HOW THE ACQUISITION WORKFORCE ADDS VALUE

Michael Barzelay and Fred Thompson

The Department of Defense is committed to reducing the acquisition workforce, and there is no question about the merits of this goal. But the terms and concepts that dominate the acquisition reform dialogue—a dialogue that has defined acquisition as merely a matter of smart purchasing—are inadequate for the task of determining which competencies should be retained and which set aside.

The acquisition workforce has never had to account for its contribution to the overall defense strategy of the United States in an explicit, thoroughly rigorous manner. Raising, equipping, and organizing armed forces obviously has been among the core functions of all military departments. The acquisition and deployment of special-purpose equipment is central to the missions of each military department. Consequently, the military departments' acquisition strategies and the structures through which they are implemented have evolved in an organic fashion, each step a response to a felt need on the part of one of the acquisition workforce's stakeholders. The results may not be pretty, but they have worked.

Since the end of the Cold War, however, the acquisition workforce has been pressured to justify itself both in terms of value creation and unique competency. As Secretary of Defense William Cohen has explained (1998):

> The Defense acquisition workforce has produced the finest weapon systems in the world. However, the Department and its workforce continue to labor under an organization, infrastructure, and legal and regulatory morass that was developed over the course of the Cold War, which is incapable of responding to the rapid changes and unpredictability we face today. We continue to spend too much on infrastructure at the expense of equipping our forces. We have lengthy development, production, and support cycles that cannot keep pace with technological change or provide the kind of timely responses

> that our contemporary forces need. Finally, we have unreliable, aging equipment that causes us to invest in large inventories of spare and repair parts, resulting in enormous maintenance costs. Further, DoD still has much to learn from the dynamic changes in business practices and support systems that characterize the best of American business, which itself has undergone massive reform in recent years. All of this must change. My vision of the acquisition workforce 10 years from now is one that is smaller and in fewer organizations….

This pressure is reflected in the Department of Defense's (DoD's) decision to centralize acquisition management in the Office of the Secretary of Defense. It was intensified as a result of the appointment of Jacques S. Gansler as Under Secretary of Defense, Acquisition and Technology.

Background

Gansler is a long-time student and critic of DoD acquisition practices. He believes (1995), along with a substantial majority of the Defense Science Board, that weapons costs must be reduced significantly and that this can be accomplished by acting on two fronts. First is to concentrate their manufacture at facilities where productivity has been enhanced by substantial investment in modern plants and equipment. Second is to reduce contractors' overheads and indirect costs, which are largely attributable to the reporting requirements, detailed contractual specifications, duplicative reviews, and intrusive oversight that characterize the federal acquisition process.

Gansler (1995) proposes to fix acquisition by relying on the commercial sector of the economy for more of the things the Pentagon buys, by adopting commercial acquisition practices, and by further pruning the existing military industrial base. He asserts that these things are feasible now, whereas they really weren't before, because of:

- the convergence of military and civilian technologies;
- the availability of rugged, high-quality, high-performance commercial components;
- computerized production and design; and
- electronic data interchange.

In other words, Gansler (1995) believes that the same technological trends that are increasing the relative efficacy of markets vis-à-vis organization and government regulation in general have also increased the feasibility of commercially oriented military procurement practices (Reschenthaler & Thompson, 1996). Of course, these claims make sense only if it is understood that Gansler is talking about production processes, not final products. He cites cannons as an example—cannons have no commercial counterparts, "but the large rotary forge on which a cannon is built is the identical machine used to produce railroad freight car axles" (Gansler, 1995, p. 93).

To exploit military-civilian convergence Gansler proposes three changes in

federal acquisition procedures (1995). The Pentagon should:

- buy commercial products at commercial prices, whenever possible;
- use commercial specifications rather than government and military specifications; and
- adopt commercial purchasing, contract-administration, and quality-control procedures and use commercial terms and conditions in government contracts.

According to Gansler (1995), these changes are needed to eliminate unnecessary bureaucratic red tape. We know that compliance with acquisition procedures deters some firms from doing business with the federal government. Gansler claims that compliance with these procedures causes the firms doing business with the federal government to spend four times as much to administer contracts as their commercial counterparts and to employ four times as many administrators. Based on a survey of 206 firms, Gansler claims that on average defense goods cost 30 to 50 percent more than commercial equivalents; and, for high-tech products like software engineering, defense costs are 200 to 500 percent higher.

Were Gansler's claims valid, it would be very difficult indeed, perhaps impossible, to show that the acquisition workforce contributes to the overall defense strategy of the United States. His claims imply that the acquisition workforce is part of the problem, not part of the solution.

EVIDENCE?

Are Gansler's claims, in fact, valid? Unfortunately, traditional government accounting systems do not provide the information needed for organizations to answer these kinds of questions. Consequently, Gansler's claims rest for the most part on a series of activity-based cost (ABC, see below) studies carried out by Coopers & Lybrand/TASC (1994) for Secretary of Defense William J. Perry, which showed that the federal acquisition process greatly increased contractors' overheads and therefore, presumably, their costs. However, these studies say nothing about the benefits produced by the federal acquisition process in general or the Air Force acquisition workforce in particular.

"Based on a survey of 206 firms, Gansler claims that on average defense goods cost 30 to 50 percent more than commercial equivalents...."

As it happens, we have ample reason to doubt some of Gansler's inferences. In a recent Carnegie-Mellon University doctoral dissertation comparing Air Force purchasing practices with those of the private sector, the Defense Logistics Agency (DLA), and the General Services Administration (GSA), Joseph J. Besselman (Besselman, Arora & Larkey, 1998) found that the Air Force acquisition workforce significantly outperformed its putative rivals. It consistently paid less on average for items of equal or superior quality—even after accounting for indirect costs.

ANALYSIS

Hence, it may be that the real problem is not that the defense acquisition workforce fails to create value, but that they cannot explain how they do so. Another problem may be that acquisition workers cannot show why they are uniquely competent to perform the value-creating functions they perform, or that they are appropriately organized to perform these functions.

The military acquisition workforce's main venues are the systems centers—in the Air Force, the centers are grouped together within the Air Force Materiel Command as the Product Support Business Area (PSBA). These centers manage portfolios of projects called programs and portfolios of programs or program areas. How to describe the work of the systems centers is a matter of some debate. "Systems acquisition" is the term with the greatest historical reach. "Program management" is another conventional term. Economic sector concepts, such as "professional services" are used, as are role concepts such as "broker." Business functional concepts such as "industrial marketing" or "relationship marketing" have been considered.

"...the real problem is not that the defense acquisition workforce fails to create value, but that they cannot explain how they do so."

A recently proposed construct is an application of Michael E. Porter's Value-Chain analysis (1980, 1985). The activities of primary value in the systems-center value chain include product characterization, formulating acquisition strategy, source selection, contract administration, and program/project management.

The outputs of the value system that the systems centers "manage" on a day-to-day basis are often described as "products." "Product" is a misleading term, however, except when it is explicitly identified as lying within the semantic field of defense acquisition. This semantic field includes such concepts as "systems" and "military capability." Consistent with theories of cognitive semantics, "product" becomes a meaningful concept only when it is interdefined with respect to the other concepts in the same semantic field—and when the cognitive models providing such inter-definitions are made explicit. To illustrate:

- The product of U.S. Air Force/computer-aided software testing (USAF/CAST) is military capability.
- Military capability can be conceptualized as a hierarchically organized system.
- At the highest indenture, the U.S. Air Force's military capability is what it has to offer theater commanders-in-chief across a range of contingencies.
- At a lower indenture, the U.S. Air Force's military capability can be described in terms of the functionality of its various systems, including weapon systems and command and control systems.
- Military capability thus derives from the functionality of systems of systems.

Moreover, some knowledge about systems is important to understand defense acquisition. Illustrative propositions making up knowledge of defense acquisition include:

- The value of products is determined by their contribution to the functionality of higher-order systems.

- The value of an airframe, for instance, depends on the avionics installed and munitions carried.

- The value of such a "weapon system" depends on the command and control system used to decide what the operators of the weapon system are to do in an operational situation, such as combat.

Apparently, many people who have power to influence the fate of the acquisition workforce do not belong to the "speech community" that uses this cognitive schema to comprehend defense acquisition. In particular, they need to see that the terms "product" and "system" are inter-defined. They also need to understand how military capability is empirically related to the functionality of systems.

It is inaccurate to think that the acquisition workforce is just a bunch of government shoppers. Buying products is comprehended through a metaphorical mapping that places the acquisition workforce and consumers in corresponding conceptual roles. Consequently, knowledge about buying products from everyday life is used to make sense of what the acquisition workforce does. Such inferences are systematically incorrect from an acquisition worker's standpoint—they are, in fact, infuriating.

The use of the term "product support" by the military departments is alleged to reinforce this problem of external comprehension and appreciation. For reasons too complex to explore here, the military departments have good reasons to use the term "product support." But they need to develop a discourse that would make the concept of "product support" meaningful, so that it can be the subject of reasonable public policy discussion.

This discourse should be based on economic and management theory. There are several reasons to use economic and management theory as systems of concepts to develop a way of characterizing product support. First, a major problem with defense acquisition is that its language is arcane. Although economic and management theory is arcane in its own way, it is familiar to an important profession that is employed by government at high levels (economics), and also familiar to the country's high-status technostructure-on-tap—namely, consulting firms serving both private and public clients. Second, it is likely that using these systems of concepts will give rise to a sophisticated framework for analyzing the organizational and policy issues that impinge upon the acquisition workforce. Third, careful crafting of a paradigm for

"Apparently, many people who have power to influence the fate of the acquisition workforce do not belong to the 'speech community' that uses this cognitive schema to comprehend defense acquisition."

discussing this subject—if it were to combine insights from strategic public management—could ultimately undergird a policy dialogue of much better quality than the current one.

The conceptual systems to be brought to bear in this effort should include the elements below.

- *Competitive advantage* is concerned with the management and economics of organizational strategy at the level of business units. Key constructs and concepts include the value-chain, and value-system, and value-chain (or system) linkages (Porter, 1980, 1985); core competencies; economies of scope; and network externalities.

- *Transaction cost economics* is concerned with the economics of "idiosyncratic" exchange relationships, such as are prevalent in defense acquisition. In a transaction cost conceptual framework, asymmetric information problems can be categorized as identification problems (which manifest themselves in terms of search and signaling costs and in missing markets); coordination problems (which manifest themselves in terms of bargaining and negotiation costs and in adverse selection), and defection problems (which manifest themselves in terms of monitoring and enforcement costs and in moral hazard). Key constructs and concepts include transaction attributes, incomplete contracting, and motivation costs (Williamson, 1985; Milgrom & Roberts, 1992). This conceptual framework is also referred to as the new economics of organization.

"...just as product costs can be analyzed in terms of cost drivers, so too can transaction costs."

- *Strategic public management* provides a conceptual framework for identifying and performing the "executive function" in government systems characterized by the separation of powers. Key constructs include indirect management and managing upwards and outwards (Moore, 1995).

The concept of cost control can be applied prospectively to transaction costs just as it can be applied retrospectively to activity and product costs, bearing in mind that prospective cost is an economic rather than accounting concept. The function of a controller in an organization is to control activity and product costs; it is reasonable to think of the function of the PSBA as controlling transaction costs. Just as the controller seeks to maximize value (within a framework established by the firm's strategy), so too does PSBA seek to maximize value (within a framework established by public and departmental policy).

And, just as product costs can be analyzed in terms of cost drivers, so too can transaction costs. Examples of product cost drivers are volume of output and number of transactions. Examples of transaction cost drivers are design connectedness and incomplete contracts. Both of these concepts can be described as attributes of the transactions. One can use economic theory to examine "what drives" these transaction cost drivers. Value creation

reflects distinctive competencies, i.e., knowledge. We believe that the distinctive competencies of the project management workforce include:

- knowledge of technology, products, and future trends—allowing PSBA to minimize the sum of product search costs (matching technological solution required to source) and expected product costs, including product failures;

- knowledge of potential partners and alternative relationships—allowing PSBA to minimize the sum of negotiations, bargaining costs, and product costs;

- Knowledge of monitoring and enforcement practices—allowing PSBA to minimize the sum of enforcement costs and product costs.

Of course, the exercise of these competencies is necessarily costly, as are those associated with modifying and sustaining existing systems. Their payoff comes when systems that work are acquired and deployed. A mistake, especially at the search and selection stage of the acquisition process, can be disastrous, resulting in either failure of the system to perform or highly expensive corrective actions.

How the Workforce Creates Value

It seems to us that, from the perspective of these conceptual systems, the acquisition workforce creates value in four distinct ways.

It identifies military needs that cannot be met by commercial off-the-shelf (COTS) or dual-use products. In this instance, failure can take two forms. The most serious case involves the failure to recognize needs that are uniquely military. In which case, a COTS or dual-use product will be acquired and ultimately prove incapable of accomplishing its military mission. Where electronic C^2 systems are concerned, for example, military specifications are primarily concerned with creating and maintaining common standards and, to use a contemporary buzz-phrase, with managing network externalities.

An equally serious case involves procuring a military-unique product like a COTS or dual-use product. Some of the worst procurement fiascoes of the past 40 years have typically involved systems that were treated like COTS purchases when they shouldn't have been (e.g., the C-5A and the A-12). The factors that call for a systems management approach include the uniqueness of the product (asset specificity), the product's interconnectedness with other military operating and human systems, and the anticipated duration of the relationship between the user and the supplier.

"A mistake... can be disastrous, resulting in either failure of the system to perform or highly expensive corrective actions."

It manages the relationship through which systems are transferred from industry to combat units. This includes the full panoply of services associated with the development, delivery, and use of the system. This function involves both coordination and motivation. Its performance is critical to industry's competence to meet the current and future needs of the military. Unfortunately, it is extremely difficult to assess the effectiveness of this

function. This is because it is concerned with increasing the efficiency of the processes by which systems are developed, manufactured, and purchased. This can be accomplished by:

- shaping the scope and scale of industry to meet the current and future needs of the military;
- optimizing supplier investments in capacity acquisition and maintenance, primarily investments in human resources, facilities, and equipment; and
- reducing suppliers' overheads and indirect costs.

It obtains value for money. Interconnectedness aside, purchasing is basically about optimizing the sum of product benefits and costs. In most cases, production costs dominate the cost side of performance-cost ratios. But systems-acquisition relationships are like marriages: information costs (search, bargaining and negotiation, monitoring and enforcement costs) are central to success. The failure to bear these costs all too often produces a wholly unsatisfactory outcome, one that can often be corrected only at great expense—hence, the saying, wed in haste, repent in leisure. Minimizing information (or transaction costs) means minimizing the sum of the costs of errors and the costs of error avoidance.

It enforces rules intended to reduce fraud and abuse. The more important of these involve self-denying ordinances meant to take politics out of the acquisition process—to prevent members of Congress or the President from using acquisition budgets to reward supporters with military spending or to extort funds from the recalcitrant, and to prevent the military departments from trading favors or threats with sponsors or enemies in the political branches of government. These rules apply to all military purchases, not just large-scale systems involving the acquisition of unique or superior products.

The problem with these value-creating processes is that they often seem inimical to each other. For example, acquisition regulations and oversight impose significant costs on defense contractors. The Coopers & Lybrand/TASC study prepared for Secretary of Defense Perry, "The DoD Regulatory Cost Premium: A Quantitative Assessment" (1994), found that on average regulatory compliance costs represented about 18 percent of total price paid for the services purchased by the military. Presumably these costs are the result of efforts aimed at eliminating waste, fraud, and abuse. Another example, value-for-money considerations, at least insofar as they are dominated by a short-term perspective, often presume a skeptical, arm's length relationship between the military and its suppliers, together with a willingness to shift suppliers based on price; in

Probability of systems success	=	Probability that underlying concept/ technology works	*	Probability of funding/ deployment	*	Probability of combat utility

Figure 1. Probability of System Success Formula

contrast, contemporary acquisition doctrine recognizes that managing productive relationships requires the cultivation of long-term alliances.

According to the new economics of organization, large, lumpy investments in specialized resources—technological knowledge, product-specific research and development, or equipment—tend to give rise to bilateral monopolies, a circumstance that provides an ideal environment for opportunistic behavior on the part of suppliers and customers. For example, once a producer has acquired a specialized asset, customers may be able to extract discounts by threatening to switch suppliers. In that case, the supplier may find it necessary to write off a large part of the specialized investment. Or, if demand for the final good increases greatly, the supplier may be able to extort exorbitant prices from customers. Hence, where the relationship between supplier and customer is at arm's length, opportunistic behavior may eliminate the payoff to what would otherwise be cost-effective investments (Masten, Meehan & Snyder, 1991).

Vertical integration occurs because it can mitigate this problem, in part through the substitution of direct supervision for indirect influence (Williamson, 1985). For example, in a study of the United States aerospace industry, Scott Masten (1984) demonstrated that specialized investments are critical to vertical integration. Where intermediate products were both complex and highly specialized (used only by the buyer), there was a 92 percent probability that they would be produced internally; even 31 percent of all simple, specialized components were produced internally. The probability dropped to less than 2 percent if the component was unspecialized, regardless of its complexity.

Unfortunately, the problems that arise in arm's length transactions where there are few alternative suppliers and customers also arise where managers try to replicate free market forces within organizations, allowing buying and selling responsibility centers complete freedom to negotiate prices (*laissez-faire* transfer pricing). Traditionally, economists have argued that services should be transferred at marginal or incremental cost to the buying responsibility center.

But this has the effect of severely biasing divisional performance measures such as return-on-investment or economic-value-added, thereby distorting the evaluation of support center performance. This of course eliminates or, perhaps even worse, distorts incentives to improve performance. As a result, organizations face a serious dilemma. They can maximize short-run performance by using marginal cost in internal transactions; thereby running the risk of short-falls in long-run performance. Alternatively, they can sacrifice short-term performance by relying on *laissez faire* transfer pricing thereby obtaining superior measures of divisional contributions to organizational performance and improving the chances of maximizing performance in the long term.

"They can maximize short-run performance by using marginal cost in internal transactions; thereby running the risk of short-falls in long-run performance."

Nowadays, many economists allege that bilateral monopoly can be governed

satisfactorily by unbalanced transfer prices, multipart transfer prices, or quasivertical integration, in which the buyers invest in specialized resources, and loans, leases, or rents them to their suppliers. Quasivertical integration is common in both the automobile and the aerospace industries, and, of course, it is standard procedure for the Department of Defense to provide and own the equipment, dies, and designs that defense firm's use to supply it with weapons systems and the like (Monteverde & Teece, 1982). Other organizations that rely on a small number of suppliers or a small number of distributors write contracts that constrain the opportunistic behavior of those with whom they deal.

"...building and maintaining trust-based relationships ...is ultimately how and when the acquisition workforce creates value."

In still other cases, desired outcomes can be realized through alliances based on the exchange of hostages (e.g., surety bonds, exchange of debt or equity positions) or just plain old-fashioned trust based on long-term mutual dependence.

Toyota, for example, relies on a few suppliers that it nurtures and supports (Womack, Jones & Roos, 1990). They have substantial cross-holdings in each other and Toyota often acts as its suppliers' banker. Toyota maintains tight working links between its manufacturing and engineering departments and its suppliers, intimately involving them in all aspects of product design and manufacture. Indeed, it often lends them personnel to deal with production surges and its suppliers accept Toyota people into their personnel systems.

Toyota's suppliers are not completely independent companies, having only a marketplace relationship to each other. In a very real sense, they all share a common purpose and destiny. Yet, Toyota has not integrated its suppliers into a single, large bureaucracy. It wanted its suppliers to remain independent companies with completely separate books—real profit and investment centers, rather than merely notational ones—selling to others whenever possible. Their solution to the bilateral monopoly problem appears to work just fine (Womack, Jones & Roos, 1990).

In fact, with the exception of unbalanced transfer prices, none of the solutions to the bilateral monopoly problem noted here presumes vertical integration. All that is required is *full* bilateral access to information—full cost and production information on the supplier's side and complete willingness to pay and demand information on the customer's side—which is the essence of teaming (Milgrom & Roberts, 1992).

Of course, what we are talking about here is building and maintaining trust-based relationships. That, in our opinion, is ultimately how and when the acquisition workforce creates value. It is also consistent with contemporary doctrine and regulation, if not necessarily practice.

Conclusions

The Department of Defense is committed to making substantial reductions in the acquisition workforce and in the base structure that sustains it. There is no question about the merits of this goal. Very large

questions remain, however, about which competencies must be retained and strengthened and which ones may be safely put aside. These questions cannot be answered satisfactorily using the terms and concepts that currently dominate the acquisition reform dialogue. Indeed, that dialogue has largely overlooked these questions altogether, defining the acquisition function as simply a matter of smart purchasing.

If the job of the acquisition workforce is merely to buy stuff at lower prices than would be obtained using other sources, its value added is merely the difference between its prices and the prices obtainable from other sources. This implies that the defense acquisition workforce should be cut back wherever it is not the least-cost supplier.

That is the wrong approach. At a minimum, acquisition workers should be acquisition experts for the goods and services that they acquire. In the information technology (IT) business, for example, the defense acquisition workforce should be the leading experts on the acquisition of IT goods and services, regardless of the source. In that case their value-added would be the savings to their military customers from their recommended solutions. It should be up to their customers to decide whether their expertise was worth its cost.

But even that approach is far too narrow. It really is necessary to figure out how in the largest sense the defense acquisition workforce can add value by increasing the capability of the American military to carry out its assigned missions, now and in the future. Absent a full discussion of the broader strategic role of the defense acquisition workforce, it will not be possible to size it in a coherent manner or align its structure with its underlying purposes. We have suggested some approaches that might enhance this conversation.

Moreover, we believe that it would be extremely useful for the defense acquisition workforce to seriously examine the processes by which it creates value for its customers. The quality management movement has provided one very useful tool for this kind of self-scrutiny—process value analysis (PVA). Process value analysis has proved itself in a variety of settings (Thompson, 1998). It involves five steps:

- Chart the entire flow of activities needed to design, create, and deliver a service.
- For each activity and step within the activity, determine its associated cost and the cause of that cost, or cost driver.
- Determine how the step adds value for the customer or, if it is non-value adding, identify ways to eliminate it and its associated cost.
- Determine the cycle time of each activity and calculate its cycle efficiency (value-added time vs. total time).
- Seek ways to improve cycle efficiency and reduce associated costs due to delays, excesses, and unevenness in activities.

This approach can identify activities and outcomes that add value and those that do not, but instead arise out of defects in the service delivery process. It can also help to identify precisely who adds value, as well as where and how.

In a sense, however, this kind of reductionism may be ultimately self-defeating. In its broadest sense, acquisition can be thought of as the reciprocal of marketing—looking at the market from the perspective of the customer rather than the seller. Marketing is defined as meeting the wants and needs of the customer by means of the product (or service) and everything associated with its purchase, consumption, and ultimate disposal. From this perspective, acquisition can be defined as meeting wants and needs *by* the customer through the product (or service) and everything associated with its purchase, consumption, and ultimate disposal. Hence, if marketing is a conversation between an organization, its employees, and its customers, acquisition is a conversation between an organization, its employees, and its suppliers.

As D. S. Pottruck and Terry Pearce (2000) explain, this conversation must start with listening, not talking. Customers have always driven innovation and new product development. People create value in this context by identifying customer needs, figuring out how to meet them quickly by means of the product or service supplied or acquired, and by making the process fully transparent to all its participants. The great paradox in marketing and acquisition is that the workforce often creates the greatest value by creative interpretation—by listening very carefully to the customer and then by selectively ignoring what they have just heard. When customers cannot themselves fully express their own needs, marketers and acquisition specialists add the most value by figuring out what those needs are.

Michael Barzelay, Ph.D., is lecturer in management at the London School of Economics. Formerly associate professor of public policy at Harvard's John F. Kennedy School of Government, he is author of four books, including *Breaking Through Bureaucracy* (1992) *and The New Public Management* (2000). Barzelay has consulted extensively with DLA, HQ U.S. Air Force, Air Force Materiel Command (AFMC), and other government agencies. He is currently completing a book about the Air Force's long-range strategic planning process and analysis.
(E-mail address: m.barzelay@lse.ac.uk)

Fred Thompson is Grace and Elmer Goudy Professor of Public Management and Policy at the George H. Atkinson Graduate School of Management, Willamette University, Salem, OR. He has received his university's top-teaching award, the National Association of Schools of Public Affairs and Administration/ American Society for Public Administration (NASPAA/ASPA) Distinguished Research Award, American Society of Military Controllers' (ASMC's) Outstanding Author Award, and the Public Administration Review's William E. Mosher and Frederick C. Mosher Award. Thompson edits *International Public Management Journal.*
(E-mail address: fthompso@willamette.edu)

ENDNOTES

1. Porter, a professor at the Harvard Business School, is the author of *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (1980) and *Competitive Advantage: Creating and Sustaining Superior Performance* (1985). His works are widely read and cited: according to the Social Science Citation Index, 1,876 times in the first five years of this decade.

2. Economists and accountants mean two different but related things by the term cost. Economists define cost in terms of opportunities that are sacrificed when a choice is made. Hence, to an economist costs are simply benefits lost (and, in some cases, benefits are merely costs avoided). Costs are subjective—seen from the perspective of a decision-maker, not a detached observer—and prospective. Moreover, cost is a stock concept: Costs are incurred when decisions are made.

   Accountants define cost in terms of resources consumed. Hence, from an accountant's standpoint, costs are objective—seen from the perspective of a detached observer—and retrospective. Accountants usually define costs as flows. Costs reflect changes in stocks (reductions in good things, increases in bad things) over a fixed temporal interval.

   These distinctions should be constantly borne in mind as we shift our perspectives from that of accounting to economics—and back again (Thompson, 1998).

3. As a reviewer correctly observed "FAR 1-106, DoD 5000, and the IPPD Manual promote teaming as a desired relationship." Clearly, regulations do not require a skeptical, arm's length relationship between the military and its suppliers. But that is nevertheless what we often observe.

4. Here defined as the opportunity cost of the resources consumed to produce the last (marginal or incremental) unit of the good or service supplied. Incremental cost is, therefore, the change in total cost resulting from a one-unit increase in output. Accountants often use variable direct cost as a proxy for incremental cost.

REFERENCES

Besselman, J. J. (1998). *Purchasing performance: A public versus private sector comparison of commodity buying*, Ph.D. dissertation, Carnegie Mellon University, Pittsburgh, PA.

Besselman, J. J., Arora, A., & Larkey, P. (2000). Buying in a businesslike fashion: And paying more? *Public Administration Review*, 60(5), Sep-Oct, 421–434.

Coopers & Lybrand/TASC (The Analytical Sciences Corporation). (1994, December). *The DoD regulatory cost premium: A quantitative assessment*. Washington, DC: Office of the Secretary of Defense.

Cohen, W. S. (1998, April 1). *Secretary of Defense Report to Congress: Actions to Accelerate the Movement to the New Workforce*. Online: http://www.defenselink.mil/pubs/foi/NewWork Force.html.

Gansler, J. S. (1995). *Defense conversion: Transforming the arsenal of democracy*, Cambridge, MA: The MIT Press.

Masten, S. E. (1984, March). The organization of production. *The Journal of Law and Economics, 27*, 403–417.

Masten, S. E., Meehan, J. W., & Snyder, E. A. (1991, July). The costs of organization. *The Journal of Law, Economics, and Organization, 34*, 1–25.

Monteverde, K., & Teece, D. J. (1982). Appropriable rents and quasi-vertical integration. *The Journal of Law and Economics, 25*, 403–418.

Milgrom, P., & Roberts, J. (1992). *Economics, organization and management*. Englewood Cliffs, NJ: Prentice-Hall.

Moore, M. H. (1995). *Creating public value: Strategic management in government*. Cambridge, MA: Harvard University Press.

Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors*. New York: The Free Press.

Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. New York: The Free Press.

Pottruck, D. S., & Pearce, T. (2000) *Clicks and morter: Passion-driven growth in an internet-driven world*. San Francisco: Jossey-Bass.

Reschenthaler, G., & Thompson, F. (1996, June). The information revolution and the new public management. *Journal of Public Administration Research and Theory, 6*, 125–144.

Thompson, F. (1998). Cost measurement and analysis. In R. Meyers, (Ed.), *Handbook of public budgeting* , (pp. 381–411). San Francisco: Jossey-Bass.

Williamson, O. E. (1985). *The economic institutions of capitalism*. New York: The Free Press.

Womack, J. P., Jones, D. T., & Roos, D. (1990). *The machine that changed the world: Based on the Massachusetts Institute of Technology 5-million dollar 5-year study on the future of the automobile*. New York: Rawson Associates.