licensed via a Creative Commons BY-NC-SA 3.0 license per our [Terms of Use](#).

No FACTUAL STATEMENT should be relied upon without further investigation on your part sufficient to satisfy you in your independent judgment that it is true.

Please consider [supporting Small Wars Journal](#).

