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EXECUTIVE SUMMARY

Title: Fighting for Intelligence: The Design of Intelligence-Led Operations

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Thesis: Achieving the level of learning, understanding, and systems thinking necessary to cope with modern, complex rivals and operating environments requires a reciprocal and carefully designed relationship between operations and intelligence.

Discussion: A paradigm shift in the joint force approach to understanding modern adversaries is long overdue. Learning and understanding the ever-changing structure and relationships of rival systems requires active interaction rather than a pursuit of “actionable intelligence” through periodic sampling with passive collection. Significant elements of our operations must now be directed towards creating conditions for learning and understanding. Joint doctrine requires subordination of intelligence to other forms of operations, making it difficult for the inverse to occur when necessary. In order to cope with uncertainty and complexity, a new paradigm for understanding the adversary and operating environment must emerge. Intelligence-led operations—the purposeful interaction to gain awareness, understanding, and leverage over rival systems—should be the foundation of this new paradigm. Intelligence-led operations should originate from the operational art and design of a campaign. By applying the heuristics of systems thinking and operational design to this problem, an intellectual foundation for the continual design of intelligence-led operations can be established.

Conclusion: In modern campaigning, fighting for intelligence is as necessary as fighting with it. We have to interact with rival systems and learn from that interaction if we are to succeed. Intelligence-led operations create the necessary reciprocal relationships that allow for such success. The purpose of intelligence-led operations is to increase understanding of rival systems—an outcome that ultimately benefits all lines of operation. Operational design provides the framework to develop and guide intelligence in the pursuit of systemic awareness as well as campaign goals and objectives. Specifically, creating a separate logical line of operation (LLO) for intelligence will maximize the potential for achieving all intelligence aims.

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Preface

Intelligence-led operations, a term frequently heard in law enforcement circles, has recently been used by official U.S. military and government sources to describe U.S. military operations in Iraq and Afghanistan. In spite of the term's proliferation, one would be hard-pressed to find a single, overarching definition or theory behind it. The concept dates as far back as Sun Tzu, but has its modern roots in 20th century law enforcement and counterinsurgency, specifically the British and French experiences in Northern Ireland and Algeria respectively. U.S. military doctrine, including Field Manual (FM) 3-24 *Counterinsurgency*, discuss operations that are intelligence *driven*. Arguably, nearly all genres of operations are driven by intelligence, but *driving* operations is not necessarily the same as *leading* them.

Certain military operations are indeed intelligence led, that is, intelligence provides both the purpose and direction for these operations. Military thought, however, clings to the idea that intelligence supports, not leads, operations (hence *driven* vs. *led*). This means that the on-going intelligence-led operations are conceived and conducted at the tactical level, which is where the subsequent learning and understanding generated by these operations remains. Increasing understanding of rival systems requires incorporating intelligence-led operations at the operational level. Doing this requires changing our view on intelligence's relationship with operations as well as its role in modern campaigning.

This paper attempts to fill a doctrinal void by explaining the necessity, theory, and purpose of intelligence-led operations from a systems perspective. In the course of this explanation, a discussion of a necessary paradigm shift for intelligence cannot be avoided. This in itself will hopefully provoke further thought and discussion on an issue that could not be more relevant to joint forces today.

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Introduction

A paradigm shift in the joint force approach to understanding modern adversaries is long overdue. Despite recognition of the uncertainty and complexity these rivals pose, Cold War thinking endures in the operational art, design, and planning of current campaigns. Campaigning still begins with reductionist analytical methods built on passive intelligence collection of denied areas and systems. Joint forces plan, launch, and sustain operations based on the a priori knowledge from these initial assessments. Doctrinally, subsequent joint intelligence, surveillance, and reconnaissance (ISR) efforts shift to “direct support of current and future operations,”¹ meaning collection efforts to support ongoing analysis of the adversary system fall behind that of targeting and other operational requirements. In other words, the current paradigm presumes a high level of accuracy in initial assessments and little effort is made to refine and improve original hypotheses through repeated scrutiny. Therefore, any new evidence during the course of operations tends to be viewed deductively, resulting in slow adaptation to the flaws in logic that are ultimately exposed.

The inevitable breakdown of the current paradigm as an effective method to cope with modern, adaptable rivals began in 1991 as Iraqi Scuds evaded our collection and targeting efforts to become a serious threat to the coalition against Saddam Hussein.² In 1999, Serbian forces were able to evade coalition ISR while retaining their abilities to conduct ethnic cleansing and air defense.³ The systems the U.S. is trying to affect in Iraq and Afghanistan today are even more elusive and adaptable. Modern rival systems are open and dynamic, leading to an ever-increasing level of complexity and uncertainty in the joint operating environment.

Learning and understanding the ever-changing structure and relationships of rival systems requires active interaction, rather than a pursuit of “actionable intelligence” through

periodic sampling with passive collection. Indeed, shifting the paradigm is best described by Lieutenant General William G. Boykin, U.S. Army (retired), as the philosophical change from pursuing “actionable intelligence” to conducting “actions to produce intelligence.” He asserts: “Actionable intelligence is a misconception. Who determines if intelligence is actionable? It’s the one who must take the action, which means the definition varies from decisionmaker to decisionmaker. If you want intelligence...take action.”⁴

In order to cope with uncertainty and complexity, a new paradigm for understanding the adversary and operating environment must emerge. It must be based on an active pursuit of empirical evidence and experience, which is meant to coincide with (not replace) deductive reasoning. This approach is supported by, and supportive of, the analysis, synthesis, intuition, creativity, and systems thinking that are necessary to understand contemporary rivals and operating environments. To be sure, this paradigm is a reinvention of the epistemology behind the joint force assessment and operational design process as well the relationship between intelligence and operations.

Essential to this new paradigm is the recognition of two fundamental realities in dealing with complex, adaptive systems. First, increasing understanding of these rival systems is possible, but complete understanding (i.e., *getting it right*) will never occur. Phenomena such as “emergence” and “perpetual novelty” make predictive awareness of complex, adaptive systems difficult, if not impossible, especially when using traditional reductionist analytical methods.⁵ Increasing our understanding of rival behavior, evolution, and adaptation must come from a holistic, systems thinking approach.⁶

Second, increasing understanding and reducing uncertainty will only come from continuous interaction with the adversary system. Certain operations must therefore be driven by

and supportive of intelligence aims. Accordingly, this new paradigm must also recognize that intelligence and operations are “two sides of the same coin” (i.e., *coequal and interdependent*).⁷ Binding these functions together in pursuing a greater understanding of rival systems requires the development of cognitive goals that act as a harmonizing agent and facilitator for creative thinking and coordination between operations and intelligence personnel. In order to increase understanding and influence over rival systems, joint forces must not simply leave this new perspective on the operations/intelligence relationship to the tactical level, but must also incorporate it into the intellectual framework of operational design.

Designing operations that are intelligence-led is a fundamental necessity in modern campaigning, though it will require a significant change in our mode of thinking. Ultimately, attaining the necessary paradigm shift for conducting modern warfare depends on joint forces to accept the following premise: Achieving the level of learning, understanding, and systems thinking necessary to cope with modern, complex rivals and operating environments requires a reciprocal and carefully designed relationship between operations and intelligence.

Starting the Shift

Shifting the paradigm must begin with recognition of the apparent trend in modern warfare: both regular and irregular forces are increasingly using mobility, dispersal, decentralization, camouflage, concealment, and deception in order to achieve a fluid, survivable, yet lethal posture.⁸ This trend is inherent in all types of situations that joint forces confront, including humanitarian, counterinsurgency, and conventional operations. Joint forces acknowledge that systems thinking is essential in dealing with the complexity posed by rival systems. Problems emerge in gaining awareness of a system when rivals continuously attempt to disguise their form and deny us access to both their “targets” and the “cognitive conditions for

appreciating their logic.” Solving this problem requires significant elements of our operations be directed towards creating conditions for learning and understanding.⁹

Perhaps the best modern-day example of this phenomenon is the improvised explosive device (IED) strategy used by the insurgents in Iraq and Afghanistan. David Kilcullen, counterinsurgency advisor to General David Patreus in Iraq, graphically depicts an excellent example of the necessary means to expose this elusive threat (see figure 1 below). Within

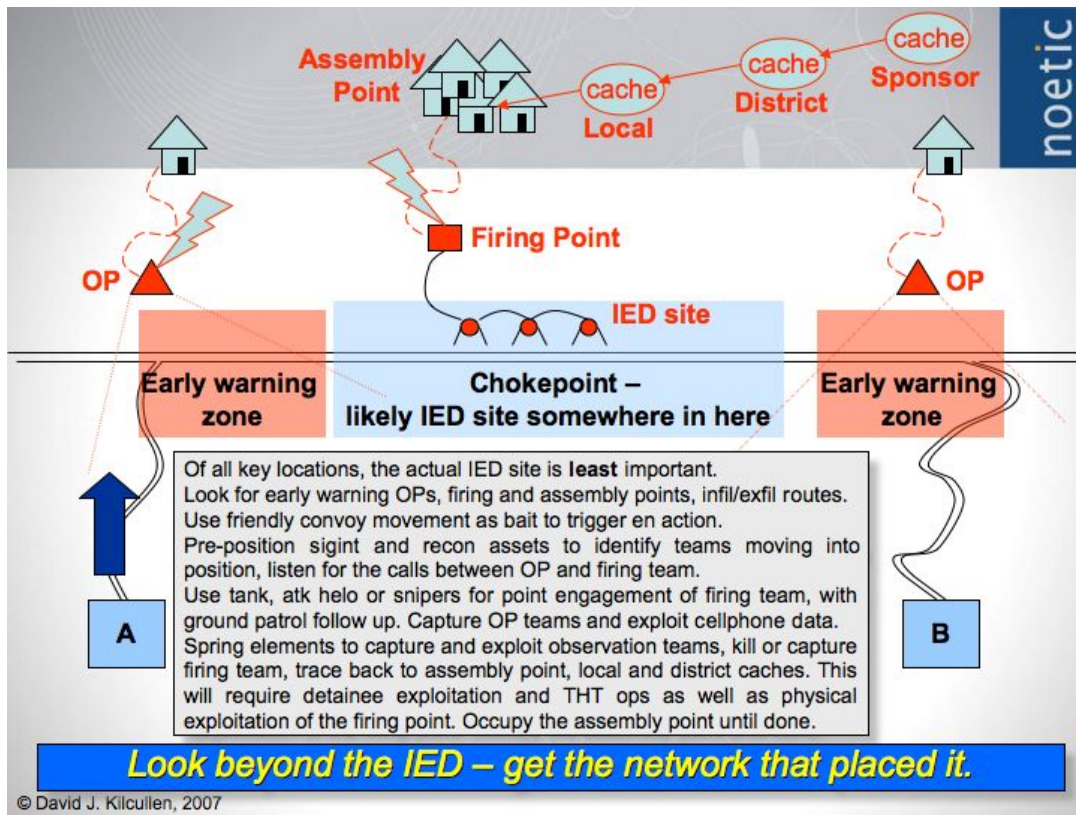


Figure 1. Kilcullen’s recommended counter-IED strategy (see endnotes for definitions)¹⁰

Kilcullen’s depiction are many concepts that will be discussed throughout this paper, but perhaps the most important is Kilcullen’s theme of using operations to gain intelligence on the IED network (or system).

The notion of conducting operations to learn about one’s adversary is an old idea. The late military theorist Colonel John Boyd argued that Sun Tzu’s idea to “probe [the] enemy’s

organization and dispositions to unmask his strengths, weaknesses, patterns of movement and intentions” is a vital part of “Blitzkrieg” and guerilla warfare.¹¹ Interacting to gain knowledge about the adversary, often called “intelligence-led operations” in today’s lexicon, is common practice in special operations, law enforcement, and network warfare.¹² Unfortunately, conventional forces tend to limit this idea to the use of decoys to expose the adversary for targeting purposes.¹³ In other words, they limit the notion to supporting immediate tactical objectives, not necessarily to gain a better understanding of the adversary system. Kilcullen’s revelation, the idea that going after the IED system is more productive than influencing the IEDs themselves, comes after years of hard-fought tactical experience. Arguably, this level of understanding could have occurred much sooner if intelligence and operations were purposefully focused at the operational level on learning and understanding the IED system, and not just defeating the immediate threat.

Joint conventional forces have yet to integrate the core premise of intelligence-led operations; that is, action reveals information that fosters subsequent understanding and has wide-ranging and continuous utility throughout all phases and types of campaigns. Joint doctrine requires subordination of ISR to other forms of operations, making it difficult for the inverse to occur when necessary. Gaining the systemic understanding necessary to succeed in modern warfare requires replacing this obsolete mode of thinking.

Coping with modern complex, adaptive systems begins with creating a new heuristic, or mental shortcut, that incorporates the aforementioned notions of systems thinking and intelligence-led operations. The model depicted in figure 2 represents this idea. The model is purposefully named “systemic awareness” versus “systemic understanding” in recognition that

one can never completely attain complete understanding of a complex, dynamic system. The model is comprised of several mutually supportive processes that affect one another in a

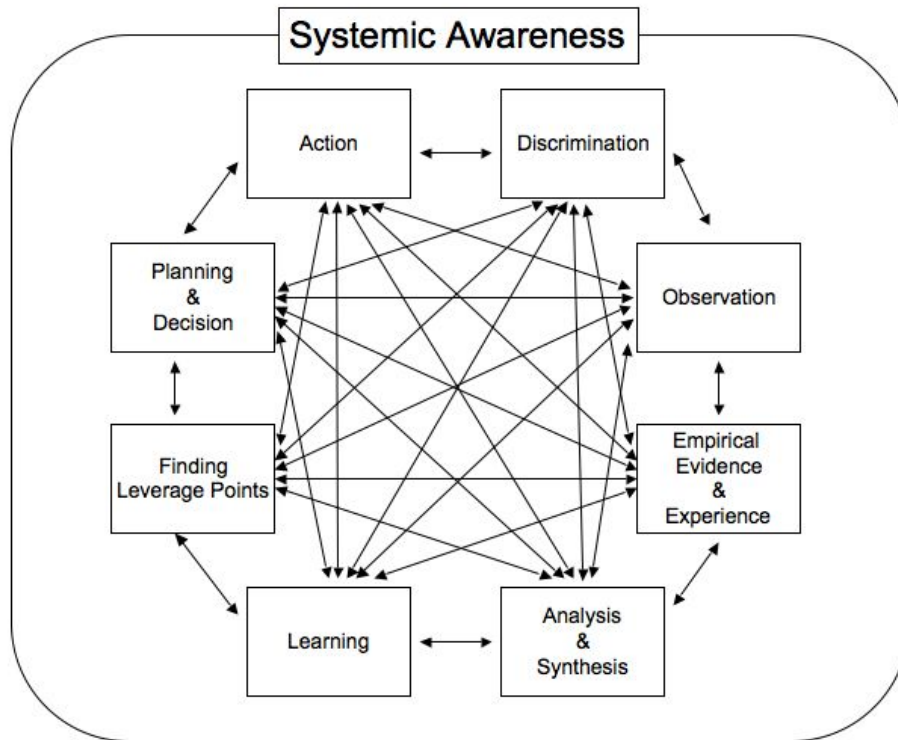


Figure 2. The Systemic Awareness Model.¹⁴

nonlinear fashion. Each process depends on the interaction between intelligence and operations, as does the model as a whole. The following describes how each process contributes to systemic awareness as well as the symbiotic relationships between them.

Discrimination

Distinguishing the adversary is a prerequisite to awareness and is a considerable challenge in modern operating environments. The Australian Army has accurately described this trend in their capstone force development document entitled *Adaptive Campaigning*. It declares that modern ISR and stand-off strike capabilities have forced regular and irregular ground forces to operate in groups small enough to avoid detection or operate in a manner that makes distinguishing targets from non-targets for stand-off fires extremely difficult. This is known as

“maneuvering below the discrimination threshold.”¹⁵ When dealing with these adversaries, the common misperception is that increasing the persistence and/or performance of passive collection can expose these elusive targets and lower the discrimination threshold. The problem is that adaptive adversaries, such as the IED teams described in figure 1, will continue to find a way to remain below it. Successfully discriminating these adversaries requires forcing the adversary to operate above the threshold.

Joint forces can accomplish this by conducting classic fire and maneuver operations in conjunction with focused ISR, such as listening to communication patterns during a combat patrol into a village or a low-level flight over an ungoverned area. Synchronizing and integrating observation efforts into operations designed to expose and/or gain understanding of the adversary (e.g., “pre-position sigint and recon assets” as Kilcullen describes in figure 1) is a perpetual essential task.

Observation

The purpose of observation is to detect changes or events in the operating environment that lead to decisions or further understanding. Successful observation results from efforts that are purposefully made within the context of the ongoing conflict rather than attempts to establish an “unblinking eye” over the operating environment. In other words, the quality of observation is more important than the quantity.

As observation feeds and improves other processes, the quality of the observation efforts improves as well. An experienced observer can begin to recognize patterns and changes within the system that would not be apparent to novice observers. One can understand this phenomenon through a simple traffic analogy. After taking a highway day in and day out, an experienced commuter would recognize the difference between slow-and-go congestion and that caused by a

serious incident, whereas to an out-of-towner, both situations may look identical. Learning and experience results in more effective and responsive observation efforts, an indispensable capability in modern conflict.

Empirical Evidence and Experience

If joint conventional forces are to reach the level of understanding to recognize patterns within a system, they will have to gather empirical evidence and build experience through interaction with that system. The challenge will undoubtedly be how to share such large quantities of evidence and experience across the force in order to feed analysis and synthesis at all levels. Stated cognitive goals can facilitate this process. Much like the scientific method, which focuses experimentation with a starting hypothesis, a cognitive goal or objective will provide context for formatting and communicating evidence and experience. However, unlike scientific experimentation, which is typically conducted on closed systems in controlled environments, knowledge of an open system “develops through a continuous interchange between theorizing and empirical studies.”¹⁶ In other words, continual analysis and synthesis of the system must occur.

Analysis and Synthesis

Analysis and synthesis are complementary, inseparable, and necessary in gaining understanding of a complex system. Analysis, the process of taking a whole and reducing it into individual parts, is the predominant method in the English-speaking world to gain knowledge and understanding.¹⁷ Analysis, however, does not emphasize the interdependence and synergy between the parts. These aspects are equally if not more important in understanding a system, because a system has characteristics that cannot be understood by separating and examining its individual elements, which themselves lose characteristics when separated from the whole. This

is where synthesis, the combining of parts to make a whole, comes into play.¹⁸

Synthesis is a creative process that enables one to see and study the system as a whole. Since synthesis is only possible after a system is broken down into its parts, analysis and synthesis must complement each other. Together, they are meant to reduce uncertainty by finding a higher level of truth. Boyd describes the continual process of analysis and synthesis as a “dialectic engine.”¹⁹ The fuel that keeps this metaphorical engine running is action. The outcome is not only a greater understanding of a rival system but also, as Boyd puts it, an increased ability to improve one’s “capacity for independent action.”²⁰

Learning

Succeeding in the competitive learning environment that defines modern, complex warfare requires generative learning, which is learning that increases one’s capacity for creativity and independent action.²¹ Its companion, adaptive learning, is about reacting and surviving in a competitive environment.²² In warfare, as in business, both learning types are necessary. A great deal of literature exists on learning organizations. Within this brief paper, the intent is not to delve deeply into learning organization theory, but to highlight how interactions between thinking and doing, or intelligence and operations, contribute to learning.²³

Learning involves both thinking and doing.²⁴ Without doing, one is forced to gain knowledge of complex, adaptive systems through historical analogy alone. Eventually, action (or doing) takes place in a military campaign. Historical analogy may be necessary to support planning and decisionmaking for initial actions, but early operations generate intelligence that will support follow-on actions. Historical analogy should become less and less important as operations continue, as long as knowledge from previous operations is collected and shared amongst the force.

Systems thinking places high value on learning through knowledge sharing using concepts such as “dialogue” or “discourse.”²⁵ An outcome of these efforts will be cognitive goals that bring together operations and intelligence efforts in pursuit of systemic awareness. Stating these cognitive goals facilitates knowledge sharing amongst the joint force by providing a common starting point or context. Knowing and articulating what knowledge is being pursued provides intelligence personnel and operators a common framework to base their interaction and subsequent learning.

Finding Leverage Points

The ultimate purpose of learning in the milieu of modern warfare is to determine how to influence rival systems in order to promote mission success. This is best accomplished through the application of leverage. Joint doctrine describes leverage as “a relative advantage in combat power and/or other circumstances against the adversary across one or more domains (air, land, sea, and space) and/or the information environment sufficient to exploit that advantage.”²⁶ Doctrine discusses how to achieve an advantage in combat power, but little on how to create the information environment that makes leverage possible. Pitting strength against weakness—the core idea of leverage—can only happen if joint forces know where to apply their strength. Against modern adversaries, this is easier said than done.

Influencing a system requires applying strength to the appropriate leverage point—a place “within a complex system...where a small shift in one thing can produce big changes in everything.”²⁷ Leverage points are typically not easily visible or intuitive, however, systems theory fortunately provides a basis for investigation. Business and economics use the concept of constraints as a source of leverage points. This concept essentially describes how a very small portion of a system is responsible for a vast majority of its performance.²⁸ For example, if

infrastructure, available materials, and/or the rate of adaptation to change constrain overall performance, they would be considered leverage points. Beyond constraints are higher-level leverage points which generate the synergy among the system's various parts. These may include the rules, goals, or paradigms (or the entities that establish them) of a system.²⁹

Kilcullen identifies several leverage points in the IED network including observation points, infil/exfil routes, and caches. Discovering leverage points in a system depends on continuous learning, analysis, synthesis, experience, and observation. It should be a primary focus for the cognitive goals that drive planning and decision in pursuit of systemic awareness.

Planning and Decision

Unpredictability and emergent behavior make traditional planning and decision approaches insufficient in coping with complex, adaptive systems. Conducting planning and decision as discrete events, using time-consuming, perishable analytical techniques in an attempt to determine and evaluate all possible options, is simply infeasible. The dynamic, time-constrained environment that planners and decisionmakers must operate requires planning and decision to be a single, continuous, problem-solving process.

In planning actions against complex, adaptive systems, experience matters more than the ability to efficiently follow prescriptive analytical problem-solving methods. Building that experience in unfamiliar environments depends on the quality of discrimination, observation, analysis and synthesis, learning, and identification of leverage points. All of these aforementioned processes are heavily dependent on action, which, interestingly, is the outcome of planning and decision.

Action

Action is the critical enabling process within the systemic awareness model. A single

action, or set of actions, should not be considered definitive or decisive in either gaining awareness or influencing a rival system. Interacting with a modern system will likely result in the system adapting and changing. Actions are rarely decisive in the strategic context against complex, adaptive systems. Actions more often result in a reorganization of these systems, rather than a complete collapse. Therefore, a new equilibrium, rather than a decisive result, is the likely outcome of any given action.³⁰

Joint forces should attempt to do two things with each cycle of actions. First, they must produce intelligence that increase understanding; second, they must positively influence a system in order to move it toward a desired state of equilibrium. Both require clearly defined goals and well designed actions to support those goals. The character of such actions must include, as Boyd asserts, variety, rapidity, harmony, and initiative in order to “shape and adapt to an ever changing environment.”³¹

Actions (operations) supporting cognitive processes (intelligence) that lead to additional actions is a common theme throughout systemic awareness, hence the requirement for a reciprocal relationship. However, indiscriminate action along with haphazard learning and observation efforts prevent or considerably delay gaining awareness. Joint forces must purposefully design campaigns to set the conditions for systemic awareness. This is where cognitive goals, the second major theme of this model, come into play. Establishing and articulating these goals will facilitate observation, generate learning, and focus intelligence-led operations. The development of these goals must be an integral part of the campaign’s operational design.

Achieving the Shift

Before planning, decision, and actions attempt to solve the problems that modern rivals pose, the problems themselves must be understood and set through the process of operational design. Operational design is the development of an overall concept that guides planning and execution. It is a creative process that takes strategic guidance and knowledge of the adversary and develops an intellectual framework for the conduct of a campaign planning and major operations.³² The underlying theme for operational design is building, testing, and refining hypotheses.³³ Joint doctrine lists 17 elements of operational design, the most relevant being *end state & objectives, logical lines of operation, center of gravity, and simultaneity and depth*.³⁴ Joint doctrinal publications unfortunately do not offer a potential design process; however, the oft-discussed FM 3-24/MCWP 3-33.5, *Counterinsurgency*, comes close. The FM lists the following key considerations for conducting operational design: critical discussion, systems thinking, model making, intuitive decisionmaking, continuous assessment, and structured learning.³⁵

Systemic awareness not only fits well into this discussion of operational design, its necessary inclusion is apparent. Design itself depends on the pursuit, development, and improvement of systemic awareness. One cannot consider systems thinking, model making, intuitive decisionmaking, and structured learning without it. Systemic awareness is a guiding force for these processes. How, then, can we incorporate systemic awareness into the most relevant guiding elements of operational design? The answer lies in establishing intelligence as a separate logical line of operations (LLO), which would allow for the arrangement of cognitive goals (i.e., intelligence objectives) that are meant to support the desired end state. This proposition may seem straightforward, but it, in itself, is the heart of the paradigm shift.

Our challenge in shifting the paradigm is changing the perception that intelligence is strictly a staff function. By viewing intelligence as a LLO similar to maneuver/strike or reconstruction operations, joint forces can harness its full potential.³⁶ Joint doctrine provides flexibility in determining LLOs. The joint force commander can organize lines by instruments of national power, objective, or function.³⁷ Moreover, the organization of lines of operations depends on the nature and circumstances of a campaign. That said, it is hard to imagine a campaign where intelligence, both a warfighting function and an instrument of national power, would not make an appropriate LLO.

An immediate critique of this method is that lines imply separation and independence. One could argue that other functions cannot operate without the support of intelligence, therefore intelligence should not be a separate LLO. Joint doctrine recognizes the misleading notion of using lines as a framework for campaigning, and asserts that lines of operations are really interdependent. Both *Adaptive Campaigning* and *Counterinsurgency* use the image of intertwined LLOs (like strands in a rope) to describe their interdependence and mutually reinforcing nature.³⁸ Reciprocity between LLOs may also occur in a sequenced versus continuous manner. In other words, certain lines (such as intelligence) could act in a *supporting* or *supported* capacity in relation to the other lines. The status of these relationships may change with phasing and sequencing. In the modern operating environment, the joint force must be agile enough to “dynamically manage the balance and weight of effort across all lines of operation in space and time.”³⁹ The joint/interagency force accomplishes this by harmonizing objectives across LLOs with regard to supporting/supported efforts.

A LLO takes the joint force toward a particular outcome, or endstate. Along the LLO, there are a series of waypoints, or intermediate objectives. Once intelligence is established as a

LLO, the next step is transforming the joint force commander’s intent and mission for intelligence into coherent objectives. Intelligence objectives provide a common outlook among intelligence and operations personnel working toward systemic awareness. Intelligence may have many objectives that are in direct or general support of other LLOs, as the inverse would also be true.

Joint doctrine defines an objective as “a clearly defined, decisive, and attainable goal toward which every military operation should be directed.”⁴⁰ Operations conducted to support intelligence should be no different. Similar to other types of objectives, the language of intelligence objectives should be in the form of an imperative statement. The distinguishing aspect of intelligence objectives would be the choice of action verbs. Instead of *defeat*, *destroy*, *neutralize*, and *secure*, intelligence objectives would use verbs such as *determine*, *verify*, *locate*, and *identify*. Figure 3 below provides an example of an intelligence LLO.

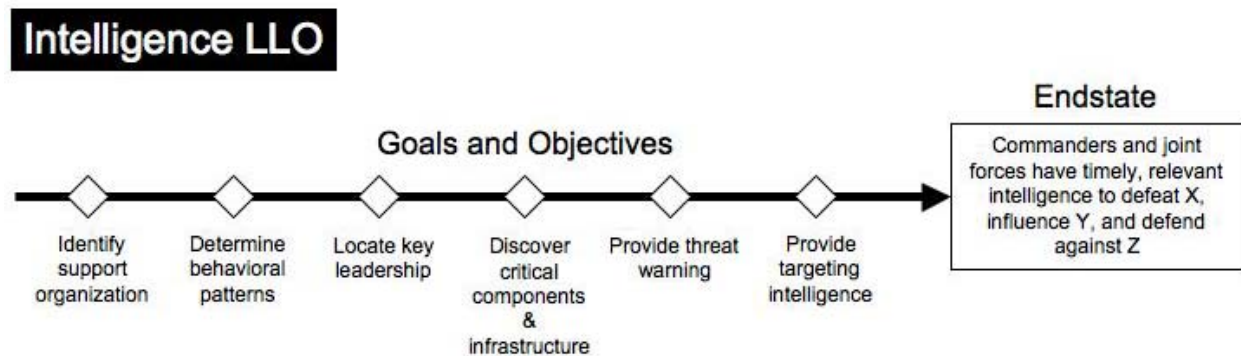


Figure 3. Example intelligence LLO with cognitive goals/intelligence objectives and endstate

The goals, objectives, and endstate contained within the intelligence LLO provide an overarching purpose for subordinate objectives and tasks. Accordingly, the purpose may be oriented toward the pursuit of systemic awareness or may be related to supporting an objective from another LLO. The benefit of expressing a purpose that links objectives and tasks is the communication of intent, which allows for the necessary creativity in planning and executing

intelligence-led operations. It subsequently enables the development of mission-type orders for supporting ISR, strike, and maneuver operations. Most importantly, it fosters the lower-level initiative necessary to engage modern adversaries.⁴¹

Unique circumstances will require intelligence-led operations to vary from campaign to campaign. If guided properly, creative minds will find solutions to fit the circumstances. The method and origin of that guidance is what matters most. By combining the heuristic frameworks of systemic awareness and lines of operation, an intellectual foundation for the continual design of intelligence-led operations can be established. Intelligence objectives set the context for pursuing systemic awareness, while the reciprocal processes within the systemic awareness model offer a methodology for achieving those objectives (see figure 4 below).

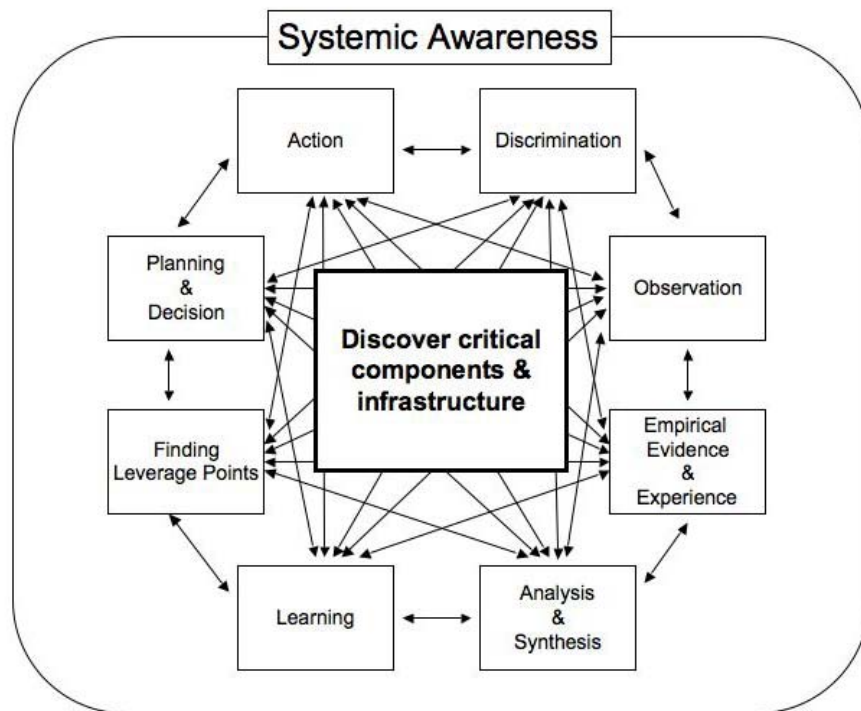


Figure 4. Combining the heuristics of Systemic Awareness and LLO

Intelligence-led operations—the purposeful interaction to gain awareness, understanding, and leverage over rival systems—should not simply be left to tactical-level planning, but should

originate from the operational art and design of a campaign. Doing so facilitates systems thinking, expedites learning, and bolsters decisionmaking. Consequently, joint forces have a greater opportunity to hasten success and deny the enemy strategic and political victories.

Conclusion

In modern campaigning, fighting for intelligence is as necessary as fighting with it. Passive periodic sampling of the environment alone simply does not cut it against complex, adaptive systems. We now have to put energy into these systems in order to gain awareness and increase our understanding of them.⁴² In other words, we have to interact and learn from that interaction if we are to succeed. Intelligence-led operations create the necessary reciprocal relationships that allow for such success.

To be sure, the purpose of intelligence-led operations is not to produce intelligence for intelligence's sake. Its purpose is to increase understanding of rival systems—an outcome that ultimately benefits all lines of operation. Intelligence, like all other activities, must support the strategic endstate of a campaign. The character of modern warfare requires a portion of intelligence activities to shift away from traditional doctrinal processes in order for intelligence to support that endstate. That is not to say that intelligence support to fire and maneuver is no longer valid, rather it is an acknowledgement that the intelligence mission goes beyond direct support to operations.

Balancing intelligence efforts requires an operational-level approach. Operational design provides the framework to develop and guide intelligence in the pursuit of systemic awareness as well as campaign goals and objectives. Specifically, creating a separate LLO for intelligence will maximize the potential for achieving all intelligence aims. By incorporating this concept into a campaign, joint forces will more than establish a primacy in the *learn-and-adapt* contest

with modern rivals. They will control the *learn-and-influence* struggle, the true theme of modern warfare.

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Endnotes

¹ For the definition of “Intelligence, Surveillance, and Reconnaissance,” see Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, (April 12, 2001 as amended through 2007).

² William Rosenau, *Special Operations Forces and Elusive Enemy Ground Targets*, http://www.rand.org/pubs/monograph_reports/MR1408/MR1408.ch3.pdf (accessed December 7, 2007), 29-30.

³ Benjamin S. Lambeth, *Airpower Against Terror*, (Rand, Santa Monica, California, 2005), 230-232.

⁴ William G. Boykin, Lieutenant General, U.S. Army (retired), interviewed by the author, October 10, 2007.

⁵ Frans Osinga, *Science, Strategy and War: The Strategic Theory of John Boyd*, (Eburon, The Netherlands, 2005), 142-143.

⁶ Headquarters, Department of the Army, Field Manual (FM) 3-24, *Counterinsurgency* (Washington D.C., December 2006), 4-3, 4-4.

⁷ Paul Van Riper, Lt Gen, USMC (ret), E-mail to author, September 24, 2007.

⁸ Major Jason M. Brown and Captain Max Pearson, “ISR Operational Art: A Joint, Unified Approach to Intelligence, Surveillance, and Reconnaissance Operations,” presentation given to Air Combat Command Director of Intelligence, June 7, 2007.

⁹ Shimon Naveh, Brig Gen (Dr.), Israeli Defense Forces (ret), E-mail to author October 18, 2007.

¹⁰ David Kilcullen, *Counterinsurgency in Iraq: Theory and Practice, 2007*, presentation given to Marine Corps University, September 26, 2007. Dr. Kilcullen uses the following acronyms and abbreviations on the slide: OP (observation point), infil/exfil (infiltration/exfiltration), atk (attack), recon (reconnaissance), sigint (signals intelligence), THT (tactical human intelligence team). Used with permission of the Marine Corps Warfighting Laboratory.

¹¹ Osinga, 198.

¹² For a discussion of “intelligence-led policing” see U.S. Department of Justice, *Law Enforcement Intelligence; A Guide for State, Local, and Tribal Law Enforcement Agencies*, <http://www.cops.usdoj.gov/default.asp?Item=1404> (accessed December 9, 2007). For a discussion on “intelligence-led special operations” see U.S. Department of State, *Country Reports on Terrorism 2006*, <http://www.state.gov/s/ct/rls/crt/2006/82727.htm> (accessed December 9, 2007). Electronic probing is a common technique for computer hackers. According to JP 1-02, electronic probing is the “intentional radiation designed to be introduced into the devices or systems of potential enemies for the purpose of learning the functions and operational capabilities of the devices or systems.”

¹³ According to JP 1-02, a decoy is “an imitation in any sense of a person, object, or phenomenon which is intended to deceive enemy surveillance devices or mislead enemy evaluation.”

¹⁴ Those familiar with Boyd Theory will find similarities between this model and “The Real OODA Loop” (see Osinga, 270-271). This model borrows some of the same components and the cross-referencing feature (although in a much simpler arrangement). The OODA loop is ultimately about adapting, whereas the systemic awareness model is about understanding, hence the inclusion of discrimination, learning, identifying leverage points, etc.

¹⁵ The Australian Army, *Adaptive Campaigning: The Land Force Response to Complex Warfighting*, Version 4.18, November 24 2006, 5.

¹⁶ Rand Intelligence Workshop, *Toward a Theory of Intelligence: Workshop Report*, http://www.rand.org/pubs/conf_proceedings/2006/RAND_CF219.pdf (accessed December 9, 2007), 5.

¹⁷ "Analytic Philosophy," by Aaron Preston, *The Internet Encyclopedia of Philosophy*, <http://www.iep.utm.edu/>, accessed December 9, 2007.

¹⁸ William H. Dettmer, *Destruction and Creation: Analysis and Synthesis*, (Goal Systems International, 2006), <http://goalsys.com/systemsthinking/3.htm> (accessed December 9, 2007), 1-2.

¹⁹ Osinga, 183.

²⁰ *Ibid.*, 177.

²¹ The Australian Army defines complex war as a competitive learning environment (see *Adaptive Campaigning*, 7). For a definition of generative learning, see Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York, Doubleday/Currency, 1990), 14.

²² Senge, 14.

²³ Senge offers a comprehensive discussion of learning organizations in *The Fifth Discipline*.

²⁴ Senge, 374.

²⁵ *Ibid.*, 238.

²⁶ JP 5-0, *Joint Operation Planning*, Washington, D.C., (26 December 2006), IV-26.

²⁷ Donella H. Meadows, *Leverage Points: Places to Intervene in a System* (Sustainability Institute, 1999), http://www.sustainer.org/pubs/Leverage_Points.pdf (accessed December 9, 2007), 1.

²⁸ H. William Dettmer, *Systems and Constraints: The Concept of Leverage*, (Goal Systems International, 2006), <http://goalsys.com/systemsthinking/6.htm> (accessed on December 9, 2007).

²⁹ Meadows, 3.

³⁰ Eyal Weizman, *Lethal Theory*, http://roundtable.kein.org/files/roundtable/Weizman_lethal%20theory.pdf (accessed December 10, 2007), 77.

³¹ Osinga, 187.

³² JP 5-0, *Joint Operation Planning*. Joint doctrine defines operational design as “the conception and construction of the [intellectual] framework that underpins a campaign or major operation plan and its subsequent execution.” The term “intellectual” was in the original definition of operational design, but disappeared in 2002.

³³ John F. Schmitt, *A Systemic Concept for Operational Design* (Marine Corps Warfighting Laboratory), <http://www.mcwl.usmc.mil/concepts/home.cfm> (accessed February 1, 2008), 4.

³⁴ See Veracruz, Victor J. Major, U.S. Army. *Systemic Operational Design: Enhancing the Joint Operational Planning Process* (U.S. Army School of Advanced Military Studies), <http://stinet.dtic.mil/cgi-bin/GetTRDoc?AD=A470655&Location=U2&doc=GetTRDoc.pdf> (accessed December 10, 2007). Major Veracruz organizes the 17 design elements into the categories of Guiding Elements (*termination, end state & objectives, lines of operation, direct and indirect*), System Elements (*center of gravity, effects, decisive points*), Time and Distance Elements (*simultaneity & depth, timing & tempo, operational reach, culmination, arranging operations*), and execution Elements (*forces & functions, leverage, anticipation, balance, synergy*). Of all the elements, Major Veracruz argues *end state & objectives, logical lines of operation, center of gravity, and simultaneity & depth* are the most relevant to operational design.

³⁵ FM 3-24, *Counterinsurgency*, 4-3.

³⁶ Boykin interview.

³⁷ JP 5-0, *Joint Operation Planning*, IV-22.

³⁸ See *Adaptive Campaigning*, 4, and FM 3-24, *Counterinsurgency*, 5-6.

³⁹ *Adaptive Campaigning*, 8.

⁴⁰ JP 5-0, *Joint Operation Planning*, GL-18.

⁴¹ Readers familiar with intelligence doctrine would naturally ask how intelligence objectives differ from Priority Intelligence Requirements (PIR). The first difference is one of language, i.e., an imperative statement (objective) vs. a question (PIR). The active language of an imperative statement (vs. the passive language of a question) is a better way to communicate intent, and therefore facilitates the creation of subordinate objectives and tasks. The second difference is intelligence objectives are not strictly tied to operational decisionmaking as are PIR, although intelligence objectives can be when necessary. Intelligence objectives can also be related to creating awareness and understanding, which may not *directly* support immediate operational decisions.

⁴² Osinga, 182.