

Logistics Professional Education: A Reflective Practitioner Approach

The Enduring Military Logistics Profession

Military professional logisticians are often working in “zones of indeterminate practice,” finding themselves ... *in the midst of a series of shifting events and so [s/he] never can at any moment consider the whole import of an event that is occurring. Moment by moment the event is imperceptibly shaping itself, and at every moment of this continuous, uninterrupted shaping of events the logistician is in the midst of a most complex play of intrigues, worries, contingencies, authorities, projects, counsels, threats and deceptions, and is continually obliged to reply to innumerable questions ... which constantly conflict with one another.*¹

Hence, professionalization in the field of military logistics involves not just the technical application of logistics science (the traditional mainstay in development of our logisticians); it involves becoming a *reflective practitioner*, comfortable with the associated *action learning* roles being that of a highly adaptive designer, modeler, evaluator, communicator, and manager—accustomed to artful, improvisational, collaborative, and fluid *reflective practice*. This white paper will propose major concepts that contribute to the logistics professional education of the reflective practitioner: the range of professional logistics knowledge; educating for novelty and mission command; a conceptual framework for outcomes-based learning; logistics learning areas; and elements of educational design.

Range of Professional Logistics Knowledge

As with all professional disciplines, logistics involves a continuum of knowledge ranging from very

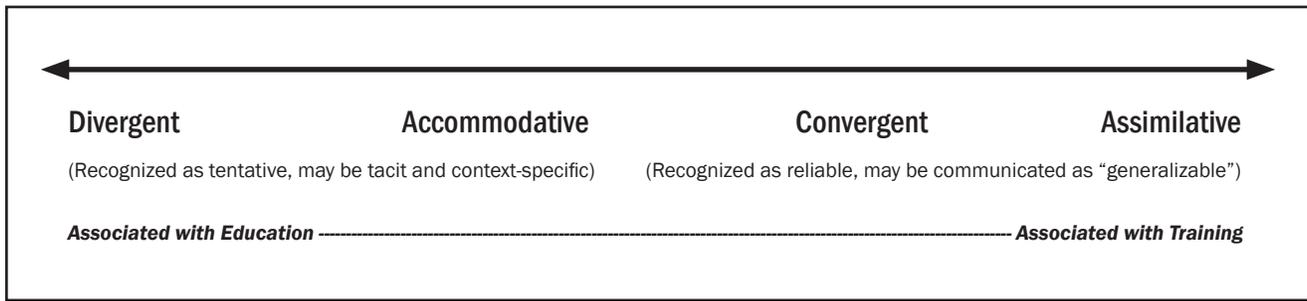


Figure 1. Range of Logistics Knowledge

tentative forms of knowledge (i.e. divergent knowledge) to applied science (i.e. assimilative knowledge) (Figure 1). Note that there are two other forms of knowledge in-between: accommodative and convergent.² In the following paragraphs, we will explore this range of professional logistics knowledge in more detail.

Divergent knowledge, located at the most tentative end of the spectrum, emerges from reflective observations of experiences by participants who may come from an assortment of disciplines, professions, and occupations. They bring diverse roles, norms, and values together for a common interest, usually motivated by a shared realization that they face novelty: unique situations where old knowledge is no longer sufficient; also, where new ideas are ambiguous. Divergent knowledge is tentative, and may often not “progress” or generalize toward other forms of knowledge as to remain tacit (knowing more than one can tell), and attached to the uniqueness at hand (i.e. context-specific). In the field of logistics its creation may involve *kluging insights* gained from entrepreneurial breakthroughs in commercial activities, logistics concept development and research, the study of military history, enterprise-holistic or local experiences in the strategic and operational environment, and from academic communities.

Accommodative knowledge emerges when newly forming professional networks begin to extend the more intuitive kinds of divergent knowledge into more communicable forms that entertain new assumptions and the dismissal of old beliefs on a broader scale. Here practitioners begin the process of examining the otherwise unexaminable when they combine concrete experience with *action learning* (i.e., dynamic experimentation). Communication of accommodative knowledge becomes more accessible by others who perhaps face similar situations and realize that these newer ideas present “aha

moments” for them as well. The use of reverse-collection and analysis teams at the U.S. Army’s Sustainment Center of Excellence and new logistics research studies published in the Defense Technical Information Center databases or logistics professional journals are examples of sharing accommodative forms knowledge.

Convergent knowledge extends from accommodative knowledge that coalesces as the emergent network begins to make sense of the world in a collective way and more easily passes this knowledge to other members of the profession. Thus, highly abstract concepts transform into more specific knowledge goals and objectives that can be tested more comprehensively and begin to be institutionalized as technical comprehension. Many articles published in *Army Acquisition, Technology & Logistics* and *Army Sustainment* magazines illustrate this convergence. The processes and outputs of convergent, analytical decision-making and planning techniques, such as MDMP or JOPP*, also fall on this portion of the knowledge continuum.

Assimilative knowledge is formed when convergent knowledge is translated into more standardized terms and other technologies that are believed to work in most any context; for example, in the form of records, rules, doctrine, textbooks, lessons learned, best practices, programs of instruction, and other institutionalized structures that tend to fix organizational designs, roles, norms, and values within the community of practice. This form of knowledge is recognized as the most reliable, usually considered “known-knowns” that provide relatively stable definitions, categories, and concepts that may be clearly communicated in a multitude of contexts (i.e. it is generalizable). In military logistics, examples of this technical knowledge (in the Army vernacular “TTP”†) can range from fielded software systems, updated consumption rate spreadsheets, to standardized receiving and shipping processes and checklists.

Seeing that knowledge falls along a continuum is critical as it should become clearer as to the ways we approach training and educating our logisticians. *Training* is traditionally associated with convergent and assimilative knowledge structures—standard application of known TTP; while *education* is associat-

* Military Decisionmaking Process (described in Army Doctrinal Publication 5-0) and Joint Operation Planning Process (explained in Joint Publication 5-0).

†TTP: tactics, techniques, and procedures.

ed with knowledge inceptions and tentative formations (on the divergent and accommodative side of the spectrum)—usually associated with researching, experimenting and exploratory sorts of activities.

Education is our focus in this white paper; hence, the more tentative side of the professional logistics knowledge continuum (accommodative and divergent) provides the necessary context for developing approaches to logistics education. The point here is not to underrate the importance of applied logistics science (e.g., TTP), but to instill *reflexivity* (a doubtful sense of inquiry³) through the education process in order to transcend indoctrination and to promote divergence and accommodation necessary for the inevitable complex, novel conditions.

Educating for Novelty and Mission Command

Throughout our long military history, the U.S. Army has expected Army logisticians and their organizations to routinely face novel situations in highly complex environments.⁴ Therefore, logistics

Action Learning Vignette: Headquarters, 13th Sustainment Command (Expeditionary), originally designed to lead sustainment units in support of friendly forces, was given the nonstandard mission of providing advice and assistance to Afghanistan security forces, helping them to establish their own logistics system. The 13th ESC mission was in a constant state of flux based on unfolding, interactive actors, and events. In retrospect, the commander stated that he and his staff did not know what they were doing until they were there doing it and engaged in learning, day-by-day, through their actions.

education must begin with visioning the eventuality of having to challenge our military logistics apprentices with scenarios involving zones of indeterminate practice and exercising methods of *action learning* on the journey to becoming a *reflective practitioner*—influencing how they “think in- and on- action” along the way.⁵

Action learning is a collaborative approach to facing novel, problematic situations for which ambiguous and emergent tasks become the vehicle for learning. By emergent tasks, we mean trying to figure out what to do when everything that we do is tied to a complicated and interactive milieu of incongruous actors and activities

based in a setting that is interdependent, dynamic, and where convergent and assimilative forms of knowledge are inadequate to frame what is happening or not happening. By action, we are not just concerned about behavior (the physical aspects of doing) but also finding new meanings during and after our acts. Hence, divergent and accommodative learning is acquired in the midst of collectively and critically reflecting “in-” action and “on-” action (the essence of professional practice).⁶ In short, education spurs the reflective military logistics practitioner to “learn to learn” more

Action Learning Vignette: Director, Defense Logistics Agency took immediate action to support disaster relief operations in the wake of the devastation of Hurricane Sandy (2012). The concept of DLA’s logistics operations was to begin to move items and services as the President had ordered the federal government to “cut through red tape...and bureaucracy”—a sufficient intent for mission command—in order to respond quickly and with disciplined initiative. As logistics actions were taken and the situation developed, DLA relied on adaptive and dynamic reflection to adjust its actions according to what just happened and what continued to happen in the devastated setting.

effectively in collaboration with others. Action learning, coupled with the ideal of reflective practice, is complementary to the central themes of both mission command and adaptive leadership.⁷ The need to exercise disciplined initiative and independent action drives an educational philosophy that helps professionalize logisticians to adapt effectively without reliable and detailed guidance from higher authority when faced with zones of indeterminate practice.⁸ To facilitate this overall intent of military logistics professional education, we propose the following conceptual framework.

The Conceptual Framework: Outcomes-Based Learning

Given the rank and positional structure of our current hierarchical organizational designs and the schoolhouse structures we have built around them, we see no recourse but to envision the same officer “levels of education” we see today (i.e. precommissioning through senior officer ranks). However, we propose a shift away from the traditional military “competency mapping” approach that prescribes

lower forms of cognitive learning⁹ at lower levels of education correspondent to lower ranks and organizational positions. Instead, we favor setting learning outcomes at high levels of cognitive learning while recognizing the context will vary as officers climb the ladder to more senior ranks and positions. By context we include both *organizational context* (from unit-level, through a more macro, enterprise-level, interorganizational scope) and *environmental context* (e.g., encompassing the full range of military operations, and variants in the strategic and operational environment).

The five higher order learning outcomes in Bloom's Taxonomy we propose are specifically Design, Model, Evaluate, and Communicate. The fifth and ultimate outcome, Manage (i.e. blending all of the above and also encompassing many executive work roles that would include leader, allocator, and negotiator¹⁰), is addressed primarily through actual practice (or perhaps in some sort of coached apprenticeship when considered part of the logistics educational experience). The four secondary outcomes are mutually reinforcing; hence, they should ideally be pursued through integrated management practicum.¹¹ This framework acknowledges that to reach the high levels of cognitive learning that logistics designing, modeling, evaluating, and communicating required would involve both technical training and significant coaching during artful practicums; ultimately toward the shaping of the professional logistics reflective practitioner to operate in the real, consequential world of action.

Designing in the military logistics discipline, like in the field of architecture, involves a synthesis of **applied science** (assimilative, context-free knowledge) and **art** (the creative and critically diverging and accommodating processes of action learning and professional reflection that deal in novel, context-specific situations).¹² A learning outcome for a design-oriented course may be worded similarly to the following: *Design a logistics concept of support for present or future unified operations involving foreign humanitarian assistance in a joint operations area (JOA) in a problematic region of the world.*

Modeling, also both a science and art form, involves the construction of simulations, developing running estimates of the logistics situation, experimenting with detailed planning schemes and proofs of concept (the latter often called rehearsals of concept, or ROC drills), and other ways to test the viability of designs. An appropriate learning outcome may be: *Model several logistics organizational construct options for present or future unified land operations involving decisive action and concurrent wide area security operations in a designated JOA in a problematic region of the world.*

Evaluating involves the difficult allocation of values across considered options. In cases where values compete and there are highly interactive variables that cannot be isolated, analytics (such as quantified operations research and systems analysis, or ORSA, techniques) are insufficient to test options. Here, evaluation would involve “appreciative inquiry” that contemplates ethical dilemmas, holistic images of interacting actors and events surrounding the loci of logistics, and the ability to *sensemake* when novel situations seem to defy rationalistic or scientific methods of understanding.¹³ Such sense-making in-the-now requires a detailed study of the history of military logistics, particularly in examining the institutional structures that failed (such as the *ad hoc* logistical organizations and processes of the Spanish-American War of 1898). These prior successes and failures provide valuable analogies in *appreciating* the viability of today’s and future logistics designs. A course outcome may include: *Critically evaluate your own and others’ concepts of support proposals by selecting and integrating information and opinions from various sources in collaborative and critical ways to determine relative efficacy; also, critique various logistics historic cases and past research that deal with similar or contrasting situations.*

Communicating involves not only being well-versed in doctrinal terms and related concepts but also the challenges of professionally criticizing this sort of assimilated knowledge. Being an adaptive logistician involves intuiting when to turn away from those assimilative knowledge structures and turn to critical reflection, diverging away from institutionalized ways of sensemaking. For example, the reflective practitioner is adept at richly describing ongoing action learning (at individual and organizational levels) while engaging in novel situations resulting in more effective, continuous personal and organizational flexibility. Such critical reflection may result in a plethora of research questions in academic environments, spur motivation for professional publication, and enhance collaborative inquiry in such venues as online communities of practice. A communicative course outcome may read: *Communicate comparative ideas, procedures, results, issues, critical arguments, and associated conclusions in an attempt to influence others’ ways of thinking and acting.*

Logistics Learning Areas

We envision four main learning areas or subfields of military logistics: planning, distribution/supply chain management, life cycle systems management, and defense industrial base management.

These areas are by no means mutually exclusive; yet, when considered holistically, make up the professional discipline of military logistics.

Logistics Planning (LP) involves conceptualizing, forecasting, and resourcing the future movement and support of forces. It includes those aspects of military planning that deal with: a. design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; b. (from a joint perspective) movement, evacuation, and hospitalization of personnel; c. acquisition or construction, maintenance, operation, and disposition of facilities; and d. acquisition or furnishing of services.

Distribution/Supply Chain Management (D/SCM) refers to a cross-functional approach to procuring, producing, and delivering products and services to customers. The broad management scope includes subsuppliers, suppliers, internal information, and funds flow. This is related to a military concept of supply chain (*distribution*) that represents “that complex of facilities, installations, methods, and procedures designed to receive, store, maintain, distribute, and control the flow of military materiel between the point of receipt into the military system and the point of issue to using activities and units.”

Life Cycle Systems Management (LCSM) is the process of managing systems across their entire life cycle, taking into account the fully burdened costs associated with maintaining required systems readiness, trade-offs between systems design and total ownership costs, and the importance of comprehensive visibility over total ownership costs.

Defense Industrial Base Management (DIBM) pertains to cooperative management within a complementary and synergistic industrial base (private and government owned) that has the ability and capacity to satisfy mission materiel requirements in peacetime and during national emergencies. Involves evaluating the processes, organizations, resources, and policies that enable the nation to develop, employ, and sustain its military capabilities.

These learning areas should be addressed in each level of learning; albeit, emphasized relative to the scope of work or context expected at each level as well as considering the category of position (officer, warrant officer, noncommissioned officer, or civilian) (Figure 2).

In addition, these learning areas should be placed in context so that the learner may gain a sense of how these subfields of military logistics play out under various conditions. The study of military

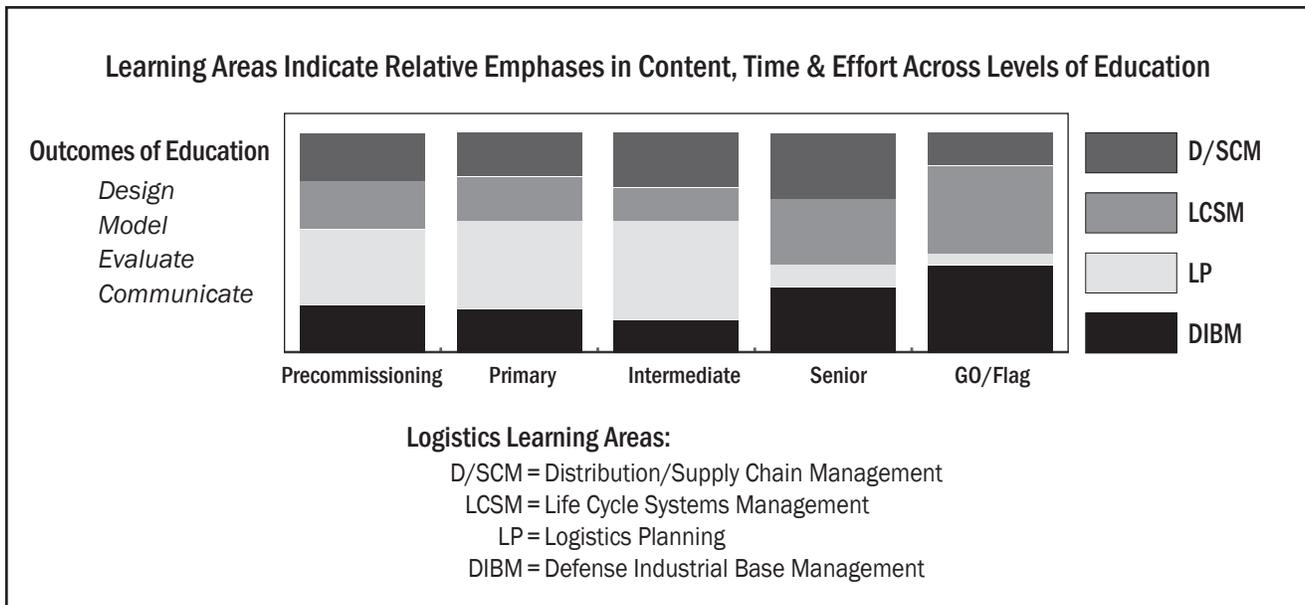


Figure 2. Proposed logistics professional education framework for officers. The framework does not intend to restrict junior officers that may at an earlier time in their career decide to specialize in D/SCM, LCSM, and/or DIBM; so, levels of emphases are only general guidelines. This scheme also acknowledges that different emphases for Army civilians, warrant officers, and noncommissioned officers may be in order.

logistics history and case study research, we believe, will serve that learning well.

Elements of Educational Design

Like the best craftwork of architectural design, the science and art of educational design must also be customized and environmentally adaptive. We see five principal ingredients to tailoring logistics education design: governance, curriculum, faculty, students, and accreditation.

Governance: At the macro-level, the Army has established the Logistics Professional Education Board (LPEB) that is comprised of three of our senior-most practitioners who are chartered to provide strategic guidance and oversight as we continuously adapt our educational institutions. We indeed support the establishment of this board with one cautionary note: we think it is vital for the LPEB, its council of colonels, and various working groups to seek the continuing advice of professional educators in their proceedings.

We propose that local educational administrators, such as commandants, presidents, and deans, orient on democratic forms of educational governance to include the power-sharing arrangements

through faculty senates and or staff and faculty advisory councils. Consider the use of academic ranks (from instructor to full professor) to signify increased autonomy and authority to innovate in educational design and delivery. As part of a comprehensive governance system, we strongly endorse the establishment of faculty recognition awards for research and publishing, faculty members serving as consultants and adjunct faculty for other institutions, and their contributing to the greater community of professional practice. Ensuring academic freedom (such as being open to faculty and student inquiry, exploration of new ideas, lively academic debate, and critical examination of curriculum issues) is a key value in the governance of our learning institutions.¹⁴

Curriculum Development and Delivery: This involves the creation, maintenance, and execution of instructional materials and lesson plans to guide the facilitation of adult learning as endorsed by the principles outlined in the *Army Learning Concept* that focuses on context-based learning outcomes and collaborative inquiry.¹⁵ This white paper does not seek to direct curricula development and delivery in detail, taking years to garner justifications and resources (as current TRADOC practices require) but rather to influence a cultural shift toward intent-based curricula designs to permit maximum agility and disciplined initiative at the instructor and course director levels.

Faculty: We firmly believe the center of gravity for outcomes-based education always rests on the very best faculty we can attract and hire. The old mass production methods of standardizing programs of instruction (so that anyone can teach them) must be replaced with “mission command” style based in the intent conveyed by high level learning outcomes that are sufficient for faculty, through their disciplined initiative, to design and deliver leading-edge classroom, homework, and distance learning experiences. Faculty development programs stress innovation, artistry, and building a climate of exciting and challenging inquiry in the facilitated learning environment, much like we imagine in the best architectural design studios or performing arts conservatories.

We recognize the tension between those who practice in the field and those who serve as long-term educators (usually civilians). Typically in Army schools, department heads, course directors, and faculty are chosen for their experiential practice in the logistics field and often not for their experience and passionate attitude toward a secondary profession as an educator. We must find ways to blend the professional roles of good logistics practitioner with those of good logistics educators. A military fac-

ulty assignments screening and acceptance process is important to this cause. Consider also converting U.S. Code Title 5 civilian faculty positions to Title 10 term-appointed positions to permit more quality assurance of faculty credentials over time.

Students: Candidates should display not only aptitude but also a positive attitude toward lifelong learning and self-development that must accompany enrollment into formal programs. In an era of declining military budgets, we cannot afford to have students who attend formal schools to “check the block” as a form of careerism. Adding more competitive acceptance processes may help where it makes sense. Assuring the proper balance in enrollment of international officers and sister services, particularly in partnership with the Marine Corps, will help the Army logisticians better prepare for “unified land operations.”

Accreditation: The quality of logistics education as expressed in this white paper demands we move away from the current Training and Doctrine Command standards of compliance (“Inspector General-like”) driven accreditations and move to appreciative efforts to recognize and reward innovative approaches to outcomes-based education and a profession associated with the reflective logistics practitioner. As the Army more widely adopts “the university model” for its functional centers of excellence, the creation and maintenance of university-wide logistics elective programs, offered to students at all levels of education, should help remove barriers between ranks, specialty departments, and colleges.

Conclusion

From our perspective, in executing our recent strategies and operations, we have witnessed that today’s logisticians are quite adept in action learning and demonstrate a professional affinity toward critical, reflective practice. However, we think our old ways of providing educational opportunities for these wondrous professionals are maladaptive. We propose to continuously adapt our educational approaches under the philosophies associated with outcomes-based learning, action learning, and the ideals associated with becoming a reflective military logistics practitioner. We argue that this will help prepare our future logisticians for the inevitable indeterminate zones of practice they will face. Our hope is that this white paper will spur rigorous professional debate as we continue to adapt to their needs.

Endnotes

- ¹ The *zone of indeterminate practice* concept is developed in the writings of Donald A. Schön (see endnote 6). The text in italics is adapted from Leo Tolstoy, *War and Peace*, Volume 2, translated by Louise and Aylmer Maude, Digiread.com, 2009, p. 172.
- ² These forms of knowledge were developed by David A. Kolb, in his book *Experiential Learning: Experience as the Source of Learning and Development* (Englewood Cliffs, NJ: Prentice-Hall, 1984).
- ³ Also known as “double-loop learning,” championed by Chris Argyris, for example, in his article: Teaching Smart People How to Learn,” *Harvard Business Review*, May-June 1991, pp. 99-109.
- ⁴ Describing the “setting” in which our logisticians are facing or will face is well-documented in current publications and “future concepts.” Good examples include Joint Publication 3-0, *Joint Operations*, August 2011, pp. ix-x: The *strategic environment* is characterized by uncertainty, complexity, and rapid change, which requires persistent engagement. This environment is fluid, with continually changing alliances, partnerships, and new national and transnational threats constantly appearing and disappearing. In addition to traditional conflicts, to include emerging peer competitors, significant challenges continue to include irregular warfare (IW), catastrophic terrorism employing weapons of mass destruction (WMD), and threats to disrupt the Nation’s ability to project power and maintain its qualitative edge. From Army Doctrinal Publication 3-0, *Unified Land Operations*, May 2012, p. 1-1: An *operational environment* is a composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. Commanders at all levels have their own operational environments for their particular operations. An operational environment for any specific operation is not just isolated conditions of interacting variables that exist within a specific area of operations. It also involves interconnected influences from the global or regional perspective (for example, politics and economics) that impact on conditions and operations there. Thus, each commander’s operational environment is part of a higher commander’s operational environment. Likewise, operational environments of commanders at all levels are part of the overall strategic environment, which encompasses general conditions, circumstances, and influences throughout the world that can affect all operations.
- ⁵ Theories of action learning and reflective practice come very close to the theory of action composed by the late Col. (USAF, Ret.) John Boyd in his descriptions of his famous observe-orient-decide-act (“OODA”) loop. For a well-developed treatise see Frans P. Osinga, *Science, Strategy and War: The Strategic Theory of John Boyd*, Oxon: Routledge, 2007. The Chairman of the Joint Chiefs of Staff also refers to John Boyd’s ideas in his Mission Command White Paper (see endnote 8).
- ⁶ We derive this theory of logistics professional reflective practice from two comprehensive books by Donald A. Schön: *The Reflective Practitioner: How Professionals Think in Action*, New York: BasicBooks, 1983; and, *Educating the Reflective Practitioner*, San Francisco: Jossey-Bass, 1987.
- ⁷ This theory of leadership is described in many recent U.S. Army and Joint documents, to include *A Leader Development Strategy for a 21st Century Army*, 25 November 2009, which sees a necessary paradigm shift forthcoming based in the effects of: **complexity** and **time**; organizational **decentralization**; and, the need for a **design** approach to complement the traditional rational decision-making and planning processes (p. 4). From the academic world, a compelling book by a Harvard professor and psychiatrist on the subject of adaptive leadership is: Ron Heifetz, *Leadership Without Easy Answers*, Cambridge: Belknap, 1994.
- ⁸ Chairman of the Joint Chiefs of Staff, *Mission Command White Paper*, 3 April 2012.
- ⁹ See Bloom’s taxonomy and many variants since the taxonomy was first published in Benjamin S. Bloom (Editor), *Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook 1, Cognitive Domain*, London: David McKay, 1956.
- ¹⁰ See Henry Mintzberg, *The Nature of Managerial Work*, New York: HarperCollins, 1973, for an exhaustive and detailed description of ten roles: Figurehead, Leader, Liaison, Monitor, Disseminator, Spokesman, Entrepreneur, Disturbance Handler, Resource Allocator, and Negotiator.
- ¹¹ Where we would also consider integrating insofar as possible the Army’s “21st Century Soldier Competencies:” character and accountability; adaptability and initiative; cultural and interorganizational competence; communication and engagement; lifelong learner; comprehensive fitness; teamwork and collaboration; critical thinking and problem solving; and, tactical and technical competence.
- ¹² Again, *design* is a key feature of the Army’s 2009 Leader Development Strategy mentioned in endnote 7.
- ¹³ Sensemaking, according to Karl E. Weick, is a form of imagination, characterized by individuals and groups using, modifying, rejecting, and creating new paradigms or mental models when dealing with situations of incoherency and disorderliness. See Karl E. Weick, *Sensemaking in Organizations*, Thousand Oaks: Sage, 1995.
- ¹⁴ These values are highlighted in the Chairman of the Joint Chiefs of Staff Instruction Number 1800.01D, *Officer Professional Military Education Policy (OPMEP)* (with Change 1, December 2011), Washington, DC, p. F-B-3. The OPMEP defines academic freedom as, “Freedom to pursue and teach relevant knowledge and to discuss it freely as a citizen without interference, as from school or public officials” (p. GL-3).
- ¹⁵ U.S. Army Training and Doctrine Command Pamphlet 525-8-2, The Army Learning Concept, 20 January 2011, p. 19.