

A Case Against **SYSTEMIC OPERATIONAL DESIGN**

By MILAN N. VEGO

Currently, the U.S. military seems well on the way to repeating its dismal experience with an effects-based approach to operations (EBAO) by adopting major parts of the so-called systemic operational design (SOD) into Army and joint doctrine. This new concept rests on dubious theoretical foundations. Moreover, it clearly failed when it was put into practice by the Israel Defense Forces (IDF) in the Lebanon conflict in July 2006.

SOD advocates offered several, sometimes conflicting, definitions of what the new concept really is. These definitions also shifted over time as the concept underwent changes in content. For example, in 2006, SOD was described as an intellectual exercise that draws on the creative vision, experience, intuition, and judgment of commanders to provide a framework for the development of detailed operational plans.¹ Proponents sometimes argued that SOD is a precursor to operational planning and at other times that it is not. More recently, some leading proponents went even further by claiming that their concept is actually operational art for the 21st century.² In one definition, it is described as an application of systems theory to operational art. In another, it is an attempt to rationalize complexity through systemic logic.³ SOD is also explained by its leading advocates as a method that uses critical learning of a shared appreciation of systemic logic to form hypotheses relevant to unique and highly complex situations that evade easy or commonsense solutions.

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Israel Defense Forces destroy
Hizballah post, 2006

Israel Defense Forces (Dan Brontfeld)

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Origins

SOD theory goes back to the mid-1990s when the Israeli chief of defense staff established the Operational Theory Research Institute (OTRI). In addition, the School for Operational Command was set up to promote creative and critical thinking at the operational level among its military students and then in the IDF. Brigadier Generals Shimon Naveh and Dov Tamari were the founders and codirectors of OTRI until spring 2006. Naveh and several of his colleagues came to the conclusion that existing operational planning was becoming increasingly irrelevant in the Israeli operating environment. In their view, the IDF were in deep crisis because of the lack of knowledge and understanding of operational thinking. Naveh asserted that the IDF in the Yom Kippur War of October 1973 showed tactical excellence but no clear understanding of the consequences at the operational level.⁴ He and his supporters embraced systems theory as the way to understand and affect the country's operational environment.⁵ The result of the work done by Naveh and his colleagues at OTRI was so-called systemic operational design. They claimed that the new concept was based on epistemology.⁶ It was developed as an alternative to the classical Western

approach to operational warfare, which is supposedly based on teleology.⁷

Theoretical Foundations

The main theoretical underpinnings of SOD are systems theory, Soviet operational art, French postmodern philosophy, social sciences, psychology, architecture and urban planning, and, more recently, ancient Chinese military thinking. The single most important

except for some terms, any of these ideas. The leading theorist of SOD falsely reinterpreted the early Soviet writings on operational art in terms of GST. Supposedly, operational art in contrast to strategy and tactics is systemic in nature.¹¹ This is not the case, however. In the process, Bertalanffy's ideas were intentionally or accidentally distorted or misinterpreted.¹² A more serious problem is that the Soviet theory of operational art as defined by SOD

Bertalanffy believed there exists a general system of laws that can be applied to any system regardless of the system's properties and the elements involved

element behind SOD is so-called general system theory (GST), first explained by the Austrian biologist Ludwig von Bertalanffy (1901–1972) in an article in 1945.⁸ His major work, *General System Theory: Foundations, Development, Applications*, was not published until 1968. Bertalanffy believed there exists a general system of laws that can be applied to any system regardless of the system's properties and the elements involved. These general laws are broad, diverse, and fluid. He believed the system's elements and their attributes or characteristics can only be understood as fractions of the total system. In other words, SOD proponents view a system in a holistic way.⁹

Bertalanffy's main contribution to system theory was the theory of open systems. In his view, traditional closed systems are based on science and the second law of thermodynamics. Because closed systems are in a steady state, they are not applicable to living organisms—hence, the need for a *general* system theory that can be applied to biology, information theory, cybernetics, and social sciences. At the same time, Bertalanffy recognized the difficulties of applying his theory to social science because of the complexities in the intersection between natural sciences and human social systems. His system theory was extended to history, psychiatry, psychology, sociology, education, anthropology, economics, and political science. However, GST is also controversial. Some theorists, in fact, consider it a pseudoscience.¹⁰

SOD theory is also supposedly based on the Soviet theory of operational art of the 1920s and 1930s. The apparent reason for this was to impress upon potential supporters that the new concept rests on some viable operational warfare theory. However, despite the claims of its advocates, SOD does not contain,

supporters bore almost no resemblance to what the Soviet theorists actually wrote or implied in their numerous published works. The Soviets were given undeserved credit for essentially creating the modern theory of operational warfare. According to the leading SOD proponent, the development of operational art was a “neoteric” (or modern) field of knowledge provided by the Russian and American examples (actually, the American contribution to the development of operational theory prior to World War II was negligible). For the first time in the history of military thought, an *intermediate* environment for discourse, which harmoniously bridges the traditional cognitive-conceptual gap between the conventional fields of military knowledge, was discernible.¹³

To reiterate, the Soviet theory of operational art emerged in the 1920s and 1930s. Soviet military theorists studied the character of modern war by analyzing the experiences of World War I and the Russian Civil War. They grappled with the problem of how to restore mobility and maneuver to the relatively stagnant battlefield. However, it is a matter of historical record that they were also greatly influenced by the major theorists of the Imperial Russian Army, notably General Genrykh A. Leer (1829–1904) and Colonel Aleksandr A. Neznamov (1878–1928). Both the Soviet and the Imperial Russian theorists were also influenced by the writings of the German theorists of their era. However, the Soviets were neither groundbreaking nor unique in their approach because similar development took place elsewhere. Western theorists, for example, faced the same dilemmas as their Soviet counterparts but reached different conclusions. Like their Soviet counterparts, French, British, and U.S. theorists

U.S. Air Force (Brian Davidson)



Tactical air control party Airman coordinates air cover for 10th Mountain Division Soldiers, Afghanistan

recognized the true nature of modern operations as a series of battles, although they did not treat the operational level of war as a distinct entity. But they, like the Soviets, recognized that operational results emerged as the sum of the results of tactical combat. B.H. Liddell Hart (1895–1970), J.F.C. Fuller (1878–1966), and others developed new concepts of warfare at the operational level. The Germans also developed their so-called *Blitzkrieg* (or airland) concept in the early and mid-1930s, which they successfully applied at the operational level in 1939–1942.¹⁴

By inappropriately using terms from system theory, the leading SOD proponent argued, the Soviets observed that the dialectical nature of warfare defines the need for a practice of command that perpetuates a learning cycle of model framing-reframing. Therefore, the need to ensure the relevance of a particular kind of warfare necessitates the expansion of the definition of warfare from a mere knowledge of forms to a form of knowledge.¹⁵ Allegedly, by establishing a systems orientation to operational art and science, the early Soviet theorists opened the

path to using patterns of abstract thought to develop an understanding of rational and logical thinking within the system in being.¹⁶ For the leading SOD advocate, the Soviet theory of deep operation (*glubokaya operatsiya*) seems the gist of all operational art instead of an example of the operational concept for planning and execution of major offensive land operations. A false claim was made that Marshal Mikhail Tukhachevski (1893–1937) replaced the concept of the battle of annihilation, which dominated European military thinking, with the idea of operational shock (*udar*) of system disruption. Yet Soviet deep operation theory has nothing to do with system disruption or the Soviet use of that term. Moreover, in Soviet theory and practice, disruption was always a means to *facilitate* destruction, not substitute for it.¹⁷

The fact is that the Soviets did not use system theory terms in their numerous writings on operational art. Their approach to operational warfare was *systematic*, not *systemic*; there is a difference between the two. This approach to the study of operational art provided the Soviets the scope and limits of the

operational realm and direction for research and a comprehensive methodology for achieving better understanding of preparing for and conducting war at the operational level.¹⁸

SOD theory was greatly influenced by the writings of the French postmodern philosophers, specifically Gilles Deleuze (1925–1995) and Felix Guattari (1930–1992) and, to a lesser extent, Jean-Francois Lyotard (1924–1998), Jean Baudrillard (1929–2007), and Paul Virilio (b. 1932). All these philosophers share to a greater or lesser degree a radical leftist and anti-capitalist ideology.¹⁹ Critics have pointed out that the literary style of the French postmodern philosophers is essentially a collection of scientific, pseudo-scientific, and philosophical jargon. Deleuze's and Guattari's books contain a handful of intelligible sentences.²⁰ The language is designed to be unintelligible to conceal an absence of honest thought. Baudrillard's writings are full of nonsense. Numerous scientific and pseudoscientific terms were inserted into sentences that were devoid of meaning. Postmodern philosophers had a total disregard for the definitions of various terms.²¹

Systemic Operational Design and Its Variants

VARIANT PRIOR TO 2007	THE U.S. ARMY COMMANDER'S APPRECIATION AND CAMPAIGN DESIGN, VERSION 1.0 (February 2008)	USARCENT EXECUTIVE SUMMARY: THE THEORY AND PRACTICE OF DESIGN (December 2008)
System Framing ■ Rival as rationale ■ Command as rationale ■ Logistics as rationale Operation Framing ■ Conditions ■ Effects ■ Forms of functions	Initiation Problem Framing ■ Establish strategic context ■ Synthesize strategic guidance ■ Describe systemic nature of problem(s) to be solved ■ Determine strategic trends ■ Identify gaps in knowledge ■ Establish assumptions about problem ■ Identify operational problem ■ Determine initial mission statement ■ Obtain approval of problem and mission statement Mission Analysis ■ Describe systemic conditions that command must realize to achieve strategic aims ■ Identify campaign objectives ■ Identify potential for campaign action Campaign Design ■ Describe commander's intent ■ Describe approach ■ Describe requirements for reframing Campaign Plan	Four Theories of the Situation ■ Emerging reality ■ Learning ■ Warfare ■ Organization System Framing ■ Understanding strategic logic and mission context ■ Developing systemic understanding of emerging operational environment Cognitive Transition ■ Opposition ■ Command ■ Logistics Operational Frame ■ Framing system of intervention ■ Reflective learning and reframing ■ Design formulation Concept Design ■ Develop concept for intervention Campaign Plan ■ Analyze mission and develop course of action ■ Plan operations and logistics ■ Assess plan ■ Execute plan

More recently, SOD theorists borrowed some ideas from Chinese military thinking and applied them to their own new method of operational planning. However, they have not only arbitrarily selected certain aspects from the extensive and extremely rich body of Chinese military theory and practice to prove their thesis, but also either misinterpreted or distorted some key elements. SOD proponents contend that Chinese military thinking, in contrast to Western thinking, is not focused on *action* as the way to reach a certain objective. Since antiquity, Western ways of military thinking were aimed at creating an ideal model and then visualizing how the real situation differed from that model. Afterward, the backward or reverse process is used to construct a sequence of actions as the way to make the model happen.²² More recently, a leading SOD proponent in the United States asserted that the ancient Greeks thought in terms of creating a vision of a desired end and then overcoming any and all obstacles in order to force that ideal end into the real world.²³ In contrast, the Chinese military focuses on identifying the inherent potential of a situation and subsequently facilitating the emergence of this potential. Expressed differently, instead of forcing one's will on a situation, one should set the conditions to allow things to happen that are already inherent in a perceived situation.

Allegedly, the Chinese military does not ascribe as much importance to having a detailed, systematically developed plan for a predetermined objective or endstate as do Western militaries.²⁴ The Chinese think it is not possible to know what an idealized end could be, but it should be easy enough to distinguish *better* and *worse*. They supposedly think in terms of a perpetual and ever-changing current of events. SOD advocates explain that a Chinese general would try his utmost to obtain a thorough understanding of the situation he is facing in order to identify which conditions would facilitate a *favorable* change. This quest for understanding is also one of the key components of systemic operational design.²⁵ However, what SOD proponents do not explain is whether their interpretation of Chinese military thinking pertains to the modern or ancient era. It is well known that the modern Chinese military largely adopted the Soviet theory and practice of operational warfare combined with many elements of the Marxist-Leninist ideology.

Full understanding of the Chinese way of warfare is difficult to explain accurately

and in succinct terms because it underwent numerous changes over many centuries. Nevertheless, it seems that SOD advocates took too much liberty in interpreting and then comparing it to the current Western practice of operational planning. In its essence, Chinese strategic culture revolves around ancient concepts of *Shih* (power or influence) and its opposite *Li* (self-interest or material gain). The main elements of *Shih* strategy were the people (soldiers and their weapons), the so-called context (opportunity, timing, and logistics), and the enemy (relative skill, competence, and the will to fight). In contrast, *Li* strategy focused on the physical aspects of one's own and enemy forces.²⁶

Ancient Chinese strategic thought applied two approaches to accomplish the end-state. A direct approach, or so-called *Li* strategy, was aimed at achieving the ultimate strategic objective through the accumulation of a large number of partial or local tactical victories. This strategy envisaged seizing enemy provinces in sequence until the entire enemy territory was brought under control. The main prerequisite for the success of *Li* strategy was to have a large and powerful army. In the indirect approach, the aim was to apply a strong *Shih* through *Tao* (the universal way) in order to continuously weaken the enemy's own *Shih*, thus avoiding major battles and ultimately winning without fighting. Because the ultimate strategic objective encompassed all intermediate objectives—*Li*—combat superiority was not required. The premise was that the power resided in and dwelt among the people. *Shih* strategy avoided indicating what one's ultimate objective is. The aim was to change or frustrate the enemy commander's intent rather than his forces. Also, the deception was the essence of *Shih* strategy.²⁷

SOD and the IDF

OTRI had a major impact on the type of education that future IDF high commanders received prior to the Lebanon conflict of 2006. These commanders were indoctrinated with postmodern ideas, which had little or no relevance to the real education on operational warfare. This was done at the expense of classic military theory.²⁸ The reading list was heavily based on architectural theory written around 1968.²⁹ Students read in detail the works of architects such as Christopher Alexander, Clifford Geertz, and Gregory Bateson. The OTRI curriculum included urban studies, systems analysis, psychology, cybernetics,

and postcolonial and poststructuralist theory. There was a certain fascination with spatial modes and modes of operations based on the writings of Deleuze and Guattari, who drew inspiration from guerrilla organizations and "nomadic wars."³⁰ The Israeli military also used the theories of great architects in conducting urban operations.³¹ Israeli officers studied military history and theory but reportedly believed that such studies had little practical value. Classical military thinkers became no more than names whose writings were occasionally cited but not read in depth.³²

A major (but not the only) reason the IDF failed in Lebanon was overreliance on airpower and modern technology in general and dogmatic application of the U.S. concept of EBAO and, not least of all, SOD. In fact, application of the disparate concepts of EBAO and SOD almost guaranteed major difficulties in the execution of operations. After 2001, the IDF began to embrace the theories of precision firepower, EBAO, and SOD. The EBAO proponents within the IDF came to believe that an enemy could be completely immobilized by precision air attacks against critical military systems. They also hypothesized that little or no land force would be required since it would not be necessary to destroy the enemy. After several alterations and revisions, the new IDF doctrine was endorsed by Air Force lieutenant general and chief of the defense staff Dan Halutz in April 2006. Reportedly, even General Halutz did not understand the new doctrine that he signed. Naveh claimed that Halutz failed to link SOD with other elements and harshly criticized his military acumen.³³

The new IDF doctrine was designed to cover strategy, force transformation, and EBAO, as well as introduce a new military language and new structure for staff work methodology, battlefield analysis, and the structure and contents of orders. Indeed, this new doctrine was not entirely based on SOD theories,

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but they were much honored. The boundary between EBAO and SOD was blurred.³⁴ There are some contrary views in the United States to this course of events. It is claimed that in early 2006, the new IDF leadership rejected SOD in favor of EBAO and system-of-systems

Israeli armored forces assemble before entering combat in Lebanon, 2006



Israel Defense Forces (Abir Sultan)

analysis. Allegedly, all plans based on SOD were shelved and their proponents retired. This, in turn, had dire consequences for the way the Israelis then chose to frame the Hizballah problem they faced that summer.³⁵ Yet Naveh himself stated that the core of the new doctrine for the IDF was the theory of SOD.³⁶

During the Lebanon conflict in July 2006, the major problem the IDF had with SOD was the new terminology and methodology. It was questionable whether the majority of IDF officers could grasp a design that Naveh proclaimed was “not easy to understand . . . because [it is] not intended for ordinary mortals.”³⁷ Many officers found the entire SOD concept elitist. Other officers could not understand why the old system of simple orders and terminology was replaced by one that few could understand.³⁸ For example, new terms such as *strategic directive*, *strategic purpose*, *system boundary*, *operational boundaries*, *campaign organizing theme*, and *rival system rationale* were overused in place of traditional military terms. Units were ordered to “render the enemy incoherent,” make the enemy feel “distress” or “chased down,” or “achieve standoff domination of the theatre.” The new vocabulary was heavily drawn from French postmodern philosophy, literary theory, architecture, and psychology. Because of its cryptic character, it is hardly

surprising that not every officer in the IDF had the time or inclination to study this philosophy.³⁹

SOD vs. EBAO

SOD and EBAO, in their essences, are pseudoscientific. EBAO and SOD activities are similar, but their underlying theory and execution are quite different.⁴⁰ Both concepts share a systemic, not classical, approach to warfare. SOD is based on both GST and complexity theory.⁴¹ EBAO supposedly treats systems as closed, while SOD considers them as open.⁴² They both use system theory language, although SOD language is far less intelligible than that used by EBAO advocates. Both claim to offer a holistic view of the situation, but so does the traditional military decisionmaking process. SOD advocates assert that while the EBAO holistic (comprehensive) approach focuses on disrupting nodes and relationships, SOD attempts to transform the relationships and interactions between the entities within a system.

Both SOD and EBAO advocates assert that modern military operations are too complicated for applying a so-called linear approach because the enemy and environment form a complex adaptive system. Yet the traditional approach to warfare always assumed that success can be ensured by applying both

linear and nonlinear actions. SOD proponents mistakenly argue that such systems cannot be destroyed but must be pushed into disequilibrium—that is, into chaos and the creation of incoherence.

SOD proponents claim that EBAO is a scientific concept while their concept is “philosophical.” However, this is only superficially true because SOD theoretical underpinnings, as shown above, are based on pseudoscientific and highly controversial ideas of French postmodern philosophers and an utterly faulty reinterpretation of the Soviet operational art. SOD advocates also argue that in EBAO the decision procedures are closed, complete, and decidable, while in SOD critical methods remain open and incomplete. Supporters of SOD also assert that EBAO is based on causation imposed on human behavior, creating false chains of cause and effect.⁴³ Yet in contrast to EBAO enthusiasts, they acknowledge, at least in theory, that uncertainty is an attribute of complex adaptive systems, which calls for “continuous reframing.”⁴⁴

In contrast to EBAO, SOD proponents contend that their approach does not seek to attain perfect knowledge but emphasizes development and conceptualization of the system, which provides a sound basis for action and learning. Supposedly, SOD injects energy into a system to move it closer to the

desired aim. SOD recognizes that the system will actually change and adapt, in response not just to friendly actions, but also to the rest of its environment.⁴⁵ A significant difference between the two concepts is that SOD does not envisage the use of quantifiable methods such as measures of effectiveness and measures of performance.

SOD and Operational Planning

SOD is separated from operational planning because supposedly there are major “cognitive” differences between these two. In the view of SOD proponents, operational design deals with *learning*, while planning is about *action*. Design is a referential framework for redesign, while planning deals with problem-solving. Design creates new patterns, while planning uses existing templates. Supposedly design is holistic but incomplete and not detailed, while planning is complete but partial. Design is an open construct, while planning is a closed one. SOD proponents assert that operational planning focuses on the components of the situation in an attempt to understand the whole. It is solution-focused. It is oriented on the fixed formatted products. It is about enabling action.⁴⁶

Separating operational design from the planning process, however, is a purely arbitrary solution and a potentially harmful one. It unnecessarily fragments the entire operational decisionmaking and planning process. Experience amply shows how dangerous it is to separate planners and executors of an operation. In a traditional operational planning process, operational design is not

of any campaign in high-intensity conventional conflict) is not addressed at all.

SOD has a completely different focus in campaign planning than traditional operational planning. It advocates a use of forward planning more in line with Chinese military thinking.⁴⁷ SOD enthusiasts claim that the forward approach makes it more relevant in the joint operating environment. They explain that forward planning begins with current conditions, lays out potential decisions and actions, and identifies the next feasible step that best approaches the established aim. They assert that by clearly confusing the desired endstate and the objective, the envisioned endstate serves as a distant and general aiming point rather than a specific objective. SOD proponents falsely claim that forward planning is more natural because it is consistent with the direction time moves and the way humans act.⁴⁸

However, SOD clearly violates some of the most important tenets of sound operational planning. Regardless of the scope and complexity of a problem, logic and common sense dictate that one should always start with what ultimately must be accomplished. Traditional operational planning is based on a so-called regressive or inverse process, in which the starting point is the ultimate objective of a campaign or major operation. For a campaign intended to end hostilities, the starting point for planning should be the desired strategic endstate as expressed in the guidance issued by the political leadership. Afterward, the ultimate military or theater-strategic objective should be determined. The properly determined desired strategic endstate provides a

but must be adequate to collectively lead to the accomplishment of the ultimate objective. The number and sequence of the accomplishment of intermediate objectives directly or indirectly affect several elements of the operational idea, specifically operational synchronization, phasing, momentum, tempo, and point of culmination.

SOD enthusiasts argue that their theory is intended as an alternative to the current classical campaign design, centers of gravity, and lines of operation. However, this is one of the major flaws of SOD theory and practice, as the Israeli failure in the Lebanon conflict in 2006 conclusively shows. So-called diffused warfare cannot replace the traditional focus on the enemy center of gravity.⁴⁹ They also assert that, in contrast to the traditional operational design where the center of gravity is determined at the beginning and remains more or less fixed, SOD assumes a continuous shifting and reframing of the design for a campaign. This is erroneous thinking. The traditional campaign design properly understood *always* highlighted the need to reevaluate the originally determined objectives and center of gravity in case of a drastic change in the situation.

Traditionally, in planning a campaign or major operation, the operational commanders and their staffs must take nonmilitary aspects of the situation (political, diplomatic, economic, financial, social, religious, informational) fully into account because these comprise the framework dictated by policy and strategy. A plan for a campaign or major operation should be based on a number of operational considerations, collectively called an operational design. A sound operational design should ensure that one's forces are employed in a logical and coherent manner and are focused on the assigned operational or strategic objectives. The basic plan for a campaign or major operation contains, in rudimentary form, only the most important elements of an operational design. Other elements of operational design are provided in detail in the annexes to the basic operation plan and the plans of subordinate land, sea, air, and special forces component commanders. In generic terms, the main elements of a sound operational design include the desired strategic endstate, ultimate and intermediate objectives, force requirements, balancing of operational factors against the ultimate objective, identification of the enemy and friendly centers of gravity, initial geostrategic positions and lines

separating operational design from the planning process is a purely arbitrary solution and a potentially harmful one

separate but is an integral part of decision-making and planning. An even more serious problem is that SOD is not what traditional operational warfare theory considers an operational design; it is actually an artificial bridge between policy and strategy on the one hand and operational warfare on the other. It includes many elements normally in the domain of policy and strategy. At the same time, it includes numerous elements of the operational commander's estimate of the situation and decisionmaking. The entire focus of SOD is on campaign design, while design for major operations (which are an integral part

sufficient framework in terms of the factors of space and time allowing sufficient flexibility in modifying or altering the ultimate objective of a campaign. In its essence, the desired strategic endstate is the strategic effect that the political leadership wants to see after the end of the hostilities in a given part of the theater. Because that objective cannot normally be accomplished by a single act, the entire effort must be divided into several operational or major tactical objectives; otherwise, there is a real danger of trying to do too much too quickly. The number of intermediate objectives should be neither too large nor too few,

of operations, directions/axes, and the operational idea and operational sustainment. In operational terms, the heart of the operational design is the operational idea (scheme).⁵⁰

The empirical evidence of successful application of systemic operational design outside Israel simply does not exist. In the Lebanon conflict, SOD was a major, although not the only, factor in the Israel Defense Forces' distinct failure to achieve victory over a much weaker opponent. This was the reason the IDF subsequently abandoned SOD and returned to a well-proven traditional operational planning process. One has to derive

empirical evidence of successful application of systemic operational design outside Israel simply does not exist

proper lessons from the Lebanon conflict instead of ignoring them.

The vocabulary used by SOD advocates is essentially unintelligible. Experience shows that no doctrine can be successfully applied unless all its elements are written in clear and succinct language understandable to all. Adopting SOD will result in having two sets of terms—one for SOD and another for the traditional military decisionmaking process. Such a situation will be untenable and should never be allowed. The entire decisionmaking and planning process must use the same vocabulary; otherwise, misunderstanding and confusion in both peacetime and combat will inevitably occur. **JFQ**

NOTES

¹ Matt M. Matthews, *We Were Caught Unprepared: The 2006 Hezbollah-Israeli War*, The Long War Series Occasional Paper 26 (Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Combined Arms Center, 2008), 25. Part of this definition made its way into the new definition of operational art in Joint Publication 3-0, *Joint Operations* (Washington, DC: Joint Chiefs of Staff, September 17, 2006), GL-24.

² Shimon Naveh et al., *Operational Design Workshop*, Center of Excellence, Booz Allen Hamilton, Washington, DC, December 2008, available at <www.operationaldesign.com/RESTRICTED/coursebook/ARCENT/ARCENT%20coursebook.html>.

³ Patrick E. McGlade, "Effects-Based Operations versus Systemic Operational Design: Is There

a Difference?" Master's thesis, Air Force Institute of Technology, 2006, 11.

⁴ Jelte R. Green, *Systemic Operational Design: Improving Operational Planning for the Netherlands Armed Forces* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 2006), 21.

⁵ Joseph A. DiPasquale, *Discourse in Systemic Operational Design* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 2007), 4.

⁶ *Epistemology* is defined as the scientific study of knowledge, especially the construction of formal models of perception by which knowledge is obtained. See William G. Cummings, *Operational Design Doctrine: Hamstrung or Footloose in the Contemporary Operating Environment* (Toronto: Canadian Forces College, 2007), 77.

⁷ *Teleology* (from the Greek *telos*: end, purpose) is the philosophical study of design and purpose. A teleological school of thought holds that all things are designed for or directed toward a final result—that there is an inherent purpose or final cause for all that exists. Western military thought is based on such a deterministic approach. Teleology teaches that the natural and historic processes are determined not only by causality but also by ultimate purposes. See Cummings, 76.

⁸ Ludwig von Bertalanffy, "Zu einer allgemeinen Systemlehre," *Blätter für deutsche Philosophie*, 3/4 (extract in *Biologia Generalis*, 19 [1949], 139–164; quoted in Green, 22).

⁹ Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory* (London: Frank Cass, 1997), 3.

¹⁰ For two critiques of general system theory, see <http://iss.org/laszlofw.htm> and <http://outbacksoftware.com/systems/systems.html>.

¹¹ Harold R. Winton, review of Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory*, in *Journal of Military History* 63, no. 3 (July 1999), 759.

¹² See Niklas Zetterling, "A Critique of *In Pursuit of Military Excellence* (London: Frank Cass, 1997) by Shimon Naveh," 2–4, available at <www.militaryhistory.nu/critiques/PDF/naveh.pdf>.

¹³ Green, 21.

¹⁴ David M. Glantz, *Soviet Military Operational Art: In Pursuit of Deep Battle* (London: Frank Cass, 1991), 19.

¹⁵ Shimon Naveh, *Operational Art and the IDF: A Critical Study of a Command Culture* (Washington, DC: Center for Strategic and Budgetary Assessment, 2007), 14.

¹⁶ DiPasquale, 6.

¹⁷ Winston.

¹⁸ Glantz, 12.

¹⁹ Avi Kober, "The Israel Defense Forces in the Second Lebanon War: Why the Poor Performance?" *Journal of Strategic Studies* 31, no. 1 (February 2008), 32.

²⁰ Eugene W. Holland, "The Anti-Oedipus: Postmodernism in Theory: Or, the Post-Lacanian Histori-

cal Contextualization of Psychoanalysis," *Boundary 2*, 14, no. 1/2 (August 1985–Winter 1986), 291.

²¹ Richard Dawkins, "Postmodernism disrobed," *Nature*, July 9, 1998, 141–143.

²² Green, 24.

²³ Huba Wass de Czege, "Renewing the Core of Operational Art: How to Design Sound Campaign Strategies, Learn Effectively and Adapt Rapidly and Appropriately," 4, available at <www.operationaldesign.net/RESTRICTED/coursebook/ARCENT/01Event_15-19%20DEC%2008/TAB%20I_Renewing%20the%20Core%20of%20OperationalArt.pdf>.

²⁴ Green, 24.

²⁵ *Ibid.*, 24; Wass de Czege, 4.

²⁶ William H. Mott IV and Jae Chang Kim, *The Philosophy of Chinese Military Culture: Shih vs. Li* (New York: Palgrave MacMillan, 2006), 11.

²⁷ *Ibid.*, 12–13, 32–33.

²⁸ Avi Kober, *The Second Lebanon War*, Begin-Sadat Center for Strategic Studies Perspectives No. 22, September 28, 2006, 4, available at <www.biu.ac.il/SOC/besa/perspectives22.pdf>.

²⁹ Eyal Weizman, "Walking through walls: Soldiers as architects in the Israeli-Palestinian conflict," *Radical Philosophy*, no. 136 (March–April 2006), 10.

³⁰ *Ibid.*, 10, 13.

³¹ Eyal Weizman, "The Kokhavi Affair," available at <http://roundtable.kein.org/node/803>.

³² Kober, "Israel Defense Forces," 31–32.

³³ Matthews, 23–24, 26.

³⁴ *Ibid.*, 26.

³⁵ Wass de Czege, 2.

³⁶ Shalom Zaki, *Hizbollah's Increased Strength: Risks and Opportunities for Israel*, Institute for National Security Studies Insight No. 57, May 26, 2008, available at <www.inss.org.il/research.php?cat=6&incat=&read=1824>.

³⁷ Yotam Feldman, "Dr. Naveh, or, how I learned to stop worrying and walk through walls," available at <www.haaretz.com/hasen/spages/917158.html>.

³⁸ Matthews, 25.

³⁹ Zaki, 25–26.

⁴⁰ Richard Swain, "Design in Army Doctrine," in Naveh et al., 17.

⁴¹ Cummings, 74.

⁴² Swain, 16.

⁴³ Green, 23.

⁴⁴ Ketti C. Davison, *Systemic Operational Design (SOD): Gaining and Maintaining the Cognitive Initiative* (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 2006), 46.

⁴⁵ *Ibid.*, 52.

⁴⁶ Green, 26–27, 40.

⁴⁷ *Ibid.*, 40.

⁴⁸ Davison, 46.

⁴⁹ Kober, "Israel Defense Forces," 26.

⁵⁰ *Operational idea* (*operative idea*) is the German term; the Soviets/Russians use *idea of the operation*.