Economics as a conceptual resource for the study of public management

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ECONOMICS AS A CONCEPTUAL RESOURCE FOR THE STUDY OF PUBLIC MANAGEMENT

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ECONOMICS AS A CONCEPTUAL RESOURCE
FOR THE STUDY OF PUBLIC MANAGEMENT

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Economics as a Conceptual Resource
for the Study of Public Management

Introduction

Four related bodies of knowledge inform the study and practice of public management. Broadest in scope is knowledge about the political processes that place demands, provide opportunities, and impose constraints on public managers. Next broadest in scope is policy analysis, which provides the conceptual foundations and craft skills for determining what government should do and how it should be done. Organizational design, a subset of policy analysis, gives insight into how the public sector can be organized to facilitate the effective delivery of goods and services. Narrowest in scope, but most directly relevant to the practice of management, is knowledge about how to carry out executive functions skillfully within existing organizational designs. We take the latter two bodies of knowledge, organizational design and executive function, as the core of the craft and science of public management. In this essay we consider what the discipline of economics offers for research on the core of public management.

Economics certainly has made fundamental contributions to the conceptual and technical development of policy analysis. Through the public choice perspective, it has also contributed in important ways to the understanding of political processes. But what has economics contributed directly to public management? The short answer is mainly some insight into
organizational design. Of course, being academics, we are not content with giving just the short answer, especially because we see some developments in economics that may eventually contribute to our fundamental understanding of executive function.

Economists have not been shy about applying their disciplinary tools to the study of a variety of non-market behaviors such as crime, fertility, and rent seeking. Yet the non-market behavior most central to the study of the economy, that which occurs within firms, public bureaus, and other organizations that produce goods and services, has only recently become part of the mainstream of the discipline. The pioneering work of Ronald Coase (1937) on transaction costs as an explanation for the existence of firms did not attract many economists to the topic. More influential was the notion that in competitive markets only those firms that acted as if they maximized profits, implicitly choosing the most efficient organizational form, would survive (Alchian, 1950). The assumed efficiency of the "what is" makes the particulars of organization seem less interesting. Concern about the optimal design of information sharing among organizational members with identical goals prompted some interest in the theory of teams (Marschak, 1955). Yet with a few very notable exceptions (Downs, 1966; Niskanen, 1971), economists tended to ignore public sector organizations, which usually are not subject to the competitive discipline that in theory drives private firms toward efficiency. Further, early explorations of behavior within firms (Cyert and March, 1963) and the
structure of firms (Williamson, 1975) seemed to many economists to stray too far from the dominant neoclassical paradigm of constrained optimization by rational actors. It was only with the introduction of the principal-agent framework, which preserved the core assumptions of neoclassical economics, that questions of organizational design have moved into the mainstream of economics.

For purposes of this essay, we delineate economics as the body of theory and related empirical research that relies on the comparison of equilibria resulting from the choices of individuals with stable preferences who act rationally to maximize their welfare. These concepts -- stable preferences, rational choices by individuals, and comparable equilibria -- comprise the core assumptions of neoclassical economics. In its simplest and most simplistic form, neoclassical economics adds the peripheral assumptions of the budget as the only relevant constraint, perfect information, and costless market exchange. We follow Thrainn Eggertsson (1990) in classifying models that preserve the core assumptions of neoclassical economics, but relax the secondary assumptions, as belonging to neoinstitutional economics. In particular, neoinstitutional economics introduces more detailed specifications of the situational constraints that individuals face, of the types of information that they have, and of the nature of the interactions in which they engage. The increasing specificity of these peripheral assumptions pushes economic theory closer to topics of concern to students of public management.
One can imagine two routes by which economics can influence public management. First, public managers can draw concepts and analytical techniques directly from economics. By understanding the economic aphorism, "the scarcest resource gets the rent," or the broadly applicable concepts of moral hazard and adverse selection, for example, a manager may be better able to avoid ineffective organizational designs. Familiarity with the techniques of benefit-cost analysis may enable a manager to pursue more skillfully what Michael Barzelay (1992) calls the post-bureaucratic paradigm emphasizing the consumer perspective, net rather than gross values, and the inclusion of nonpecuniary costs (p. 121). Second, economics can indirectly influence public managers by providing the conceptual frameworks employed by public management researchers. With respect to organizational design, for instance, such concepts as sustainable competition, contestability, and credible commitment may suggest very different ways of thinking about the delivery of services. An economic theory of institutions based on equilibria in repeated games may provide a clear conceptual foundation for thinking about such elusive phenomena as leadership and organizational culture.

In this essay we speak more to researchers than practitioners. Rather than attempting to catalogue the concepts and techniques that are potentially useful to practitioners systematically, we provide examples of important general concepts that might be usefully transferred from various economic approaches to the substantive problems of
public management. Though most of these concepts are relevant to issues of organizational design, a few may be useful in helping to understand the executive function better.

We begin by considering the concept of market failure in neoclassical economic theory. Next we review the agency theory and transaction cost branches of neoinstitutional economics. Though substantively more often thought of as the domain of political science, we consider the application of social choice theory to organizational decision making. Finally, we turn to game theoretic models of institutions, which provide a new sort of "general equilibrium" in that they can explain the existence of conventions and adherence to rules without resort to external authority.

Neoclassical Economic Theory

The ideal paradigm of neoclassical economics, the Arrow-Debreu (1954) general equilibrium framework, simply assumes all production occurs within technically efficient firms that maximize profits. Thus, it does not speak to questions of interest to students of public management. Yet consideration of the normative implications of the violation of the assumptions of the ideal neoclassical paradigm, the subject of welfare economics, does offer some concepts of relevance to organizational design. In particular, the traditional market failures -- public goods, externalities, natural monopoly, and information asymmetry -- can be very useful in diagnosing the sort of intra-organizational problems that public managers routinely face.
The fundamental welfare theorem, which formalizes the notion of the "invisible hand," serves as the basis for normative neoclassical economics. It says that, in an idealized economy satisfying certain assumptions about consumer preferences, production technology, the nature of goods and factor inputs, information, and the existence of competitive markets, an equilibrium in prices and quantities of goods and factors exists and that it is Pareto efficient. That is, it would not be possible to find a reallocation that would make someone better off without making anyone else worse off.

Certain violations of the assumptions of the fundamental welfare theorem, which can be analyzed within the neoclassical framework, comprise the traditional market failures that lie at the operational heart of welfare economics. They involve situations in which rational behavior by individuals results in equilibria that are not Pareto efficient in the sense that alternative allocations can be identified that could make at least some people better off without making anyone else worse off.

An economic approach to policy analysis seeks market failures as rationales for affirmative public policy. Further, associated with each of the market failures are a number of generic "solutions" that provide starting points for designing policy alternatives. For example, in situations involving externalities, characterized by a gap between marginal private costs and marginal social costs, one generic solution is for government to impose a tax or provide a
subsidy that closes the gap. Other generic solutions to externality problems include direct regulation of the activity generating the externality and allowing those who bear a negative externality to seek compensation through tort from those who generate it. Thus, framing policy problems as market failures naturally leads the analyst to candidate solutions.

Though welfare economics frames these failures in the neoclassical world of market exchange, we believe that they provide a useful conceptual resource for understanding behavior within organizations, and, therefore, potentially offer insight into effective organizational design and more. The production and exchange of intermediate products among organizational members, and the production and delivery of final products to the customers of the organization, can be viewed as occurring in intra-organizational markets. This may strike some readers as a bit curious as one explanation for the existence of hierarchial organizations is that they are responses to market failures that make spot transactions unsatisfactory. Organizations substitute to some extent hierarchies of authority for market exchange. Members subject themselves to hierarchical authority in return for an ongoing relationship providing some package of monetary and non-monetary compensation. Yet, because the direct exercise of authority is costly in terms of specifying, monitoring, and enforcing directives, organizations typically delegate considerable discretion to their members. Thus, in many spheres of organizational life, members are free to pursue
their self-interest within very broad constraints. Their interactions can be thought of as occurring in organizational markets where expenditures of time and effort are generally the relevant prices.

This perspective makes the distinction between markets and hierarchies less significant. Markets embody some hierarchy -- typically a centrally enforced system of property rights, but also perhaps various regulation by government agencies. Within hierarchical organizations considerable discretion is often delegated to people whose behavior can be understood as the pursuit of self-interest subject to various administrative constraints. Indeed, the boundaries of hierarchical organizations become blurred when they contract with non-members for the provision of services.

We develop the organizational market failure framework more systematically elsewhere (Weimer and Vining, 1992, pp. 131-138; Vining and Weimer, 1990 and 1993). We offer here only a few illustrations in an effort to convey the usefulness of this approach as a conceptual resource for diagnosing and managing organizational problems.

Achieving a favorable organizational reputation. A favorable reputation is valuable to both the organization and its members. A reputation for customer service may enable a private firm to expand its market; a reputation for competence and efficiency may enable a government bureau to secure more resources and greater jurisdiction from its political sponsors. Organizational members may find their job easier and more pleasurable when their organization has a favorable
reputation. Nevertheless, departments of motor vehicles and many other organizations we routinely encounter have difficulty establishing and maintaining favorable reputations. The reason is that reputation is a public good for the organizational members.

A private good is rivalrous (only one person can use it at a time) and excludable (a particular person has exclusive control over its use). A pure public good like organizational reputation is neither rivalrous (new members benefit from the reputation without reducing its benefits to existing members) nor excludable (short of expulsion from the organization, no member can be excluded from its benefits). The chronic problem of pure public goods is undersupply.

Members of organizations typically produce both private and public goods. The production of private goods is easy to monitor -- number of cases processed, dollar value of sales, units of product delivered. The production of public goods is typically much more difficult to monitor -- courtesy to customers, extra effort to solve a customer's or colleague's problem, reliability of final and intermediate products. Organizational reward systems are typically based only on private good production because of these differences in the ease of monitoring.

In order to elicit supply of an organizational public good, managers must find ways of either rewarding actions that contribute to it or penalizing actions that undermine it. Making public examples of reputation-enhancing and reputation-detracting actions that come to the manager's attention is one
approach. Another approach is to make the discovery of examples more systematic through soliciting or sampling customer opinions about the quality of the performance of organizational members. In situations in which co-workers can observe each other's actions, they may be involved in the monitoring and rewarding process through such devices as "quality circles." The general point is that managers should expect organizational public goods to be undersupplied without some sort of authoritative intervention to encourage provision.

We assume that managers are willing to expend effort to increase the supply of organizational public goods. The managers of government bureaus with monopoly positions, however, may not be willing to put effort into increasing organizational public goods, because they do not have to compete for customers. Further, civil service may make it difficult for them to create incentives to motivate workers to provide public goods. Thus, relative to private organizations, government bureaus are likely to have lower levels of organizational public goods like favorable reputation.

Overuse of resources. Often organizational resources such as secretarial capacity, the time of employees with specialized skills, and shared computer systems are overused and eventually depleted or degraded. Overuse usually occurs when the goods have the characteristic of common property: they are rivalrous but not excludable. The generic solution to common property problems is to convert them to private
goods by introducing excludability through such means as establishing user prices or giving "property rights" over use to a specific person.

Consider the case of a shared computer system. It is quite possible that at the time the system was introduced into the organization, demand for computing at zero price was sufficiently low so that no queuing occurred. As the organization grows, however, demand grows sufficiently to create queuing and other degradations of service. A natural solution is to introduce fees to discourage relatively low-valued uses so that remaining users do not bear the costs of queuing. But to be effective, the fees must be denominated in units that have some other value to organizational members. Unless unspent funds in individual computer budgets can be used for other things of value to organizational members, such as equipment or travel, they will have no incentive to spend less than the full amount on computing. Indeed, if they anticipate that subsequent allocations will depend on current spending, then they have an incentive to be sure that they spend the entire account. Though the aggregate amount of budget allocations can be set to avoid queuing, sufficient information to provide individual budgets to facilitate most valued uses is unlikely to be available. The result may be inefficiency in excess of that caused by queuing.

Government bureaus typically face more severe constraints in establishing fungible budgets than do private firms. Line item budgeting and constraints on the conversion of unused organizational resources to private income preclude designs
available to private firms. Nevertheless, one of the thrusts of "reinventing government" is to allow at least managers to have fungible budgets (Osborne and Gaebler, 1992:119-122). As we discuss later, however, such systems suffer from a lack of credibility.

Natural resources owned as common property often are depleted. Yet the users of common property resources sometimes develop governance systems that, while not necessarily achieving efficient utilization levels, preserve the resources over extended periods. Based on the observation of a large number of common property resources, Elinor Ostrom (1990) has distilled a number of design principles that seem to characterize those that are long-enduring. For example, such factors as mutual monitoring by users, participation in the determination of appropriation rules by all users, and the fitting of appropriation rules to local conditions appear to contribute to longevity. Transferring these design principles to organizational common property suggests that allowing workgroups to set rules for their use might be a promising approach to preventing their degradation.

Undersupply of specialized resources. As a final illustration, consider a situation in which an organization relies on a particular member for expertise in an area such as law, accounting, or engineering. Supply of the in-house expertise may have the characteristics of a natural monopoly: over the relevant range of demand for the expertise the average cost of its provision is falling because demand can be accommodated by a single person. The cost of the expert's
employment contract can be thought of as a fixed cost; the managerial effort and user inconvenience involved in inducing the expert to deliver the expertise can be thought of as the variable cost. Natural monopolists have an incentive to restrict supply in order to drive up price and gain rents. The monopoly supplier of organizational expertise may similarly restrict effort to enjoy an easier life or obtain rents, though the higher "price" that results may be manifested as deference, queuing, or even bribes of some sort.

In recent years the concept of contestability has been introduced to the study of natural monopoly (Baumol, Panzar and Willig, 1982). A monopoly is contestable if there are potential alternative suppliers of the good. It is not contestable if there are barriers to entry, such as costly organization-specific investments in human capital that have substantially less value in other uses. If the monopoly is contestable, then the monopolist can be expected to limit prices to discourage takeovers. If it is not, then the monopolist can raise price to maximize rent without concern about loss of the monopoly.

Increasing the contestability of supply is one strategy for managers to improve the performance of monopoly suppliers within their organizations. For example, barriers to entry may be lowered by creating circumstances, such as task forces and apprenticeships, in which the monopoly supplier reveals information to other organizational members. Resistance to such strategies often appear as "turf wars" with members who enjoy monopoly positions guarding the information and
authorities that function as barriers to entry.

In situations involving the supply of a specialized resource by a group of organizational members, they may collude to obtain monopoly rent for the group as a whole. A well-known example is the account provided by Michel Crozier (1964) of French mechanics who used intimidation and sabotage to prevent others from acquiring or exercising expertise concerning factory machines. Managers may try to break up such cartels by weakening the social relations among the colluders, say by dispersing them to line units rather than keeping them as a staff function. In the creation of positions in organizations, managers should keep in mind that job classifications in union contracts and civil service regulations may be helpful to group members in creating barriers to entry.

Summary: The underlying importance of information asymmetry. Information asymmetry arises when some members of the organization have information that they can withhold from other members. Organizational inefficiency results if the information is withheld when providing it would reduce organizational costs by more than the cost of its provision. Though we focussed on pure public goods, common property problems, and natural monopoly in illustrating how market failure concepts can be useful to managers in diagnosing and correcting commonly encountered organizational pathologies, one of the other traditional market failures, information asymmetry, was implicitly involved in each of these illustrations through the assumption that monitoring of the
behavior of organizational members by managers is costly. Indeed, it is the information asymmetry that generally allows the other market failures to occur in the presence of hierarchical authority that could correct them through fiat. The central thrust of neoinstitutional economics is to make assumptions about information asymmetry explicit rather than implicit.

Neoinstitutional Economics: Ownership, Information, and Transaction Costs

Neoinstitutional economics has developed along two tracks. Agency theory formalizes assumptions about the distribution of property rights and information in the writing of contacts that define organizations. Transaction cost theory explicitly considers the nature of the interaction between economic agents and its relation to forms of organization for governing contracts. The formal application of these theories to practical problems of organizational design has as of yet been very limited. In the case of agency theory, the formal models have incorporated very simple assumptions and produced very general propositions, often without immediately apparent empirical application; less formal models have yielded testable implications concerning corporate structure and control that have generally been confirmed by empirical research. With the possible exception of bargaining models, which have actually developed as an independent line of research, transaction cost theory has yet
to develop formal models. Nevertheless, both these approaches provide useful general insight into organizational design.

Agency theory. Organizations can be viewed as collections of explicit and implicit contracts, typically covering periods of longer duration than single transactions and generally characterized by the incomplete specification of all contingencies. Agency theory deals with the design of these contracts. In particular, it focusses on the relationship between principals and agents who exercise authority on their behalf.

Though we normally think of agency theory in terms of hierarchies with managers as principals and workers as agents, ironically one of the seminal works on agency theory considers just the opposite case. Armen Alchian and Harold Demsetz (1972) propose an explanation for the existence of firms based on the problem of shirking in team production. A situation is characterized by team production when it is costly to monitor the contributions made by each of the team members to the group output. Team members have an incentive to shirk because they each bear the full costs of their effort but only share a fraction of the output. Each team member would be better off if no one shirked than if everyone did. Realizing this, they may decide to hire a manager who can monitor their behavior to eliminate shirking. But how do they keep the manager from shirking? One solution is to write a contract that pays workers fixed amounts (wages) and gives rights to the residual of revenue over cost (profit) to the manager. Thus results a firm owned by the manager.
At about the same time, Stephen Ross (1973) introduced formal techniques for modelling principal-agent relationships. The problem facing the principal is to design a contract that specifies payment to the agent as a function of observable quantities such that the agent receives some minimal expected utility and the principal's expected utility is maximized by the agent's self-interested responses to the provisions of the contract. In the simplest formulation, the output produced is a function of the agent's effort and the realization of some random variable observable only by a risk-neutral agent. The optimal contract in such situations is often of the form of a franchise: the agent pays a fee to the principal and then keeps the entire value of the output.

One of the more thoroughly explored lines of development of the formal model, which leads to more commonly observed employment contracts, has involved consideration of the consequences of assuming that agents are more risk averse than principals (Stiglitz, 1974, 1975; Holmstrom, 1982). In such cases, optimal contracts typically shift some risk to the principal but as a consequence agents have lower effort levels than they would in the case of risk neutrality. Other extensions consider situations in which the principal can observe a signal correlated with the agent's effort (Holmstrom, 1979), multiple agents compete in tournaments (Nalebuff and Stiglitz, 1983), agents perform multiple tasks (Holmstrom and Milgrom, 1991), and agents are the principals for other agents (Laffont, 1990). For non-technical surveys of the literature using formal principal-agent models, see

Unfortunately, the formal principal-agent models often do not provide predictions that can be directly tested empirically (Holmstrom and Tirole, 1988: 105). Some related empirical work does offer practical insights into organizational design. Consider, for example, Charles Knoeber's (1989) study of the broiler industry that has been extremely successful in reducing the real price of chicken over the last 30 years. Large wholesalers, called integrators, typically employ tournaments among sets of independent growers. In each tournament growers receive similar allotments of chicks, feed, and medicine. The price they receive per pound of delivered chicken depends on how efficiently they use the inputs relative to others in the tournament. The use of tournaments in this industry is theoretically consistent with formal principal-agent models in that the growers face common random effects due to temperature, epidemics, and experimental changes in the genetic stock of chicks. It provides a way of reducing these systematic sources of risk to growers by generating information about their relative rather than just their absolute performances.

Though some examples of the use of tournaments in the public sector can be found (Fong, 1986; Church and Heumann, 1989), they might be more commonly employed to maintain competition (Weimer, 1992). Specific applications arise in the context of dual-sourcing for goods purchased by the
government (Riordan and Sappington, 1989; Anton and Yao, 1990) and competitive franchising (Hazlett, 1990). The general design concept for public managers to keep in mind is that they may be able to generate useful information about production costs through on-going tournaments among contractors, regional offices, or other groups that produce similar products.

Christopher Hall’s (1986) study of claiming races suggests another general design concept: inducing the production or revelation of information through the creation of appropriable value (Weimer, 1992). A high percentage of horse races at North American tracks are claiming races in which any horse can be purchased (claimed) for a set price. By setting purses sufficiently above the claim price, some owners will be induced to enter horses worth more than the claim. The possibility of the availability of these bargains induces other buyers to monitor horses, thereby increasing the chances that switched horses will be detected and reducing the chances that owners will hold back horses in prior races to manipulate odds. Claiming thus reassures bettors about the accuracy of public information about horses.

One type of application is in the enforcement of laws. The setting of "bounties" can be used to induce decentralized enforcement. Care must be taken, however, to align the incentives closely to goals or inappropriate enforcement may result. For example, because the "citizen suit" provisions of the Clean Water Act do not tie bounties to the magnitude of environmental damage, they appear not to be contributing to
social efficiency (Greve, 1989). A more worrying example is the provision in many state forfeiture laws allowing police departments to keep all, or a large fraction, of property they seize from people accused of drug-related crimes -- it creates not only an incentive to go after large asset holders rather than major offenders but also an invitation to corruption.

Another application is in the creation of rules that induce the revelation of information through forced transactions. Examples include: generating information about the costs of regulations by requiring firms to make estimates of how much a regulatory standard will cost and to pay that amount to any outside contractor who can alter equipment to meet the standard (Stonselie and Portney, 1983); and generating information about the value of natural resources for purposes of taxation by requiring owners to state a value and sell the resource at that value to any claimant. Though these particular applications are not necessarily desirable, they suggest how thinking explicitly about information can lead to consideration of organizational designs that might otherwise be overlooked.

A less formal, but empirically richer, strain of agency theory focuses on the effect of different structures of property rights for organizational efficiency. It was formulated in the seminal article on agency cost by Michael Jensen and William Meckling (1976). Agency costs include "the costs of structuring, monitoring, and bonding a set of contracts among agents with conflicting interests, plus the residual loss incurred because the cost of full enforcement of
contracts exceeds the benefits" (p. 305). Bonding refers to arrangements made by the agents to raise the costs of their not complying. For example, in the case of owners as principals and managers as agents, bonding might include the promise to have audits conducted by independent accountants or an agreement to hold stock that cannot be sold during the manager's tenure. (Blue ribbon advisory panels and independent internal investigation units may have a similar function for public managers.) The theory has been used to produce testable hypotheses about the relationship between monitoring costs and ownership structures in such industries as property and casualty insurance (Mayers and Smith, 1988).

Agency theory also has relevance to the issue of state versus private ownership of organizations. Politicians serve as the principals for state-owned organizations. In contrast to private owners, who can claim the residual of the organization, electoral competition and civil service laws generally preclude political principals from directly taking the residual as personal gain. Unlike private owners, individual politicians cannot transfer ownership to others. This nontransferability of public organizations discourages specialization in their ownership, so that less effective monitoring of management may result (De Alessi, 1983; Lott, 1987). Public agencies usually have multiple principals so that managers may receive conflicting and unstable political demands (Moe, 1984). Further, a principal-agent relationship exists between voters and politicians encouraging oversight to discover sensational instances of fraud, waste, and abuse that
will catch the attention of voters rather than more mundane monitoring of the efficiency of routine operations. These factors suggest that, other things being equal, privately-owned organizations will be more efficient than state-owned organizations.

A theoretically important "other thing" is the degree of competition that the organization faces in its product markets. One way to hold the degree of competition equal is to limit the comparison of ownership forms to organizations that sell their output in competitive markets. Doing so gives support to the hypothesis that private ownership is more efficient than public ownership (Boardman and Vining, 1989; Vining and Boardman, 1992). Differences in the effectiveness of oversight helps explain why public managers are generally given less discretion than their private counterparts.

Control can be accomplished through a combination of ex ante rules and ex post oversight (Thompson and Jones, 1986). When ex post monitoring is relatively less effective, we expect greater reliance on ex ante rules such as strict prohibitions against personal expropriation of organizational resources, line item budgets, and restrictions on patronage.

**Transaction cost theory.** As with agency theory, the focus of transaction cost theory is the contract (Williamson, 1985). But unlike agency theory, which usually treats agents as simply reacting to contracts designed by principals, transaction cost theory views the parties attempting to engage in exchange (a transaction) as contracting both the terms of the exchange and their execution. The contracting process is
costly. It includes not only the structuring, monitoring, bonding, and residual loss costs of agency theory, but also the costs of negotiation. At one level, transaction cost theory considers the nature of specific types of transactions. At a broader level, it is concerned with which institutional arrangements best facilitate and economize which kinds of transactions (Williamson, 1985; Maser, 1986; Heckathorn and Maser, 1987; Bryson and Ring, 1990).

Douglas Heckathorn and Steven Maser (1987) identify three important problems that contribute to the costs of contracting. First, a "cooperation problem" arises when a contract could offer all parties gain relative to the absence of a contract. To achieve a mutually beneficial contract, however, the parties must expend transaction resources that include "(1) the prerequisites for negotiating, for example, communication channels with which to bargain, independent sources of pertinent information with which to assess competing claims, and information processing capacities; and (2) the prerequisites for enforcing contracts, for instance, the ability to monitor compliance and to sanction noncompliance" (p. 76). Second, a "division problem" arises when different mutually beneficial contracts offer different relative gains. The parties may expend bargaining resources and effort attempting to secure more favorable contracts for themselves. Third, a "defection problem" arises when noncompliance is in the self-interest of any of the parties. Because it is impossible to anticipate all contingencies in the writing of contracts, parties sometimes have opportunities
to withhold contributions without being subjected to anticipated sanctions or to force re-negotiation of terms through threats of non-compliance.  

Transactions often involve investments by one or more of the parties in specific assets, such as specialized equipment or knowledge, that have much lower value in uses other than as part of the transaction. Parties who invest in specific assets are especially vulnerable to threats of non-compliance. Therefore, they may be unwilling to enter into contracts unless they receive credible commitments that other parties will not behave opportunistically in exploiting their vulnerability. A central question of political economy is how governments can make credible commitments to convince people that their investments will not be expropriated (Rodrik and Zeckhauser, 1988; North and Weingast, 1989; Root, 1989; Riker and Weimer, 1993) and that the money supply will not be debased (Blackburn and Christensen, 1989). But the problem of credible commitment is pervasive at all levels of organization.

Return to the problem of establishing fungible budgets for public managers. The expenditure control budget advocated by Osborne and Gaebler (1992: 119-122) allows managers to carry unspent funds over from one fiscal period to the next.  

Transaction cost theory suggests that we should be skeptical about its use in circumstances in which the manager and the central budget office do not already have a trusting relationship. The reason is that the manager must anticipate the possibility that the budget office will expropriate the
savings by reducing the base budget in the next period. If this happens, the manager would not only lose the discretionary use of the savings but she would also have revealed information about the true costs of delivering output that could weaken her bargaining position in the future. What appears to be needed is some mechanism that makes the commitment not to expropriate the savings credible. One possibility is to create a sort of "Swiss bank" that conceals information about savings from the budget office (Weimer, 1992).

The risk of opportunism has obvious relevance to the issue of privatization. Competition may be very intense when a contract for provision of some service is initially put out for bids. Once a firm has won the bid, its specific investments in knowledge about producing the service create a barrier to entry that makes the contract less contestable in the future. If loss or degradation of the service is particularly costly to public officials, then the firm will enjoy a favorable bargaining position for renegotiating contract terms. Of course, the government can act opportunistically with respect to employees and suppliers who make organizationally specific investments. Civil service tenure is one way for the government to make a credible commitment that it will not exploit workers who have invested in developing expertise with little value outside the organization.

One of the specific assets of firms and units of government is the trust they engender by virtue of their track
records in supplying goods and services. By demonstrating a
general reliability they create a barrier to contestability
that advantages them in negotiating the terms of contracts
which allow them to operate above minimum cost. Substitute
monitoring capability for trust may contribute to more
efficient supply. Ironically, therefore, one way to make
privatization more effective may be to invest in the core
analytical and managerial functions of public organizations
(Vining and Weimer, 1990).

Social Choice Theory and Intraorganizational Decision Making

Social choice theory considers the relationship between
individual preferences and social preferences. Arrow's
General Possibility Theorem raises a fundamental limitation to
collective choice: no social choice rule can simultaneously
satisfy minimal conditions of fairness (there is no
dictatorship; all transitive preference orderings for
individuals are permitted; if one alternative if preferred by
every individual over another, then it is socially preferred;
the choice rule is not arbitrary in that it will consistently
produce the same social ordering from the same individual
orderings) and simultaneously guarantee a transitive social
ordering of alternatives (Arrow, 1963). Most applications of
Arrow's theorem concern the characteristics of voting systems,
though it applies to any social choice rule. In particular,
it applies to decentralized decision making within
organizations.

The Liberal Paradox of Amartya Sen (1970), which replaces
the condition of non-dictatorship with one of minimal
delegation, gives a result similar to Arrow's when applied to
organizational decision making. In particular, if there are
at least two individuals or organizational subunits that each
have the authority to rank order at least one pair of
alternatives, then no decision rule can guarantee both Pareto
efficiency and transitivity of organizational choices for all
combinations of individual preferences. This result can be
seen as a fundamental theoretical limit to organizational
performance (Hammond and Miller, 1985; Miller, 1992).

Pareto efficiency and transitivity at the level of the
organization can be achieved by abandoning the condition of
unrestricted preferences. One way to do this is to establish
a clear corporate culture that leads, through selective
recruitment, to members with homogeneous preferences. Doing
so, however, may be at the cost of excluding some types of
expertise that are correlated with excluded preference
profiles. For example, excluding economists from a
substantive line agency may make for a more homogeneous
corporate culture but deprive the agency of expertise valuable
in some circumstances. Further, as Thomas Hammond and Gary
Miller (1985) point out, the fundamental limitation may
reappear when decision-making authority in a government is
distributed across agencies with distinct corporate cultures.

[Figure 1 about here]

The simple spatial voting model presented in Figure 1
graphically illustrates the fundamental problem of social
choice and the potential role of institutional rules in
Figure 1
Disequilibrium and Structurally Induced Equilibrium in a Spatial Model
overcoming it. The horizontal axis represents a continuous policy dimension, say the size of the social welfare program budget. The vertical axis represents a second continuous policy dimension, say the size of the defense budget. The points labelled I₁, I₂, and I₃ represent the ideal, or most preferred, points for each of three legislators. Assume that each legislator prefers points that are closer rather than further from his or her ideal point. Imagine that the status quo point is exactly the ideal point of legislator two, I₂. What do we expect to happen if a policy combination (x, y) is to be chosen by a majority rule vote?

The circular arc centered at I₁ and passing through the status quo point is an "indifference curve" for legislator one in the sense that it represents all the points that she finds equally satisfactory to the status quo. Legislator one prefers any point inside the arc because it is closer to her ideal point. The other circle arc similarly represents points of indifference to the status quo for legislator three. The intersection of these arcs, the shaded area labelled W₁₂, represents all the points that both legislator one and legislator two prefer to the status quo. Thus, if each legislator voters his or her sincere preferences, then any proposal within W₁₂ would beat the status quo two votes to one.

The fundamental social choice problem arises because, through a similar procedure, we can find proposals that beat the new status quo. There is no equilibrium because any policy can be beaten in a majority rule vote by alternatives. Indeed, Richard McKelvey (1976) shows that if one of the
legislators has control over the agenda, he or she can, by successively proposing alternatives to the previous winning proposal, eventually secure any point in the policy space including his or her ideal point. Thus, there is either no equilibrium or one induced by giving control of the agenda to one legislator.

The institution of an "agenda setter" is one way to induce an equilibrium. Kenneth Shepsle (1979) began a line of research that explores the various institutional arrangements that can induce an equilibrium. For example, consider the delegation of authority to committees such that each one has complete authority over one of the policy dimensions. In Figure 1, the points $x_1$, $x_2$, and $x_3$ represent the legislators' ideal points on the single dimension decided by a committee. In this case, the Median Voter Theorem gives $x_2$ as the equilibrium. Similarly, the committee with authority over the other policy dimension would select $y_2$ by majority rule vote. An equilibrium corresponding to $I_2$ would emerge as long as the committee structure guaranteed that only votes involving changes in one dimension at a time occurred.\[11\]

Spatial models provide a framework for thinking systematically about political strategy. William Riker (1966) describes Heresthetics, the art of political manipulation, in terms of agenda control, strategic voting (voting against one's true preferences to obtain a more favorable outcome in future votes), and the manipulation of policy dimensions. Heresthetics can help public managers find strategies for getting more favorable results from the various political
arenas in which they operate. It can also contribute to more
effective organizational design.

Consider, for example, the recent success that the Department of Defense has had in closing unnecessary military bases (Weimer, 1992). Between 1976 and 1989 virtually no military bases were closed. But in 1988, Congress delegated authority for formulating the set of bases to be closed to a commission. Congress further imposed a closed rule (no amendments are permitted) on the recommendations of commission and exempted the proposed closures from environmental impact statement requirements that could be used to move the decisions from the legislative to the judicial arena. As a result of these institutional changes, bases are now being closed.

Game-Theoretic Models of Institutions

In common usage, institutions generally refer to the rules of society, whether formal or informal, that constrain individual behavior. But why do people obey the rules when violating them may be in their immediate interests? Returning to Figure 1, for instance, in the case of committee jurisdiction over policy dimensions, why is it that legislators one and three do not vote to suspend the rules so as to be able to propose alternatives they find desirable to the status quo? Resorting to some external authority, such as judicial interpretation of a constitution, gives only a partial answer because it raises the question of why the external authority is accepted. The most general theory of
institutions should explain why a set of rules is constraining without resort to some external authority. In other words, the rules comprising the institution should be self-enforcing in the sense that individuals voluntarily accept them.

The elements of an economic theory of institutions that meets these requirements were introduced by Andrew Schotter (1981), who views institutions, including such informal rules as conventions and norms, as equilibria in repeated noncooperative games. A social situation is represented as a one-stage game involving either a cooperation or coordination problem so that the equilibrium strategies of the players lead to an outcome that is Pareto inefficient. If this stage game is repeated indefinitely, however, then, with appropriate assumptions about the knowledge and discount rates of the players, equilibria can result that involve varying degrees of cooperation, often including ones that achieve Pareto efficiency.\textsuperscript{12}

By far the most commonly employed stage game is the well known prisoners' dilemma, characterized by an equilibrium involving "defection" by both players whereas "cooperation" by both players would be Pareto efficient. If the game is repeated such that the players do not know the last period of play with certainty, then there may be many possible equilibria that lead to Pareto efficient levels of cooperation depending on their discount rates, the probability that the game continues from one period to the next, and the payoff structure of the stage game. For example, plausible assumptions often make mutual play of the well known "tit-for-
"tat" strategy (cooperate in the first period, then play the stage-game strategy that your opponent played in the previous period) an equilibrium that results in continuous cooperation.

Though most of this literature is at least a step away from modelling real institutions, one exceptional work shows the possibilities for application. Paul Milgrom, Douglass North, and Barry Weingast (1990) consider the problem of trade in the Middle Ages, which was characterized by infrequent interactions among a large number of traders. They show how a cooperative equilibrium involving a third party who keeps records about contract compliance can result. The record keeper corresponds closely to the historical institution of the law merchant.

David Kreps (1990) and Gary Miller (1992) make an important connection between the economic theory of institutions and leadership. They note that repeated games generally have multiple equilibria; indeed, the so-called "folk theorem" states that repeated games can even have an infinite number of equilibria. If many different equilibria are possible, then a coordination problem arises: How can the players know which strategies to play so that one of the more desirable equilibria results? An effective leader provides a vision of one of the desirable equilibria and communicates it to the members of the organization. She thus facilitates effective coordination by giving members consistent expectations about each other's behavior. Symbols may play a role in creating the shared expectations; so too might the personal interaction achieved through "management by walking
around."

The importance of the credibility of managerial commitments becomes apparent in viewing organizations as repeated games. Members must anticipate not only that if they make contributions to the collective endeavor that others will as well, but that they will not be disadvantaged in future plays because they have revealed information that leaves them vulnerable to exploitation. Miller (1992), in work co-authored with Jack Knott, illustrates the importance of credible commitment through an analysis of piece-rate incentives, a contract form favored more by economic theory than actual use. Work groups, fearing a ratcheting down of piece rates and potential layoffs, generally create norms to limit output. The rare organization that effectively uses piece-rates probably does so by convincing workers that they have job security and by giving them a role in the setting of rates. A corporate culture consisting of a set of norms about how workers will be treated, may be valuable in giving credibility to the commitments by individual managers whose tenure is uncertain.

Corporate culture can also be viewed in the context of incomplete contracts (Kreps, 1990). It communicates general principles for dealing with unanticipated contingencies and provides a basis for evaluating performance ex post. Maintaining a generally valuable corporate culture may explain what otherwise appears as inappropriate managerial rigidity: support for its principles, even when they lead to specific outcomes that are not in the best interests of the involved
Table 1

Overview of Economic Concepts of Potential Use to Public Management Research

<table>
<thead>
<tr>
<th>Economic Approach</th>
<th>Central Notion</th>
<th>Area of Application</th>
</tr>
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<tbody>
<tr>
<td>Neoclassical Welfare Economics</td>
<td>Market failures occur when violations of the assumptions of the competitive</td>
<td>Administrative rules and incentives to increase efficiency of intra-organizational</td>
</tr>
<tr>
<td></td>
<td>framework lead to equilibria that are not Pareto efficient</td>
<td>markets: solving organizational public good, common property resource, and natural</td>
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<td></td>
<td></td>
<td>monopoly problems</td>
</tr>
<tr>
<td>Neoinstitutional Economics:</td>
<td>Contracts structure the relationship between principals and agents to minimize</td>
<td>Organizational design: creating incentives for the production and revelation of</td>
</tr>
<tr>
<td>Agency Theory</td>
<td>agency cost, which is the sum of the costs of structuring, monitoring, and</td>
<td>information that improve the efficiency of intra- and inter-organizational transactions</td>
</tr>
<tr>
<td></td>
<td>bonding contracts and the loss from residual discretion</td>
<td></td>
</tr>
<tr>
<td>Neoinstitutional Economics:</td>
<td>Institutional arrangements economize on transaction cost: the sum of pre-contract</td>
<td>Organizational design: creating hostages, bonds, and other mechanisms for generating</td>
</tr>
<tr>
<td>Transaction Cost Theory</td>
<td>bargaining and post-contract compliance (opportunism) costs</td>
<td>credible commitment and discouraging opportunism</td>
</tr>
<tr>
<td>Social Choice Theory</td>
<td>Social choice rules are prone to disequilibrium; institutional structure may</td>
<td>Organizational design and political strategy: obtaining substantive outcomes through</td>
</tr>
<tr>
<td></td>
<td>induce equilibrium</td>
<td>the manipulation of procedural rules</td>
</tr>
<tr>
<td>Economic Theory of Institutions</td>
<td>Institutions are equilibria in repeated games; equilibria are rarely unique</td>
<td>Corporate culture and leadership: creating focal points for more efficient organizational equilibria</td>
</tr>
</tbody>
</table>


parties in any particular situation, may make their continued application more credible. This view of corporate culture raises a number of interesting design questions. For example, if it is important for an organization to have a single corporate culture, then should the substantive jurisdictions of public organizations be limited so that the principles comprising their corporate cultures will be appropriate for dealing with the types of unanticipated consequences they are likely to face?

Though the practical consequences of interpreting leadership and corporate culture in terms of repeated games are not yet clear, we think that this approach provides a promising conceptual foundation for generalizing about these important but elusive phenomena.

[Table 1 about here]

Conclusion

A variety of economic literatures, summarized in Table 1, inform organizational design. The market failure framework, so central to welfare economics, can be easily applied to diagnose, and perhaps remedy, commonly encountered organizational problems. The neoinstitutional literatures focussing on agency and transaction costs bring theory a step closer to providing practical concepts for organizational design. The social choice and institutional theory literatures offer deep conceptual foundations not only for organizational design but also for some important aspects of the executive function. As these literatures are continuing to grow, they have prospects for offering more to public
management in the future.
Endnotes

1. Relaxing these assumptions has both positive and normative implications: it allows analysts to make predictions about the consequences of differences in institutional arrangements; it also brings into question the interpretation of efficiency in neoclassical welfare theory by treating institutional arrangements as a matter of choice rather than taking them as given (Bromley, 1989).

2. For a discussion of information asymmetry as a market failure, see Vining and Weimer (1988).

3. Neoinstitutional economics can be thought of as a subset of what has been called the "new institutional economics." The latter includes models that relax the assumption of individual rationality central to neoclassical economic theory. For example, Oliver Williamson (1985) conceives of transaction cost theory as broadly including bounded rationality and therefore a part of the new institutional economics. In this essay, because of our definition of economics, we limit our attention to that part of transaction cost theory that preserves the assumption of individual rationality.

4. Empirical research in four areas -- corporate control, vertical integration, managerial compensation, and organizational structure of corporations -- has been "mostly confirmatory." See Hesterly, Liebeskind, and Zenger (1990)
for a review.

5. In this framework, management involves monitoring the execution of contracts and providing appropriate direction to organizational members when unspecified contingencies arise.

6. Elements of the model were introduced by Robert Wilson (1968) in the theory of syndicates and by Michael Spence and Richard Zeckhauser (1971) in their article on insurance and information.

7. We are reminded of the story of the men in a balloon who had become lost. They shouted to a man below: "Where are we?" He responded: "In a balloon." They concluded he must be an economist because he was precise but unhelpful. So far, the formal principal-agent literature has been more valuable in providing precise specifications of a variety of information asymmetries, such as hidden information and hidden action, than in informing practical issues of design.

8. The relative efficiency of giving residual rights to the various parties in situations of incomplete contracts provides an explanation for ownership of assets in organizations. See Klein, Crawford, and Alchian (1978) and Grossman and Hart (1986).

9. Robert Biller (1976) advocated the establishment of "savings banks" to allow carry-over of some fraction of
unspent funds to avoid the end of period rush to spend the budget.

10. For an excellent overview of spatial models, see Krehbiel (1988).

11. Viewing one of the committees as an agency, say controlling the policy dimension corresponding to the speed of implementation, provides a way of thinking about the nature and stability of administrative discretion (see Hill, 1985).

12. For excellent overviews of this approach to the study of institutions, see Calvert (1995a, 1995b).
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