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## WEDNESDAY SESSIONS VOLUME I

### **Enhancing Critical Thinking Through Creation of Learning Organizations Within the Confines of an Overarching Mechanistic Organization**

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# Enhancing Critical Thinking Through Creation of Learning Organizations Within the Confines of an Overarching Mechanistic Organization

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## Abstract

The Under Secretary of Defense for Acquisition, Technology, and Logistics has highlighted the need for acquisition professionals to apply critical thinking in executing programs. Quotes include “[BBP 2.0] is not intended to be a ‘school solution’ or a checklist of ideas for you to unthinkingly ‘check off.’ BBP 2.0 ... is designed ... to drive critical thought in the daily execution of our work” (Kendall, 2013, p. 2); and “nothing is more important to our success than our ability to understand, think critically, and make sound decisions” (Kendall, 2014, p. 3). This has led to requests for greater education and training in critical thinking. However, these perspectives don't include the importance of organizational structure in fostering critical thinking. Since Frederick the Great instituted drill and discipline to manage his conscripts, the military structure can best be described as mechanistic, emphasizing hierarchal power, specialized divisions of labor, and formal policies, at the expense of innovation and adaptability (Walonick, 1993). For critical thinking to thrive, the acquisition community needs to transition to learning organizations capable of initiating and conveying knowledge (Giesecke & McNeil, 2004). This research studies workers' perceptions of the mechanistic behavior their organizations exhibit and reveals ways to adopt learning organizations within the confines of the Department of Defense's mechanistic organization.

## Introduction

Over the past several years, the Under Secretary of Defense for Acquisitions, Technology, and Logistics (USD[AT&L]) has highlighted the need for the Department of Defense's (DoD's) acquisition workforce to apply critical thinking skills in executing acquisition programs. Quotes include “Like BBP 1.0, it [BBP 2.0] is not intended to be a ‘school solution’ or a checklist of ideas for you to unthinkingly ‘check off.’ BBP 2.0 is consistent with my goals and priorities, and it is designed in large part to drive critical thought in the daily execution of our work” (Kendall, 2013, p. 2); and “nothing is more important to our success than our professional ability to understand, think critically, and make sound decisions” (Kendall, 2014, p. 3). This has led to requests for greater education and training in critical thinking skills, including a recent article, which states, “Unfortunately, the DoD acquisition education system is not designed to develop critical thinkers” (Frisbee & Reynolds, 2014, p. 18). While valid, these perspectives do not take into account the importance of organizational structure and culture in fostering critical thinking.

Since the 18th century when Frederick the Great instituted a focus on drill and discipline to manage his conscripts, the military's organizational structure can best be described as mechanistic, emphasizing the need for hierarchal power, specialized divisions of labor, and formal rules, operating instructions and policies, at the expense of personal growth, innovation, and adaptability (Walonick, 1993). For critical thinking to thrive, one could posit that the acquisition community needs to transition from mechanistic to learning organizations capable of initiating, obtaining, and conveying knowledge, while continuously improving behavior and processes to reflect newly-found knowledge and insights (Giesecke



& McNeil, 2004). This research studies the perceptions of acquisition workers to the degree of mechanistic behavior that their top and immediate organizations exhibit and also reveals methods for adopting learning organizations within the confines of the DoD's mechanistic organization to embrace innovative and adaptive approaches to manage today's complex defense programs.

## **Organizational Structure and Culture**

The DoD's mechanistic organization can be linked as far back as the reign of Frederick the Great, whose military celebrity is founded on strict discipline and repetitive drill in molding conscripts for the service of professional arms (Showalter, 2007). Mechanistic behavior implies that the organization is designed to run like a machine in a "routinized, efficient, reliable, and predictable way" (Morgan, 2006, p. 13). Morgan (2006) cites the military and, in particular, Frederick the Great's, methodology to transform the lowly members of society into a superior fighting force as the prototypical depiction of a mechanistic organization. The term *mechanistic* intimates the metaphor of a machine with its precisely operating mechanisms producing predictable output, each organizational entity doing exactly what it is designed to do within the confines of that operation ("Mechanistic Organizations," n.d.).

Mechanistic organizations are characterized by high levels of hierarchical structure and control; clearly defined roles and responsibilities; written policies and procedures; specialized, standardized tasks; and centralized decision-making processes, which research has indicated tend to restrict innovation, flexibility, and creativity (Hatch & Cunliffe, 2013). Mechanistic organizations are designed to achieve preordained goals using predetermined regulations, policies, events, or standards, which can be problematic in a complex and changing environment (Morgan, 1986; "Mechanistic Organizations," n.d.). However, advantages of the mechanistic organization are that formalization and control often lead to higher efficiencies through lessened variation and improved predictability, which are very attractive attributes in a risk-averse environment ("Mechanistic Organization," n.d.). Therefore, the mechanistic structure tends to buttress past practices rather than challenge the status quo, making adaptations to known methods, such as the DoDI 5000.02 acquisition models, uncomfortable for those being held accountable for results (Fiol & Lyles, 1985). Functional specialization, another key characteristic of mechanistic organizations and the acquisition workforce, while providing the specific skills needed to navigate the complex world of DoD acquisitions, also contributes to myopic optimization of programmatic sub-goals, such as security, iron-clad contracts, gold-plated performance, financial constraint, and optimal quality, with the program manager bearing the sole responsibility for seeing the product as a whole—cost, schedule, and performance. Organizational structure deeply induces and is heavily interwoven with its organizational culture, including a demonstrated "negative correlation between centralization and innovation" (Whittinghill, 2011, p. 17).

Schein's Theory of Culture posits that a set of basic assumptions, which are taken for granted by the culture's participant, form the foundation of a culture (Hatch & Cunliffe, 2013). For example, in America, the rights of free speech and representative government are basic cultural assumptions. Even as our awareness of these basic assumptions fade, they influence our perceptions, thoughts, and feelings (Hatch & Cunliffe, 2013). Values, the next level of culture, provides the "social principles, goals, and standards that cultural members believe have intrinsic worth" (p. 169), guiding members in their concept of right and wrong and leading to defined behavioral norms and expectations (Hatch & Cunliffe, 2013). The third and final level of Schein's construct is artifacts, which are the manifestation of values and norms in objects, verbal expressions, and activities (Hatch & Cunliffe, 2013). The U.S. Marines expression of *semper fidelis*, Latin for *always faithful*, provides an



excellent example of an artifact derived from the values of honor and duty to country and fellow marines.

### ***Origins—The DoD as a Mechanistic Organization***

The DoD, especially its military services, has a notoriously mechanistic structure and culture brought on by early adhesion by the Continental Army to the precepts of Frederick the Great and continuing through the influences of powerful secretaries of defense, such as Secretary McNamara and Donald Rumsfeld (Whittinghill, 2011; Meilinger, 2007). However, originating from an application of Taylor's scientific management, our military educational approach of "crawl-walk-run" runs contrary to the Prussian cadets' training in problem solving of complex issues, highlighted by America's lack of preparation for World War I's large scale warfare and our alliance with France (Vandergriff, 2005).

As early as 1897, Major Eben Swift adopted and adapted Taylor's scientific management philosophy to the U.S. Army by instituting a checklist approach to warfighting through instruction at the Army's Staff College at Fort Leavenworth (Vandergriff, 2005). As America entered WWI, the Army found itself unprepared for the vastness of the European's battlefield and followed France's mechanistic formula, which was derived from the French mathematician Rene DeCarte's teaching philosophy of breaking engineering problems into sequential processes; French tacticians used these same techniques to break down their military training into process-oriented checklists to expeditiously turn their civilians into soldiers (Vandergriff, 2005). With the primary emphasis on avoiding mistakes (i.e., risk aversion), these highly-defined processes are still adhered to today, allowing hierarchical control with a mechanistic organizational structure, which was boosted in the 1960s by the longest-tenured Secretary of Defense ever, Robert S. McNamara (Clarke, 2008).

While Secretary McNamara is most widely known for his role in the Vietnam War, he was also instrumental in enhancing the DoD's mechanistic organizational structure by proliferating his experience as president of Ford Motor Co. to his government service. McNamara is known for centralizing authority, standardizing processes, and statistically analyzing efficiencies, including the development of the Planning, Programming, and Budgeting System (PPBS), the Five (now, Future) Year Defense Plan (FYDP), and the application of statistical analysis to measure the efficiency in the use of defoliants, bombs, and cannon while fighting the Vietnam War (Thompson, 1991; Karnow, 1997). Hierarchical control was stifling at the highest level as many senior military leaders voiced their disapproval and reservations of wartime strategy only in their memoirs long after the U.S. withdrawal from Vietnam (Meilinger, 2007).

Similarly, in our latest conflict in Iraq and Afghanistan, senior military leaders publically denounced the military strategy deployed by Secretary Donald Rumsfeld, however, only after they had retired (Meilinger, 2007). Yet, there has been a push towards creating an organization contrary to the mechanistic model, one that portrays adaptability, risk-taking, and innovation, highlighted by President G. W. Bush in his speech to the graduating U.S. Naval Academy's Class of 2001, as he "declared a commitment to a military culture of risk-taking and forward thinking, and to recognizing and promoting visionary leaders" (Williams, 2009, p. 59). Words such as these and those spoken in 1999 by General Shinseki, Army Chief of Staff—"The development of bold, innovative leaders of character and competence is fundamental to the long-term health of the Army" (Wong, 2002, p. 1)—indicate a desire and commitment to move away from the mechanistic model and towards an organic or learning organization. Yet, the rank-and-file edict of hierarchical control is displayed in a recent example of the comments made by Maj. Gen. James Post, the vice commander of Air Combat Command, when he advised lower ranking officers that "it is their duty to support the service's budget priorities by refraining from offering opinions



inconsistent with those priorities” (p. A3) and that “talking to members of Congress about the capabilities of the A-10 attack aircraft is tantamount to treason” (Burns, 2015, p. A3). The inherent control that comes with a mechanistic organization makes expressing new ideas and incorporating change difficult (Morgan, 2006).

### ***Current Perceptions/Conditions—The DoD as a Mechanistic Organization***

Wong (2002) follows up his quotes from civilian (President Bush) and military leadership (Gen. Shinseki) calling for less bureaucracy and more innovation with perceptions of a company commander:

Interviewer: Do you feel you’re being trained to be a creative, innovative and adaptive leader?

Company Commander: They’re not telling me, “Here, you’ve got ten crews—train them.” They’re not allowing me to devise the methods and the ways to get there. They’re giving me the egg and telling me how to suck it. (p. 1)

Although this comment represents only the view of a singular individual, a recent study conducted by Pierce (2010) indicates a dichotomy exists between the stated desires of top leadership and the perceptions of U.S. Army War College students, lieutenant colonels, and colonels. Results from the study indicate that these future senior Army leaders “clearly perceive that the deep-seated underlying assumptions that comprise the Army culture are focused on organizational stability and control as opposed to innovation, flexibility, and long-term growth” (Pierce, 2010, p. 80). Of the four organizational culture quadrants tested, adhocracy, which features innovative, visionary leaders, scored nearly three times lower than the hierarchical quadrant and nearly four times lower than the market quadrant, both of which feature stability and control (Pierce, 2010). On the contrary, though, the officers preferred organizational culture where they indicated that they had the strongest skillset, which were the clan and adhocracy cultures, whose common dimensions include flexibility and discretion, “providing strong support for the contention that the Army professional culture is ‘out of balance’” (Pierce, 2010, p. 97). However, in large organizations, such as the U.S. Army, one might posit that there are likely to be differing cultures across sub-organizations, such as commands, posts, and so forth. Interestingly, Pierce’s (2010) study’s empirical data strongly alludes to a homogeneous culture within the U.S. Army’s officer corps with effectively no statistically significant disparities between 10 demographic groups. But what about the acquisition workforce specifically?

In a 2014 survey of acquisition workforce leaders designed to portray the viewpoints and perceptions of the acquisition community on the status of government acquisitions, the Professional Services Council (PSC) and Grant Thornton LLP (2015) questioned 51 federal acquisition workforce members, young professionals and senior leaders, with findings covering five principal areas: Budget Uncertainty, Workforce, Access to Innovation, Communications and Collaboration, and Oversight and Compliance (PSC, 2015). Albeit qualitative in nature, the survey provides insight into the cultural psyche of the acquisition workforce. In summarizing their results, the authors provide some key indicators that those surveyed view their organizational culture as being mechanistic, characterized by hierarchical oversight, lack of innovation, prescriptive policies, and a “punitive, rigid, risk-averse environment” (PSC, 2015, p. 14). Recognizing USD(AT&L) Frank Kendall’s initiative for the acquisition workforce to think, the report notes that, “if getting the workforce to ‘think’ is a primary objective, the environment in which they work needs a great deal of attention” (PSC, 2015, p. 14), and that Congress, federal agencies including the DoD, and industry “must work together to build a smarter, more strategic acquisition ecosystem in which the



workforce is encouraged and empowered to think and decide rather than check a box to avoid a mountain of congressional attention for the tiniest of errors” (PSC, 2015, p. 15).

As this survey anecdotally suggests, today’s acquisition community follows the five simple principles of scientific management pioneered and advocated for the industrial age factory by American engineer Frederick Taylor, the principal cohort in the creation of mechanistic organizations:

1. “Shift all responsibility for organizing the work from the worker to the manager.” DoDI 5000.02, *Operation of the Defense Acquisition System*, can be viewed as a shift in responsibility for organizing the operation of a program from program manager to Office of the Secretary of Defense (OSD) leadership. Although Kendall clearly states in the memorandum announcing its most recent release that the acquisition models are “not alternatives from which a Program Manager must choose; they serve as examples and starting points that can and should be tailored to the actual product being acquired” (Kendall, 2015, p. 1), in a risk-adverse environment, the tendency is to follow the instructions.
2. “Use scientific methods to determine the most efficient way of doing work.” While Taylor’s mindset reflected the industrial age factory and the use of time studies in designing specific tasks, one could posit that the defense acquisition system works similarly with an emphasis on collection and analysis of program data to dictate best practices from earlier programs.
3. “Select the best person to perform the job thus designed.” Individuals are assigned within a functional cohort and trained primarily with that cohort, especially in higher level Defense Acquisition Workforce Improvement Act (DAWIA) courses. Trend results indicate those functional employees feel that their opinions are not highly valued outside their functional area.
4. “Train the worker to do the work efficiently.” Frisbee and Reynolds (2014) argue that the DoD education system, specifically the DoD’s corporate university for acquisition education, Defense Acquisition University (DAU), is “designed to develop process experts” (p. 18), not critical thinkers. Even higher level DAWIA courses, such as the Level III program management course, are designed to teach, emphasize, and test policy knowledge. Recently, the development effort on the Acquisition Workforce Qualification Initiative demonstrates a similar path with its “check the box” emphasis on completing steps and tasks to achieve specific qualifications.
5. “Monitor worker performance to ensure that the appropriate work procedures are followed and that appropriate results are achieved” (Morgan, 2006, p. 23). DoD oversight is replete with examples of monitoring programs for process adherence to include expenditure/obligation rates, earned value management metrics, DAES reports, and so forth. As Frisbee and Reynolds (2014) elucidate, program managers (PMs) have been taught “how to build and present briefings, how to speak to the media, how to build budgets and track expenditures and on myriad other steps necessary to develop, acquire and sustain America’s weapon systems. These are necessary skills, but they are not sufficient” (p. 18).

Yet, as noted by the 2014 Acquisition Policy Survey report, respondents recognize the need for both oversight and compliance, that is, hierarchical control (PSC, 2015). Most of the items and processes stated in the previous list in the Taylor analogy have definite worth. However, a way must be found to offset and balance the necessity of an overarching



mechanistic organization with a methodology that promotes critical thinking, tailoring to specific circumstances, and learning new ways to adapt to the ever-changing, complex dynamics of the acquisition environment. Heidi Shyu, Assistant Secretary of the Army for Acquisitions, agrees that the current bureaucracy inhibits the participation of small and medium-sized companies, likening the government's response to a troubled program to what happens with an overturned bus: "Industry will throw the best people in to turn the bus upright and get it moving. At the Pentagon, everybody sees [the bus], and what do they do? Shoot out the tires and windows and the kneecap of the bus driver. They don't have the same vested interest as a corporation. It's painful. It's a fascinating culture to see" (Aitoro, 2014, p. 2). Recent efforts by Rep. Mac Thornberry (R-Texas), Chairman of the House Armed Service Committee, at establishing acquisition reform are focusing on reduced bureaucracy; he highlights one example where "Congress was concerned that some programs were not paying enough attention to corroding metals. The bureaucracy's response to that was that every program had to have a corrosion prevention report that had to be staffed and written before that program could proceed—even computer software" (Serbu, 2015, p. 1).

DAU provides an example of the organization as a machine metaphor. While professors have some input into the process of educating the acquisition workforce, the preponderance of course material, method of instruction (i.e., online or residential), class length, and evaluation techniques are controlled by the Washington, DC–located headquarters. As Morgan (2006) so aptly puts it, "all the 'thinking' is done by the managers and designers, leaving all the 'doing' to the employers" (p. 23). Faculty are given some opportunities to influence new course material; however, due to the control necessitated by worldwide, precision-required operations and the challenge of presenting a consistent educational message across five geographically dispersed regional campuses and their satellite offices, the mechanistic organizational model has been adopted. DAU's mechanistic organizational structure is not abnormal for corporate universities. Research by Abel and Li (2012) found that many corporate universities employ the centralized model often associated with mechanistic organizations, and use a more formal construct since educational activities are "centrally coordinated and managed" (p. 107). The strengths of using the mechanistic organization for DAU include instruction that provides consistent training and tasks that are straight-forward employing prescribed curriculum, resulting in low task variability (Hatch & Cunliffe, 2013; Morgan, 2006). However, since life experiences of DAU's student are so diverse, task analyzability is also low, which describes the craft technology condition of Perrow's typology (Hatch & Cunliffe, 2013). Unfortunately, routine technologies are typically the better match with a mechanistic organization than craft technology, resulting in the limitations of the DAU mechanistic organization becoming apparent (Hatch & Cunliffe, 2013). One of the severe limitations described by Morgan (2006), "great difficulty adapting to change" (p. 28), plagues DAU. DAU's ability to quickly create new curriculum and teach updated lessons due to new DoD policy is a recognized weakness, confirmed by "rapid deployment training" taking months, instead of days or weeks, to deploy. However, many of the other limitations that Morgan (2006) presents, for example, the potential demotivating effect on workers, are offset with other opportunities, such as consulting and research, that professors are encouraged to pursue with great latitude.

While these examples, along with the 2014 Acquisition Policy Survey, provide some good qualitative data, more data and analysis is appropriate to understand the rank-and-file acquisition workforce's perception of the command in which they work, as well as their immediate organization.



## **Quantitative Methodology**

A number of research projects have been conducted as the wars in Iraq and Afghanistan have shown the need for military operators to demonstrate flexibility and agility in decision-making. However, a literature search has revealed only limited, qualitative research for the acquisition workforce.

### ***Research Questions and Hypotheses***

The scientific aim of this research is to establish the need to move from mechanistic to layered learning organizations in an effort to encourage and enhance critical thinking among organizational members. The quantitative research questions directly applicable to the survey are as follows:

- Do acquisition workforce members perceive that they work for a mechanistic organization at the immediate level, that is, branch, division, staff office?
- Do acquisition workforce members perceive that they work for a mechanistic organization at the top level, that is, larger HQs or DoD-level organizations?

Answering these research questions through the use of the a survey instrument, specifically focused on organizational structure, has the potential to provide the DoD with a practical roadmap to create layered learning organizations, thus enhancing critical thinking among its organizational members while retaining hierarchical control mechanisms.

- Hypothesis 1: Acquisition workforce members perceive that they work for a mechanistic organization at the immediate level, that is, branch, division, staff office.

The expectation is that acquisition workforce members will perceive that, overall, they work for an immediate organization with mechanistic characteristics; however, responses will vary greatly as individual leaders influence perceptions across the spectrum from mechanistic to learning behaviors.

- Hypothesis 2: Acquisition workforce members will more strongly perceive that they work for a mechanistic organization at the top level, that is, larger HQs or DoD-level organizations.

The expectation is that acquisition members will perceive that, overall, they work for a top-level organization with mechanistic characteristics and that those perceptions will indicate stronger mechanistic behaviors than their immediate organizations, as the DoD hierarchical culture influences perceptions.

### ***Research Design***

The most appropriate research design for exploring these hypotheses is to conduct surveys that can capture the perceptions of acquisition workforce members across multiple functional areas, years of experience, services, and organizational type. Questionnaires are an appropriate and relatively easy way to collect information across a wide population for studying behavioral items (Cozby & Bates, 2012). The research design consists of a simple, one-page questionnaire to be conducted across multiple DAU–Midwest classes, developed specifically to minimize the time required to distribute and complete in order to encourage participation, since it is being conducted using class time.

While the preference would be to investigate the hypotheses across the entire population of interest, that is, all acquisition workforce professionals characterizing all organizational types, services, areas of the country, and experience levels, that would be too costly, impractical, or even impossible (Acharya et al., 2013). Therefore, due to time and cost constraints, and a population size of over 100,000 acquisition workers (45,443 Army,



40,651 Navy, and 25,075 Air Force), sampling was restricted to students attending DAU courses at DAU–Midwest campuses, that is, convenience sampling (DAU, 2007). The disadvantage of convenience sampling is that bias could be introduced since a sampling of DAU–Midwest students, which likely includes a large percentage of students from the local USAF base—Wright-Patterson AFB—may not be an accurate representation of the overall acquisition workforce population (Cozby & Bates, 2012).

### **Population and Sample**

Questionnaires were made available to all acquisition workforce students taking classes at DAU–Midwest campuses from mid-February 2015 through early-March 2015. The limitation in time was due to the requirement for the questionnaire to be approved for use with human subjects (exempt determination made by ARDEC’s Institutional Review Board) and data analysis time requirements. With an acquisition workforce population of over 100,000, a sample size of 384 participants would be required to provide a precision of estimates of +5% with a 95% confidence level; whereas, 96 student participants would be required for +10% accuracy (Cozby & Bates, 2012). A total of 164 surveys were collected.

### **Measures/Instrumentation**

A survey instrument (see appendix) was developed specifically for this research. Perceptions of mechanistic and/or learning organizational behavior are based on two main variables, decision-making and rules bias. The survey is divided into two sections. The first section includes a four quadrant diagram requesting that participants indicate their perception of their top-level and immediate organization using two scales: *Flexible/Adaptive to Change to Formal/Rule-Based* and *Participative Decision-Making to Highly-Centralized Decision-Making*. The second section consists of five questions employing a 5-point Likert scale used for each item (1 = strongly disagree to 5 = strongly agree). In order to better understand the acquisition workforce perceptions on the organizational culture, the following demographic variable data were collected: years of experience, functional area, and organizational type.

### **Data Collection Procedures and Analysis**

With the permission of instructors and consent of students, the questionnaire was completed during class. The questionnaire consists of an informed consent message on one side and Sections 1 and 2 on the reverse. Students who did not want to participate could either not accept it or hand it back in blank. Upon completion, students anonymously returned the surveys to a box at the front of the room.

Due to time constraints for both collection and analysis of data, coupled with an apparent ambiguity in the survey instrument, data analysis for each question was limited to between 108 to 164 responses. Future research should modify the survey instrument to provide better clarity and be performed electronically to facilitate more comprehensive data analysis. Also, to ensure that the research is not flawed by an alternative explanation, a succession of t-tests, using a significance level of .05, should be conducted to verify that the data does not vary significantly based on any of the demographic variables.

That being said, the data collected did reveal some important trends in the perceptions of the current acquisition workforce, even as the limited number of participants only provides for an accuracy between +5% and +10% given a 95% level of confidence. Most notably, the participants’ perceptions of their top level organizational culture revealed a strong trend for mechanistic behavior. Figure 1 shows that 77% of the participants who submitted unambiguous surveys perceive their top-level organization—that is, command headquarters—as mechanistic, demonstrating highly-centralized decision-making with a reliance on formal procedures and rules. However, when respondents shared their



perspectives of the organizational behavior existent within their immediate organization—that is, division, branch, program management office—the results were varied with no clear trends evident, with the top two responses being diametrically opposed, representing characteristics of both learning and mechanistic organizations (see Figure 2).

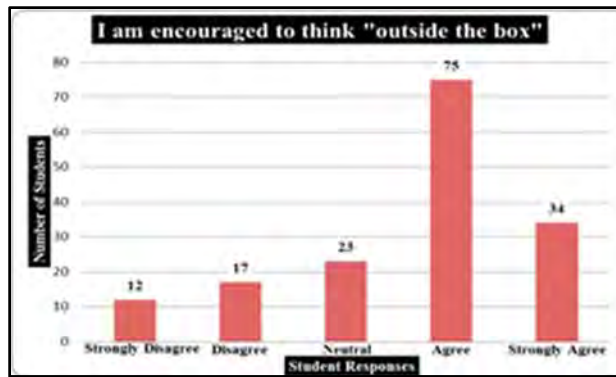


**Figure 1. Top-Level Organizational Behaviors**

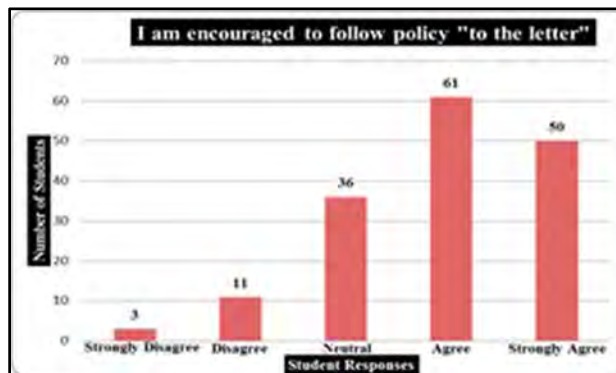


**Figure 2. Immediate Organizational Behaviors**

Similar trend data were found in the first two questions: “I am encouraged to think ‘outside the box’” (see Figure 3), and “I am encouraged to follow policy ‘to the letter’” (see Figure 4). Whereas these questions were designed to elicit different responses based on the participants’ perceptions of mechanistic behavior in the workplace, both of these questions were answered with high agreement rates. Question 1 received either “agree” or “strongly agree” ratings from 68% of respondents, and Question 2 received either agree or strongly agree ratings from 69% of respondents, indicating that although they are encouraged to “think outside the box,” they are also encouraged to follow policy “to the letter.” Part of the rationale for this duality may reside in the question not clearly stating which organization to rate—top or immediate.



**Figure 3. Question 1**



**Figure 4. Question 2**

Question 3, “My inputs are valued and considered in decision-making,” also found a favorable rating, with 65% of the respondents indicating agreement (see Figure 5). However, when asked if their opinions on items outside their functional area were valued (Question 5; see Figure 7), a diverse response was found, with the most popular responses being “neutral” (35%) and over 61% either being neutral or in disagreement. These results are not surprising since specialization of jobs, with clear-cut responsibilities, are inherent in mechanistic organizations and has the advantage of expectation management, but also suffers from a lack of flexibility and initiative when the organization faces complex, changing circumstances (Morgan, 1986).

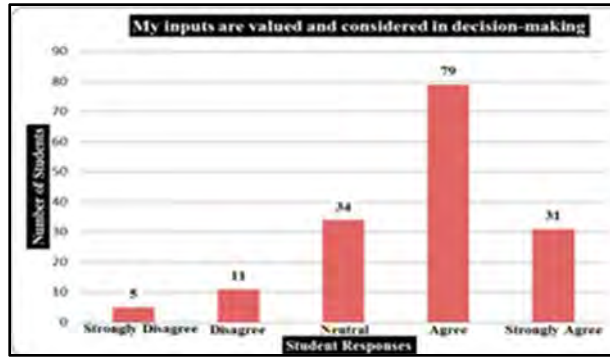


Figure 5. Question 3



Figure 6. Question 4

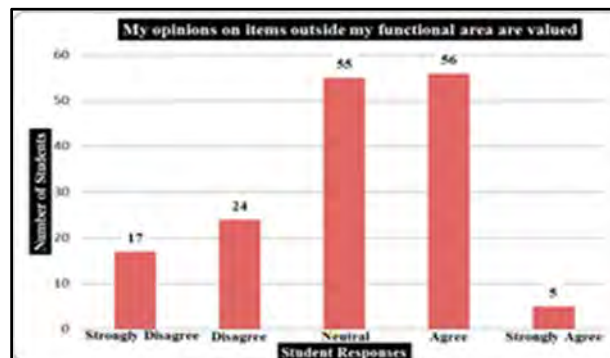


Figure 7. Question 5

Responses to Question 4, “My top organization values risk-taking to improve operations,” correspond with the top-level organizational behaviors’ data (see Figure 6). Most respondents felt that their top organization did not agree with this statement as over 77% of the respondents perceived risk-taking by their command organization, indicated by a neutral, disagree, or strongly disagree response.

**Results**

Although the ambiguity of the survey and the inability to acquire the 384 acquisition workforce responses necessary for +5% accuracy diminished the ability to provide definitive quantitative results, indications and data trends support the 2014 Acquisition Policy Survey report findings of strong mechanistic behaviors with pockets of learning behaviors at the lower levels. Both Hypotheses 1 and 2 are supported; however, more diversity in responses relevant to Hypothesis 1 was evident than anticipated. Respondents indicated through their



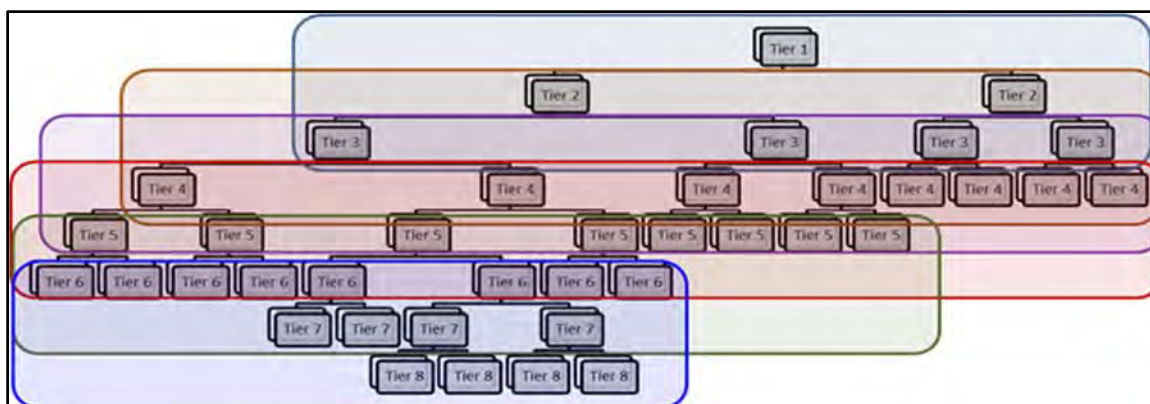
identification on the matrix and their ratings to the five questions that perceptions are strong that top-level organizations are mechanistic. However, the diversity of responses specific to their immediate organization indicates a wide variance between participative versus highly centralized decision-making, and flexible versus rules-based operations.

### **Building Layered Learning Organizations Within the Construct of a Mechanistic Culture**

For all of its faults, the case can be made for the necessity of the boundaries and controls of the mechanistic organization construct as an overarching vehicle, in which critical thinking and innovation can thrive. Shields (2003) recognizes the importance of an overarching bureaucratic organization in its ability to “promote military professionalism, seamlessly implement complicated logistics and procure the best weapons for the job” (p. 181). Williams (2009) argues that true innovation can only exist within the boundaries of control and mechanistic structure, ensuring fair treatment for employees and bounding innovators from push[ing] their inclinations too far ... lead[ing] to belligerence, chaos, disastrous experimentation, and unprincipled opportunism” (p. 61). Policies, regulations and statutes when viewed as tools versus obstacles can enhance critical thought and negate the mavericks that circumvent strictly in the name of expediency, while encouraging risk-taking along with its potential for failure, but resisting the dispersion of the necessary boundary and control systems designed to balance warfighter needs and a responsibility to be good stewards of the taxpayers’ money (Williams, 2009).

Research also indicates that the age and size of the DoD dictates a tendency towards mechanistic behavior, postulating that older institutions are more rigid and less adaptable to change and that larger organizations also promote rigidity and a cumbersome environmental change response (Walonick, 1993). Yet, even larger organizations promote decentralization by allowing lower-level managers autonomy and flexibility, even as they employ formalization of rules and procedures to retain control over strategic decisions (Hatch & Cunliffe, 2013). Large U.S. corporations such as McDonalds, with its 33,000 restaurants and 1.7 million workers across 119 nations, understand that their 68 million customers per day are demanding changes that their famously consistent and efficient mechanistic organization is slow to handle (Hatch & Cunliffe, 2013). As a result, McDonalds is edging towards a more organic approach by providing business units greater flexibility and autonomy to meet local customer demands (Hatch & Cunliffe, 2013). So why not build a layered system of learning organizations (Figure 8) within the overall construct of the DoD acquisition’s mechanistic organization to promote critical thinking on policy issues at the top and innovation in program management techniques at the lower levels?





**Figure 8. Layered Learning Organizations in a Hierarchical Organization**

Senge (1990) popularized the concept of learning organizations, defining them as “organizations where people continually expand their capacity to create results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (p. 3). The power of a learning organization is that its leaders and workers promote work-related learning with a free flow of information to encourage new ways of doing business, continually improving upon established procedures, learning from mistakes, and adapting to new realities more readily (Giesecke & McNeil, 2004). The learning metaphor refers to an organization built for maximum flexibility, dynamically responsive to changes in the environment with little to no hierarchical social structure. Information and intelligence is distributed throughout so that the organization can self-organize and adapt to evolving challenges (Morgan, 2006). As these organizations learn to learn, the need to question the relevance of operational norms is required to develop cultures that “support change and risk taking” (Morgan, 2013, p. 91). Mitzberg (1983) describes such an organizational structure as an adhocracy, where the need for constant innovation in a turbulent environment necessitates a structure of “interacting project teams whose task is to innovate solutions to constantly changing problems” (Hatch & Cunliffe, 2013, p. 109). An empowered, cross-functional team developed to handle a particular situation within a larger mechanistic organization may adopt the learning metaphor to innovate and solve the crisis it has been assigned. Research indicates that while the mechanistic organization is adept at decision-making in problematic situations, such as those in which a tiger team would be employed, a learning organizational approach more positively affects decision-making in non-problematic situations, that is, innovative or continuous improvement processes (Bolfikova, Hrehova, & Frenova, 2010).

An important addition to DoDI 5000.02 furthers Kendall’s call for more critical thought by requiring program managers to include framing assumptions. Mark Husband (2015), senior advisor for Root Cause Analyses in the Office of Performance Assessments and Root Cause Analyses (PARCA), defines framing assumptions as “any supposition, explicit or implicit, that is central in shaping cost, schedule, or performance expectations of an acquisition program” (p. 1). In essence, framing assumptions deepens learning from single-loop learning to double-loop learning, the distinction being that single-loop learning pertains to improving the current process, whereas double-loop learning requires the organization to question the assumptions upon which their current actions are based (DiBella, 2010). As Morgan (2006) explains, “‘double-loop’ learning depends on what is sometimes described as the art of framing and reframing ... organizational members must be skilled in understanding the paradigms, metaphors, mind-sets, or mental models that underpin how the organization

works ... [and] able to develop new ones when appropriate” (pp. 89–90). Implementation of these new ideas, employing the best practices and acquisition framework found in DoDI 5000.02 as a guide, becomes critical as PMs and other acquisition functional members will only pursue change through critical thought if they believe those ideas will be fairly evaluated and implemented with some level of risk accepted (Garvin, 1993).

An example of where a disciplined review of framing assumption would have been beneficial is found in a current DoD weapon systems acquisition program. The program’s production line was interrupted in order to produce critically needed assets of a different configuration, an urgent operational need (UON). However, in recent contract negotiations for a follow-on production lot, both government program office and the contractor were still pursuing full rate production of the previous configuration with little valid cost data to base a firm-fixed price contract-type decision on. The framing assumption that was not critically thought through should be “the low rate initial production (LRIP) line will be stable.” With framing assumptions established and evaluated for validity, the program could benefit from an additional LRIP lot using a Fixed Price Incentive (Firm Target) (FPIF)–type contract with an aggressive share line (50/50) to encourage the contractor to aggressively pursue cost savings initiatives.

### ***The Layered Approach and Culture Change***

The cultural impediments within the DoD, as linked to its hierarchical control and mechanistic structure, make the grand leap of the DoD to a learning organization impractical. DiBella (2010) makes the valid point that the Army “will never be one monolithic learning organization” (p. 122). However, as depicted in Figure 8, within the bounds of three organization levels, the learning metaphor can be adopted if leaders develop a culture with low power distance and low uncertainty avoidance cultural value dimensions (CVDs). Personnel within three organizational levels are more likely to adopt these CVDs and the learning metaphor since hierarchal control and increased risk-taking can result from an open organizational culture, characteristic of a learning construct, tending towards adaptability and away from the prescribed practices and procedures that are found in rigid, rules-based, closed organizational cultures, characteristic of a mechanistic organization (Nahavandi, 1993). For double-loop learning, which includes examination of the status quo and consideration of alternative ways of doing business, cultures must be developed that encourage change and risk-taking (Morgan, 2006). With rapid change and high risk, the acceptance of failure and openness towards conflicting views must exist for the organization to be successful (Morgan, 2006). This concept of differentiation, referring to a single company operating different organizational constructs to account for varying levels of uncertainty and change experienced by individual departments, is not uncommon (Hatch & Cunliffe, 2013).

In the U.S. technology sector, companies need to stay on the technological cutting edge by developing and capitalizing on change. Their research and development (R&D) departments encourage innovation through organizational metaphors such as organism or brain, that is, learning organizations (Morgan, 2006). However, their production departments should efficiently produce quality products, a task more conducive to mechanistic organizations. Differentiation allows these two different metaphors to co-exist. Integration, referring to the collaboration required to achieve common goals, allows for successful co-existence. The R&D department needs to create products that can be affordably produced by the production department in order for the sales department to successfully market those products, leading to maximized profits, an overall corporate goal. However, the more differentiation is obtained through diversifying the internal operations, the harder it is to achieve integration (Hatch & Cunliffe, 2013). Organizations that tend to be market-focused



and opportunistic often encounter integration issues, while well-integrated, controlled teams have difficulty dealing with environmental change (Fey & Denison, 2003). One could posit that DoD integration would be challenged by the differentiation of an overarching mechanistic structure with layered learning organizations, especially as military leaders move from operational units to the acquisition commands. However, these challenges can be met with the shared, articulated vision of national security through cultural values and artifacts.

While organizational change may include certain practical aspects, such as new technologies, employee skills and motivation, and organizational structure, what is most critical to effective transformation lies in the changes to its culture (Morgan, 2006). Strong organizational cultures “generate an almost tangible social force field of energy that empowers employees” (p. 4) and can be linked to increased performance (Ojo, 2010). While the basic assumptions’ layer of culture will not change as progress is sought from hierarchical, mechanistic organizations to layered learning sub-organizations, espoused values articulated through visible artifacts will need to change for organizational change to occur. The second layer of organizational culture, espoused values, provides the mission, goals, standards, and other measures designed to shape an organization’s plans, decision-making, and leadership actions (Duke & Edet, 2012). To switch from the mechanistic value of adherence to the regulations to one of adaption to uncertainty and complexity, leadership will need to ensure responsible risk-taking is preferred and failure is acceptable. Organizations tend towards the comfort of stability with reliable managers instinctively seeking to reduce risk through controls and structure, yet at the “price of diminished innovation and zeal” (Jain, 2013, p. 106). The building of a learning organization demands that “the shift goes all the way to [the] core of the culture” (Kofman & Senge, 1993, p. 17). However, Morgan (2006) elucidates that leaders who “understand the challenge of culture change recognize the enormity of [the] task” (p. 138), especially considering that Senge et al. (1994) has described government as “difficult soil for learning organizations to grow in” (p. 493). Culture is not something easily swayed, but rather needs to be cultivated over time (Morgan, 2006). The characteristics of the learning organization will need to be championed repetitively through the use of artifacts. Artifacts are markers of basic cultural assumptions and values, manifested by objects, verbal expressions, and activities (Hatch & Cunliffe, 2013). Formalization of new values coupled with consistency between words and actions can drive trust and create an atmosphere conducive to change (Michailova, 2000).

Using the modernist perspective in exploring the effects of organizational culture on change, Hatch and Cunliffe (2013) cite the research of Dan Denison, who “proposed that an organization’s strategy, culture and environment need to be aligned if an organization is to achieve high performance” (p. 186). Modernists believe that if culture affects behavior, then by managing the culture, the preferred behaviors will develop (Hatch & Cunliffe, 2013). In today’s dynamic and complex acquisition environment, organizations that value flexibility and change are likely to perform best (Hatch and Cunliffe, 2013). New characteristics that change the radical frame of reference to a unitary frame of reference need to be embedded in all the parts through shared core values, which in turn replace the domineering set of rules and laws used to control the workforce (Morgan, 2006). A unitary frame of reference is characterized by working “under the umbrella of common goals” (p. 195), where “conflict is a rare and transient phenomenon” (p. 195), and power is the “managerial prerogative of guiding the organization toward the achievement of common interests” (Morgan, 2006, p. 196). Organizational leadership will need to “change their leadership roles from one of directing and controlling organizational activities, to inspiring, supporting and facilitating them” (Hatch & Cunliffe, 2013, p. 100). Leaders will need to incentivize the transition of the



culture from one that desires hierarchical control to one that values innovation and encourages debate (Fairbanks, 2006; Murray & Millet, 1996).

### ***Leadership and the Creation of Learning Organizations***

The autocratic leader would destroy the double-loop learning process, as he or she would not take kindly to their status quo being examined and challenged. Morgan (2006) writes that leaders are often hesitant to trust the self-directing work characteristic of learning organizations and resort to more traditional hierarchal techniques. If this were to occur and strong centralized control manifest with it, employees working in a learning organization may resent the loss of autonomy, likely resulting in lack of job satisfaction and, potentially, high attrition rates. Unfortunately, as DiBella (2010) points out, the “military culture rewards bravado and the projection of confidence rather than humility and the projection of uncertainty or ambivalence ... constrain[ing] openness ... the free flow of data” (p. 121), that is, the military culture rewards the characteristics of an autocratic leader. Gerras (2008) elucidates that the most significant barrier to critical thinking and, therefore learning organizations, is the egocentrism that exists in military leaders, cultivated over a career “as rank and responsibility progress” (p. 8) and characterized by “exceptional confidence with respect to both who they are and the validity, accuracy, and correctness of their views” (p. 8).

The Government Accountability Office (GAO) noted that PMs leading successful programs shared several attributes, including “communication skills that facilitate open and honest decision making” (GAO, 2010, p. 14). The GAO (2010) report also revealed that the PMs, despite the appearance of lack of bravado and subsequent risk to one’s career, readily admitted programmatic issues using honest, candid communication, which in turn increased their credibility amongst all stakeholders, including their industry counterparts. Leaders in a learning organization cannot be defensive, but must be receptive to criticism and employees bearing bad news (Garvin, 1993). By using Ouchi’s concept of clan control, where new organizational members are socialized into the culture and thus internalize the DoD’s values, principles, and purpose, the members of the DoD leadership who control promotions can heavily influence the behavior and direction that the DoD adopts (Hatch & Cunliffe, 2013). Learning organizations benefit from the openness that thrives from a humble leader who readily admits not knowing everything and a willingness to learn from subordinates (DiBella, 2010).

### ***Humility***

Humility can be defined as treating others with respect, avoiding special privileges and status symbols, admitting limitations and mistakes, exhibiting modesty about achievements, and emphasizing the collective contributions of others (Yukl, 2013). Davis et al. (2011) expresses humility using a twofold approach, an intrapersonal level having an accurate view of oneself; and an interpersonal level having an other-orientation versus self-focus, characterized by respect and a restraint of egotistical intentions. One could posit that the other-orientation leads to putting the good of the organization and others first, thereby allowing the use of conflict to “increase awareness of problems that need to be addressed, result in broader and more productive searches for solutions, and generally facilitate positive change, adaptation and innovation” (Ivancevich, Konopaske, & Matteson, 2011, p. 311). Since humble people understand, accept, and are willing to admit their shortcomings, they are more apt to acknowledge their need for help, portray thankfulness, feel loved, and extend trust (Exline, 2012). In other words, for functional conflict, which Ivancevich et al. (2011) define as “a confrontation between groups that enhances and benefits the organization’s performance” (p. 311), that is, learning, humility appears to be the key determinate. Humility is the crucial attribute, since humble people are “freed from the



tyranny of their ego” (Gunn, 2002, p. 14). Humble people know that no matter what you accomplish, you are just one among many, making it feasible to grasp that you can serve a larger purpose (Gunn, 2002).

Jim Collins’ (2001) economics research into what drove only 11 out of 1,435 companies to make the leap from “good to great” led to a conclusion that his team of 22 researchers didn’t expect—a special type of leader. Collins (2001) coined this leadership perspective “Level 5 Leadership,” characterized by “a paradoxical combination of personal humility and unrelenting, professional will” (p. 140). Collins (2001) identified humility as the differential between good leaders, such as Lee Iacocca, former CEO of Chrysler, and great leaders, such as Darwin Smith, CEO of Kimberly-Clark, in building organizations that sustain performance. Unfortunately, DoD leaders are rewarded for their confidence, which reinforces an absolutist tendency and egocentric bias, thus inhibiting acceptance of other viewpoints and perhaps leading to arrogant, “not invented here” behaviors (Clarke, 2008). Also critical is that Level 5 leaders are characterized by “an almost stoic determination to do whatever needs to be done” to make their organizations great (Collins, 2008).

### ***Professional Will***

Collins (2005) writes that a leader with unrelenting, professional will stimulates an organization to produce superior results, “demonstrating an unwavering tenacity to do whatever must be done to produce the best long-term results, regardless of difficulty” (p. 7). However, Clarke (2008) elucidates that most Army officers focus on short-term goals and the process rather than the product. Some blame the lack of a long-term result focus on program manager longevity; however, the 2014 Performance of the Defense Acquisition System report, citing research by Ferreiro (2012) and their own analysis, found no statistical or qualitative correlation between program manager tenure and unit-cost growth, Nunn-McCurdy breaches, or two MDAP cost growth measures—total RDT&E and quantity-adjusted procurement (USD[AT&L], 2014). Another potential culprit is the way that the DoD evaluates its officers and civilian leaders with an emphasis on short-term, individual achievements vice long-term, organizational goals (Williams, 2009).

This short-term, individual focus, especially in the up-or-out world of officer promotions and combined with our national cultural values of individualism and competitiveness (The Hofstede Center, n.d.), led one study, *Army Professionalism, the Military Ethic, and Officership in the 21st Century* (1999), to conclude that “the encroachment of egoism (‘What is good is what’s best for me’) pervades the Army leadership” (Williams, 2009, p. 64). This suggests that a leader may decide upon a certain path based on personal advancement thoughts vice “whatever must be done to produce the best long-term results” (Collins, 2005, p. 7). The up-or-out reality can create an overemphasis on competition, where short-term results and looking good now trumps performance over the long haul (Kofman & Senge, 1993). However, even long-term organizational goals must be coupled with ethical leadership. Establishing hard, specific goals does not come without risks, as several specific negative side effects have emerged. In the early 1990s, Sears established a stretch goal to its automobile repair departments of \$147 per hour, creating a motivation that drove their workers to deceive customers by recommending and performing unnecessary repairs (Ordóñez et al., 2009). Difficult goals can challenge employee ethical behavior, as the narrow focus and drive towards those goals, especially with the noble cause of national defense and keeping our soldiers, airmen, seamen, and marines safe, can cause program management teams to fixate on accomplishing specific performance goals without regard for greater DoD organizational goals and values.



One DoD example is the Navy's A-12 medium attack aircraft that was awarded a \$4.38 billion contract to the team of McDonnell-Douglas and General Dynamics Fort Worth in 1988. Eckhardt (1996) maps the case of a program manager, Navy Captain Elberfeld, whose zealotry for the program led to an advocacy not supported by the facts, along with unethical behavior, such as the ordering of defective parts to be staged in the assembly area for SECDEF Cheney's plant visit in March 1990. The fierce resolve for the program's success went beyond Captain Elberfeld, who was ultimately fired and censured, as Navy and DoD acquisition leadership ignored an OSD analyst report showing the program to be \$500 million over cost, two years behind schedule, and greater than 5,000 lbs overweight, ultimately leading to the resignation of Under Secretary of Defense for Acquisition John Betti, termination of the A-12 program for contractor default, and, subsequently, the largest lawsuit ever filed against the U.S. government, which languished in the federal courts for over 20 years (Eckhardt, 1996).

This is not to dictate that pride in one's program is all bad; as Locke and Latham (2009) elucidate, these potential pitfalls of goal-setting can be mitigated by managerial attention and strong, ethical leadership, citing that "organizations cannot thrive without being focused on their desired end results any more than an individual can thrive without goals to provide a sense of purpose" (p. 22). The DoD's focus on warfighter goals can be an advantage; Williams (2009) cites Jordan (2002), whose study indicates that the defense industry perceives the DoD's definition of success as focused on accomplishing mutual goals vice individual achievements. Program managers should follow the lead of the CEOs from the 11 companies out of the 1,435 companies that Collins (2001) studied that went from "good to great," who all demonstrated an ability to put aside personal reward and fame for building companies that endure; one of these Level 5 executives said, "I want to look from my porch, see the company as one of the great companies of the world someday, and be able to say, 'I used to work there'" (Collins, 2001, p. 144).

Ultimately, the combined characteristics of humility and putting the organizational goals above self-interest, coupled with an ethical approach, can lead to organizational trust, an essential ingredient in building learning organizations.

### ***Organizational Trust***

The building of learning organizations requires organizations to better understand and facilitate trust within their organizations. Diversity in the workplace requires that people well work together beyond being based strictly on common backgrounds, interests, and interpersonal likenesses (Mayer, Davis, & Schoorman, 1995). More companies are flattening their organizational structures and providing opportunities for individuals and teams to work autonomously, where trust must take the place of daily, direct observation of their efforts. Trends, such as teleworking or virtual teams, where employees work from a location such as their home, separate employees from their immediate supervisor and require mutual trust in order to be effective.

The definition of trust has been nuanced by researchers as the number of scholarly articles and books have proliferated on the subject. In their development of an integrative model of organizational trust, Mayer et al. (1995) have defined trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trust or, irrespective of the ability to monitor or control the other party" (p. 712). They posit that trustworthiness is conditioned upon three factors: ability, "that group of skills, competencies, and characteristics that enable each party to have influence within some specific domain" (p. 717); benevolence, "the extent to which a trustee is believed to want to do good to the trustor, aside from an egocentric profit motive" (p. 718); and integrity, which "involves the trustor's perception that the trustee adheres to a



set of principles that the trustor finds acceptable” (p. 719). Dirks and Ferrin (2002) tie the relationship of trust with ability, benevolence, and integrity in their meta-analysis of 93 articles across four decades of research on the subject of trust in leadership. Colquitt et al. (2007) builds upon the work of Dirks and Ferrin (2002) and Mayer et al. (1995) by emphasizing the fourth dimension of trust propensity, defined by Mayer et al. (1995) as, “a stable within-party factor that will affect the likelihood the party will trust” (p. 715), noting that personal experience, personality, and cultural dimensions all play into trust propensity. One could posit that humility with its intentionality towards others versus self would be essential to interpersonal trust. Covey & Merrill (2006) posit that trust produces faster results at lower costs and consists of “four cores of credibility”—integrity, intent, capability, and results. Their trust behaviors include the following; talk straight, demonstrate respect, create transparency, right wrongs, show loyalty, deliver results, get better, confront reality, clarify expectations, practice accountability, listen first, keep commitments, and extend trust (Covey & Merrill, 2006).

Trust-building and high-trust relationships are crucial in learning organizations, encouraging workforces to embrace change and face uncertainty (Gill, Levine, & Pitt, 1998). Trust constitutes the driving force that allows employees to experiment and adapt to a changing culture (Rubinstein & Firstenberg, 1999). Interestingly, the DoD culture runs contrary to the national culture of low power distance and individualism (The Hofstede Center, n.d.). One could posit that the camaraderie one finds in military units, with their high sense of purpose, leads to higher in-group collectivism than societal norms; however, the perceived necessity of a wartime command hierarchal structure drives a higher power distance CVD than societal norms. Huff and Kelley (2005) elucidate that past studies imply a “strong positive relationship between trust and collectivism, and a negative relationship between trust and individualism” (p. 97), pointing directly to the likelihood of less benevolence displayed by members of an individualistic society. High collectivism would lend itself to a sense of responsibility for fellow members of the group; however, conversely, high power distance contributes to a sense of superiority, running counter to humility and, therefore, likely to organizational trust. Therefore, the influence of power distance may confound the influence of collectivism for the DoD. Thus, while an argument perhaps can be made that operational units require the strict command structure, support units, to include the buying commands, do not and should adopt the low power distance culture inherent in American society. This characteristic of differentiation supports the layered learning organizational approach advocated by this study.

Thus, the culture of a layered learning organization is enabled by leadership characterized by humility and professional will, which includes a willingness to listen to other viewpoints, admit not knowing or being wrong, and putting the mission and others before self-serving goals. This creates an environment of trust, which ultimately leads to a place where critical thinking can be cultivated.

### **Enhanced Critical Thinking**

Critical thinking is conceptual and, therefore, can be tough to define. The Defense System Management School and the Army’s Professional Military Education refer to the definition found in *The Miniature Guide to Critical Thinking Concepts and Tools*: “critical thinking is the art of analyzing and evaluating thinking with a view to improving it” (Paul & Elder, 2006, p. 4). A somewhat less esoteric, and perhaps more pertinent definition for the business of acquisitions is presented by Halpern (2003), “the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal directed” (p. 6). Critical thinking dates its origins to the days of Socrates, and is derived from two Greek words, *kriticos*, denoting astute judgment,



and *kriterion*, close to our English word *criterion* in both character and meaning (Clarke, 2008).

Although numerous definitions for critical thinking have been developed by academia and practitioners, critical thinking boils down to the Socratic method of asking and answering questions, along with challenging assumptions. As many researchers have noted, the skills required for critical thinking are a learned characteristic and should find their root in established DoD educational programs, such as DAU's DAWIA course and professional military education (PME). However, leadership must create an atmosphere of reasoned questioning and active, respectful dissent (Fastabend & Simpson, 2004). The current DoD structure of formal hierarchical control limits critical thought as junior officers and civilians are reluctant to question their immediate supervisor or their supervisor's boss (Allen & Gerras, 2009). The layered learning organization enhances critical thought by establishing an environment at intersecting layers where presenting reasoned argument is encouraged and long-standing paradigms are challenged, even as the overall construct of the mechanistic organization persists.

Ivancevich et al. (2011) elucidate that in years past, all conflict was thought of as bad; however, a more current view is that conflict, known as functional conflict, can be healthy and used as a change agent to drive growth in an organization. Lencioni (2002) goes so far as to posit that the absence of conflict is one of five key dysfunctions of teams. For functional conflict, which Ivancevich et al. (2011) define as "a confrontation between groups that enhances and benefits the organization's performance" (p. 311), humility appears to be the key determinate, with its characterization of respect and a restraint of egotistical intentions (Davis et al., 2011). Humility can lead to thinking open-mindedly, acknowledging and evaluating alternate solution sets, a key sign of a well-cultivated critical thinker (Paul & Elder, 2006). In an effort to develop creative and critical thought, the atmosphere must be conducive to developing what Williams (2013) calls "heretics—leaders capable of challenging convention to create imaginative solutions ... because it's about questioning and good questioners unequivocally make better thinkers" (p. 51). The ability to argue well, to go beyond egotistical diatribes and call into question the status quo and open the team up to new alternatives while taking all perspectives into consideration, takes education and practice (Williams, 2013).

However, functional conflict also requires the foundation of interpersonal and organizational trust (Lencioni, 2002). This trust, formed as part of the establishment of learning organizations, is necessary for critical thinking to succeed, as those leaders who squash others, especially subordinates, or adopt a "shoot the messenger" mentality, will contribute to risk aversion and a business-as-usual approach (Mueller, 2012). This combination of functional conflict and high trust allows for the formulation and articulation of questions and effective communication of ideas outside the status quo, both characteristics of a well-cultivated critical thinker and learning organizations, which is contrary to the feelings of those who operate within a mechanistic organization where questioning the conventional practice can be seen as career-limiting or fruitless, leading to apathy and risk aversion (Morgan, 1986; Paul & Elder, 2006; Senge, 1990). Therefore, a well-reasoned organizational approach is to enhance critical thinking by establishing layered learning organizations within the confines of the DoD's mechanistic organizational boundaries.



## Conclusion

Past and current perceptions of the DoD culture by society at large, as well as its members, indicate behaviors consistent with mechanistic organizations. Unfortunately, the culture tied to mechanistic organizations does not positively correlate with strong critical thinking. While education can and should play a role in the development of critical thinking skills, organizational transformation from chiefly mechanistic to layered learning should be pursued to encourage and nurture critical thinking as a practice. However, organizational change is difficult, especially when it entails cultural items such as power, organizational values, motivational principles, and trust. Leaders wanting to produce cultural changes face a formidable challenge and should recognize the immensity of the undertaking (Ivancevich et al., 2011; Morgan, 2006).

Research has demonstrated that ethical leadership characterized by humility and a fierce professional resolve creates powerful, long-lasting, productive organizations (Collins, 2001). Correlating with those qualities is the building of interpersonal and organizational trust, and accompanying functional conflict, as organizational members seek, debate, and differ on what is best for the organization and its customers (Lencioni, 2002). Enhanced critical thought can then flourish in an environment that seeks disagreement and questioning in a construct of layered learning sub-organizations within the overall construct of the DoD' mechanistic organization.

Due to time constraints and lack of a validated survey instrument, the quantitative analysis of current DoD acquisition workforce perceptions falls short. More complete quantitative research and longitudinal studies are recommended to understand whether the acquisition workforce trends away from mechanistic organizations and towards learning organizations, along with its effect on critical thinking practices over time.

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