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New Insights into Hierarchical Solutions to Managerial Dilemmas

Managerial Dilemmas : The Political Economy of Hierarchy. By Gary Miller. Cambridge University Press, 1992.

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1. Introduction : Bridging Two Literature on Hierarchy

In this innovative book, Gary Miller tries to bridge the gap between traditional *organizational theory* (that is, theory on organizational behavior based in psychology, sociology, and political science) and *organizational economics* to provide new insights into the structure of hierarchies. The former stresses the importance of managerial leadership and cooperation among employees, while the latter focuses on the engineering of incentive systems that will induce efficiency, and profitability, by rewarding worker self-interest.

The perspective of *organizational economics* views organizational control as mechanistic problem of designing incentive systems and sanctions so that self-interested and intrinsically unmotivated employees will find it in their own interest to work toward the organization's goals. As in Frederick Taylor's (1895) viewpoint, management is seen as shaping subordinate behavior through the correct system of rewards and punishments. In addition, economics

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contributes to this literature the "principal-agency theory." The principal's job is to anticipate the rational responses of agents and to design a set of incentives such that the agents as rational maximizing individuals find it in their own interests to take the best possible set of actions(e.g., to limit risk taking or costly effort). In this approach, leadership has a negligible role because the manager's goal is essentially the engineering of the organizational machine.

In contrast, the other perspective, traditional *organizational theory* centered primarily in political science and organizational psychology, regards the manager's primary job to be one of leadership — that is, inspiring a willingness to cooperate, to take risks, to innovate, to go beyond the level of effort that a narrow, self-interested analysis of the incentives would summon. In his book, *The Functions of the Executive* (1938), Chester Barnard regards organizations as fundamentally cooperative groups of individuals, and the executive chief's job is not so much to shape the self-interested behavior of subordinates as to inspire them to transcend self-interest.

The first two-thirds of the book argues that a narrow, neoclassical version for organizational economics self-destructs. While the economic rationale for the existence of hierarchy is based on its capacity to correct market failure, the internal logic of self-interested behavior by both subordinates and superiors cannot be shown to sustain a vision of hierarchy as a smoothly running, efficient machine. On the contrary, results described in the literature of social choice theory, principal-agency theory, and incentive compatibility reveal built-in logical inconsistencies that make it impossible to design an incentive/control system that simultaneously disciplines the self-interested behavior of both superiors and subordinates. For

every incentive system that has other desirable characteristics, there will always be an incentive for some individuals to 'shirk' — to pursue a narrower definition of interest that results in equilibrium outcomes that everyone in the organization can recognize as deficient.

Miller submits that those organizations whose managers can inspire members to transcend short-term self-interest will always have a competitive efficiency advantage. The final third of this book argues that modern game theory provides a theoretical structure for a more rigorous analysis of cooperation and political leadership in hierarchies. Miller argues that in the context of the analysis of repeated games, the traditional organic concepts of cooperation, culture, trust, commitment, and leadership take on richer and vivid meanings.

2. The Political Economy of Hierarchy

The main theme in this book, which consists of three parts, is the tension between individual self-interest and group efficiency in teams (that is, 'social dilemma') and its hierarchical solutions. The social dilemma has been seen as a central problem in the literature on organizational behavior since the work of Chester Barnard (1938) as well as exactly the central problem identified by Alchian and Demsetz (1972). Being concerned with the role of incentives (for superiors and subordinates), Miller maintains that a hierarchy clearly alters incentives and these alterations must be seen as efficiency enhancing. Also, Miller indicates that hierarchies generate profits in excess of what a nonhierarchical team would be able to generate and thus the distribution of those excess profits becomes a major

bargaining problem. His political-economic analysis on mechanism design points to the desirability of a hierarchical coercive authority if two mutually dependent sides bargain in the context of information asymmetries.

1) Why Have Hierarchy? : The Creation of Political Authority

Part I of this book confronts the issue of political authority in a firm. In Chapter 1, Miller agrees with organizational economists who state that the reason for the creation of a hierarchical firm is the failure of market efficiency. As Coase (1937) pointed out, the failure of market actors to contract efficiently may be attributed to the different transaction costs of negotiating, monitoring, and enforcing contracts with factor inputs. Miller introduces three reasons for high transaction costs and market failure: 'information asymmetry'(Williamson, 1975), 'team production externalities'(Alchian and Demsetz, 1972), and 'market power'(Klein, Crawford, and Alchian, 1978).

First, in the presence of an information asymmetry — in the situation where one side is deprived of vital information available to another side —, the consumer and producer of labor may fail to achieve what would otherwise be a mutually advantageous market exchange; hierarchy may be the best way to realize the potential benefits of the transactions. Second, in a team production process, each person's level of productivity may be determined by other actors' efforts, which can provide opportunities for individual shirking and can make it especially costly to reach a satisfactory contract for the efforts of any one member or all members of such a team production technology. Thus, 'team goods' may not be produced at all without cooperative action among producers, as

'public goods' may not be consumed at all without cooperative group actions among consumers; efficiency in either case requires coordinated — even hierarchical — interaction. Third, in a 'thin' market where market power is acquired or monopolized by a small number of participants, actors are not simply price-takers as in the competitive market, and one or both parties may be vulnerable to what Williamson calls 'opportunism' — self-serving misrepresentation of information (Williamson, 1975; Williamson and Ouchi, 1981), resulting in an inefficient underallocation of resources to monopoly-produced goods.

Under these factors, a competitive market will yield an inefficient allocation of resources; as Coase (1960) demonstrated, these allocative inefficiencies could be corrected by contracting, assuming clear specification of property rights and costless negotiation and enforcement of contracts. In the presence of these (maybe, large) transaction costs, however, reliance on voluntaristic negotiations of efficient contracts could be disastrously expensive. In Chapter 2, Miller demonstrates that the same factors that cause markets to fail can limit the bargaining to an efficient contract — that is, 'bargaining failure.'[1] In situations of high mutual interdependence and information asymmetry, he argues that it is better to have a hierarchical institution that partakes of political authority to impose solutions without the inefficiencies of constant bargaining among participants. He adds that employees submit to this authority because they realize that they will be better off in a system that has the authority to impose outcomes on everyone. In short, Miller indicates that in the presence of information asymmetry, externalities, and market power, hierarchical authority can be an efficiency-enhancing institutional feature.

In Chapter 3, Miller raises the possibility that democratic voting may be used to reach authoritative group decisions. Also, he indicates that the problems that generate market failure and bargaining failure can be shown to lead to systematic failures in voting processes—that is, 'voting failure.' However, he emphasizes that the literature on social choice theory(e.g., Arrow's *impossibility theorem*[2]) argues for a rather extreme centralization of this coercive authority if the firm is to meet certain minimal conditions of rational group decision-making.

Miller concludes that, at least in some circumstances, groups of individuals are faced with a dilemma. Most people would prefer the voluntaristic or participatory exchange of competitive markets, bargained contracts, or voting democracies. However, these transaction arenas may result in large allocative inefficiencies in the presence of information asymmetry, externalities, or market power. Allocative efficiency and reduction in the transaction costs of negotiating and monitoring contracts may require that some persons in the group receive an asymmetric and incompletely defined grant of authority to direct the activities of other members. Sometimes, the result is the dissolution of partnership contracts based on bargaining and voting among partners and the imposition of strict hierarchical authority. But how is such an authority to be established? Part I ends with a discussion of the means by which a firm can use long-term contracts to provide a barrier against the voluntarism of competitive markets.

2) Managerial Dilemmas : The Use of Political Authority

In Part II, Miller asks how well the hierarchical firm can correct for the incentive problems generated by information asymmetry,

monopoly, and team production externalities. Hierarchy can at times improve on market inefficiency or the failure of voluntary cooperative action. But the same factors that promote inefficiency (in market processes, bargaining, and voting institutions) in the absence of hierarchy also present the managers of hierarchical organizations with day-to-day dilemmas that endanger the health and well-being of the hierarchies they control. That is, the dilemma for managers at the top of hierarchies who recognize their own informational deficiency is to use the expertise of multiple subordinates without allowing the organization to fall into disarray.

In Chapter 4, Miller suggests that even in the context of hierarchy with more than one subordinate unit, the pulling and tugging of subordinates with informational advantages relative to other actors can result in Pareto inefficiencies and inconsistencies. If managers want any degree of decentralization in hierarchies, they cannot guarantee that stable choices will be efficient, or that efficient choices will be stable. This notion of 'horizontal dilemma' is concisely captured in social choice theory by the 'Sen Paradox,' which says that any organization that delegates decision-making authority to more than one subset of individuals must suffer from either incoherent behavior or inefficiency for some combinations of individual preferences (Sen 1970, 1976, 1983, 1986). As a result, organizations use selection and socialization to screen out individuals with problematic preferences. However, these techniques are insufficient by themselves to eliminate the problematic preference profiles, and 'adverse selection' problems make it difficult to measure the most important characteristics of potential recruits. Thus, Miller contends that an ideal incentive system is needed to shape and mold the natural preferences of risk-averse or

lazy members and to control the centrifugal tendencies of autonomous subunits. That is, such incentive system will encour- age organizational specialists to use their knowledge in the coherent pursuit of organizational goals.

In Chapter 5, Miller indicates that self-interested behavior by employees in responding to incentives, and by employees in creating incentive systems, leads to inefficient firm outcomes. Even though managers may have the expertise of time-and-study at their disposal, the self-interested behavior of employees and managers under the institution of the piece-rate contract leaves them far short of the potential efficiency gains from hierarchy. Both subordinates and superiors could be better off if subordinates worked harder and superiors fixed higher piece rates than either side has an incentive to do its own. However, self-interested behavior in the hierarchy leads to a 'vertical social dilemma.'[3]

In Chapters 6 and 7, while Miller recognizes that the presence of competitive market forces drives hierarchies to realize potential efficiency gains, he also explores the logical limitations on the ability of hierarchies to realize those efficiency gains through manipulations of formal contractual and incentive systems. While a great many contractual forms and incentive systems have been proposed, the best economic analysis argues that information asymmetry, monopolistic behavior by employers in labor markets, and team production externalities combine to confound the search for hierarchical efficiency in incentives. Managers cannot afford to pay risk-averse employees the output-tied bonuses that would eliminate any incentive for 'moral hazard' under information asymmetry. The mutual shirking in team production is also inefficient. Miller argues that Holmstrom's (1982) solution to the

problem of such 'hidden actions' within teams—a 'residual-generating joint forcing contract'[4] —would eliminate the employee incentives for shirking but would in fact create incentives for the managers of the residual to sabotage the efficient scheme. In addition, managers require private cost and benefit information from the subordinates themselves in order to decide what outcomes or goals they want to elicit from the forcing contract, but the problem is that such information is generally hidden from them. Furthermore, two related problems limit any ideal solution (through an efficient incentive system) to the 'hidden information' problem. First, the mechanisms that enable firms to elicit hidden information from subordinates require substantial incentive payments to the subordinates. Second, when a manager (contrary to self-interest) impose an incentive system to obtain (hidden) information from subordinates, she has already deprived herself of the tools necessary to use that information effectively (Miller and Murrell, 1981). The strategic misrepresentation of hidden information by subordinates is itself the most profound obstacle to effective hierarchical performance.

The specter of hierarchical failure is a day-to-day concern of business managers, a concern for which creative incentive system could reshape individual preferences sufficiently to reconcile individual self-interest and group efficiency. The failure of 'internal' incentive systems (insulated from market forces) is no news to students of socialist economies. In Chapter 8, Miller suggests that it is the 'external' incentives posed by the market economy in which hierarchical firms are embedded that effectively discipline managers and employees. If that is the case, it appears that, paradoxically, markets correct hierarchical failure. Miller alleges

that if hierarchies are governed by the invisible hand, managers need neither expect nor demand deviations from self-interested behavior. And if the net result of self-interested responses to imperfect contracts is some degree of inefficiency, there will be efficiency gains to be realized by those managers who seek the benefits of a cooperative solution to a social dilemma — by means outside of incentive design and market discipline. Indeed, markets themselves may reward those managers who find ways to elicit nonopportunistic, cooperative solutions. Miller argues that managers' attempts may go beyond normal economics — they may use psychological and political means to induce self-interested individuals to cooperate.

3) Cooperation and Leadership : the Deployment of Political Authority

The pressures of the marketplace reward those hierarchies than can achieve the efficient gains that self-interested behavior under any incentive system leaves unrealized. In Part III, Miller maintains that if narrow self-interested behavior under formal contractual systems cannot realize all potential efficiency gains, there must be a competitive advantage for hierarchies that can induce non-self-interested intrafirm cooperation.[5] Miller indicates that firms with apparently identical formal contracts, organizational structures, and incentive schemes may perform quite differently, depending on the nature of individual expectations and beliefs, social norms, and leadership. Miller insists that while any formal incentive system leaves room for self-interested behavior leading to persistent efficiency losses, a hierarchy that can induce the right kind of cooperation — defined as voluntary deviations from self- interested behavior — will have an important competitive edge over other

firms. Thereby, Miller emphasizes that the firm must be regarded as an arena for political leadership, ideology, and goal setting rather than simply for managerial manipulation of economic incentives and formal structures.

In Chapter 9, Miller contends that the 'folk theorem' of repeated game theory can make an important contribution to the analysis of cooperative behavior in the hierarchy. The theorem demonstrates that under certain conditions rational individuals in long-term, interactive groups like the Kalmar work teams[6] can achieve cooperative solutions to social dilemmas. Indeed, many aspects of the Kalmar plant's self-managed teams can be understood only in terms of eliciting long-term cooperation rather than of managing short-term self-interest. Miller asserts that managers need to inspire among their employees a willingness to cooperate and trust one another by setting an example of concern and trustworthiness themselves. It is because information asymmetries (in the form of monitoring limitations) and production externalities (in the form of high levels of synergy among subordinates) make it impossible for managers to realize the full efficiency potential of team production processes through the manipulation of short-term economic incentives alone. Cooperation in a repeated social dilemma can be sustained by rational actors as long as the probability of continuation is sufficiently high and as long as all the actors have mutually consistent expectations about the others' intentions to reciprocate. Hence, the rational economic manager needs to be concerned with the same issues of interpersonal communication, trust, and loyalty that have been traditional concerns of organizational behaviorists. Here, Miller tries to soften the sharp distinctions between organizational economics and organizational behavior.

However, folk theorem also demonstrates that, in any repeated Prisoners' Dilemma game, there are an infinite number of equilibria by rational, self-interested actors. Hence, achieving a particular equilibrium outcome requires the solution of an immense coordination problem. In Chapter 10, Miller claims that the solution to this coordination problem requires the construction of mutually reinforcing psychological expectations (among all the players involved) about when cooperation and teamwork are appropriate and how they are to be reciprocated and rewarded in the long-run. Thus, the task of managers requires social and political skills to induce norms of cooperation and trust among employees rather than technocratic efforts that rely on formal incentive system only. This provides a game-theoretic interpre- tation of concepts such as norms and organizational culture that are normally regarded as being squarely in the behavioral, rather than the economic, tradition of analysis. Hence, Miller tries to bridge the gap between organizational behavior and organizational economics, asserting that as long as the participants have a shared expectation of reciprocated cooperation in the long term, then cooperation can be sustainable as a long-run equilibrium by rational, self-interested players.

In Chapter 11, Miller discusses the means by which organizational leaders in hierarchies address the coordination problem indicated by the folk theorem. It is rational for employees to use cooperative strategies in a repeated social dilemma only if they are convinced that the other players (that is, hierarchical superiors) are themselves committed to the appropriate cooperative plays. This means that hierarchical leaders' hoping to focus organizational expectations on a cooperative long-term equilibrium must find a

way to commit themselves credibly to the appropriate behaviors. Central to this signaling problem is the appropriate allocation of political responsibilities, rules of the game, and property rights that provide the long-run incentives for investment within the hierarchical organization. This formation of cooperative organizational culture by the hierarchical leader is done through a set of activities that have traditionally been in the realm of politics rather than economics: communications, exhortation, and symbolic position taking. Miller offers quite a different style of the appropriate political leadership to reach one efficient outcome in repeated social dilemmas by projecting trustworthiness and/or a constitutional constraint on political authority of hierarchical superiors, while economists since Alchian and Demsetz have defined the manager's role as the specialized monitoring and motivation of members of a team production process. From this perspective, Miller maintains that the advantage of hierarchy over market is that it can be a means for creating common knowledge and cooperative work norms. Miller concludes that the enforce- ment of social norms of reciprocated cooperation, the design of a system of political representation, and the commitment to a system of property rights for employees can solve coordination problems within hierarchies and provide much more efficient solutions to the inevitable social dilemmas within hierarchies.

3. A Small Critique

In this book, Miller revives the roles of hierarchical managers which traditional organizational theory and organizational economics have overlooked. Miller asserts that in the presence of marked

information asymmetries and team production externality, there is no ideal incentive system that would lead subordinates to find it in their interest to share private information and to make costly efforts to achieve the organization's goals. Then, individuals in hierarchies inevitably find themselves in situations in which their own self-interest is clearly in conflict with organizational efficiency, which is called social dilemma. Rather than relying on a mechanical incentive system to align individual interest and group efficiency, Miller claims that hierarchical managers must create appropriate psychological expectations of cooperation, pay the startup costs for appropriate cooperation norms, kick-start the secondary norms that will be the primary enforcers of cooperation norms, and create institutions that will credibly commit the leader to the nonexploitation of employee ownership rights in the organization. However, what if hierarchical managers themselves 'shirk' instead of 'work' in regard of these political leadership roles? Miller's model of hierarchy does not guarantee that hierarchical, political superiors would not shirk in forming cooperative organizational culture and reallocating political and property rights within the hierarchy. Hierarchies might be detrimental in situations where the creation of cooperative norms depends on the personal characteristics and political skills of top people.

In addition, Miller supports his model of hierarchy by claiming that the analysis of repeated game theory has demonstrated that sustainable cooperation among rational individuals is one among many logical possibilities and that the efficient solution to the coordination of such sustainable equilibria involves the reestablishment of 'organic' rather than 'mechanical' hierarchy. Throughout this book, however, it is business companies or private organizations

that Miller employed and assumed in these analyses. What happens in the public sector where there are no profits to share and no appropriate means to measure efficiency or accomplishment? Miller's model of hierarchy might be inappropriate to be applied to public organizations or governmental bureaucracies whose goals or efficiencies often defy definitions, measurements, and comparisons and whose hierarchical superiors are not given enough discretion or autonomy to accomplish the roles or duties that Miller suggests hierarchical managers need to solve social dilemmas. The problem of generalization remains in his analysis on the political economy of hierarchy.

■ Notes

1) That is to say, when negotiators have both the capacity to veto contracts that leave them individually worse off and the ability to misrepresent their private valuations of the negotiated commodity, there can be no guarantee that voluntary negotiation will achieve efficient outcomes.
2) In 1951, Kenneth Arrow stipulated a set of desirable characteristics for social choice. He then demonstrated conclusively that "no social choice function can simultaneously guarantee all of these characteristics" — that is, "impossibility theorem." This means that every social organization, including markets, states, and hierarchies, exists in a world of trade-offs. In order to ensure one desirable characteristic of social choice, an organization must give up other characteristics.
3) The piece-rate contract pays the employee an amount based on the number of units, or pieces, the employee produces. The theory of the piece-rate system is that it should align the self-interest of employees with organization goals. Miller asserts that the pierce-rate system seems to perform that function only partially, at best, and thus the use of individual incentives of this sort seems only to dramatize and enhance the underlying conflict of interests in hierarchy. Theoretically, there is very good reason for this — the piece-rate system is a vertical manifestation of the Sen paradox within hierarchy.

4) It is the contract that requires the desired team outcomes and punishes every team member severely for any team member's shirking.
5) Miller defines 'cooperation' as occurring when individuals in a social dilemma select alternatives that are not rewarded by the formal incentive system but that result in Pareto-efficient outcomes, generating efficiency gains that short-term hierarchical incentives cannot promise.
6) In 1974, the Volvo company built a new car plant in Kalmar, Sweden, and its production process was developed to accommodate cooperative work teams, which was different from the traditional assembly line system. The work team of fifteen to twenty people monitors, controls, and rewards its own individuals. The team designates its own leader who is confirmed by the firm; but the leader has no formal authority over any other team member. Miller considers the success of the Kalmar plant to be a challenge to organizational economics, as its maximum team effort is not induced from an incentive contract but from a cooperative effort between subordinates and managers.

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