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Author(s): William G. Ouchi

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A CONCEPTUAL FRAMEWORK FOR THE DESIGN OF ORGANIZATIONAL CONTROL MECHANISMS*

WILLIAM G. OUCHI†

The problem of organization is the problem of obtaining cooperation among a collection of individuals or units who share only partially congruent objectives. When a team of individuals collectively produces a single output, there develops the problem of how to distribute the rewards emanating from that output in such a manner that each team member is equitably rewarded. If equitable rewards are not forthcoming, members will, in future cooperative ventures, adjust their efforts in such a manner that all will be somewhat worse off (cf. Simon [41], Marschak [26], Alchian and Demsetz [1]).

It is the objective of this paper to describe three fundamentally different mechanisms through which organizations can seek to cope with this problem of evaluation and control. The three will be referred to as markets, bureaucracies, and clans. In a fundamental sense, markets deal with the control problem through their ability to precisely measure and reward individual contributions; bureaucracies rely instead upon a mixture of close evaluation with a socialized acceptance of common objectives; and clans rely upon a relatively complete socialization process which effectively eliminates goal incongruence between individuals. This paper explores the organizational manifestations of these three approaches to the problem of control.

The paper begins with an example from a parts distribution division of a major company which serves to give some flesh to what might otherwise be overly-abstract arguments. Through the example, each of the three mechanisms is explicated briefly and discussed in terms of two prerequisite conditions, one social and the other informational. The more concrete organization design features of the three forms are considered, along with some consideration of the unique costs accompanying each form.

(ORGANIZATIONAL DESIGN; CONTROL; ORGANIZATIONAL GOALS)

1. Introduction

Organizational control has many meanings and has been interpreted in many ways. Tannenbaum [42], whose view has dominated organizational theory, interprets control as the sum of interpersonal influence relations in an organization. In a similar vein, Etzioni [13] finds it useful to treat control in organizations as equivalent to power. Other than the power-influence approach to control, organization theorists have also treated control as a problem in information flows (Galbraith [15], Ouchi and Maguire [30]), as a problem in creating and monitoring rules through a hierarchical authority system as specified by Weber [46] and interpreted by Perrow [33], Blau and Scott [7], and many organizational sociologists, and as a cybernetic process of testing, measuring, and providing feedback (Thompson [43], Reeves and Woodward [35]).

This paper considers a more simple-minded view of organizational control stated in the following two questions: What are the mechanisms through which an organization can be managed so that it moves towards its objectives? How can the design of these mechanisms be improved, and what are the limits of each basic design?

2. An Example: The Parts Supply Division

For the last two years, the author has worked with the parts distribution division of a major company. From the outset, I was struck with this problem: the purchasing department buys approximately 100,000 different items each year from about 3,000

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† University of California, Los Angeles.

different manufacturers, and it accomplishes this huge volume of work with only 22 employees, of whom 3 are managerial-level. On the other hand, the warehousing operation, which stores these items until they are ordered by a customer and then fills the customer orders, has about 1,400 employees, of whom about 150 are managers. Why is it that it takes relatively so few people to accomplish the very complex task of evaluating the quality and price of so many items, compared to the number of people required to store and then to distribute them?

Out in a warehouse, the "pickers" must pick out the proper items to fill an order from a customer, the "packers" must check the items to be sure that the order is as specified and then must pack them properly for shipping, and the foreman must see to it that the work is going along properly. What we are interested in is the control process which the foreman uses to get the work out. The foreman is engaged in an elaborate task: he gathers information concerning the flow of work by watching the actions of the workers, knowing from their behavior which workers are doing their jobs well or poorly; he confirms his observations by checking a record of output for each worker at the end of each day. As he observes the pickers and packers at work, the foreman also, from time to time, will stop to inquire of a worker why he or she is doing a job in a particular manner. He may also ask someone to stop what they are doing and to do a different job instead; in some cases, he will angrily confront a "trouble maker" and demand that they behave as he directs. In all of these actions, the supervisor is working within a well-defined set of rules which prescribe both his behavior and that of the pickers and packers; he does so within both the formal limits of authority which are given him by virtue of his rank and within the informal limits of authority granted to him by the workers as a result of their trust in and respect for him as an individual. These formal limits of authority and of power are not implicit, they are written down in black and white, and each employee, both picker and foreman, knows them by memory. The informal agreements, while equally effective, remain implicit.

In the purchasing department, each purchasing officer does his or her work by sending out a description of the item desired to three or four different manufacturers, asking each one to quote a price for it. After the prices are in, the purchaser adds in any information that he may have concerning the honesty and reliability of the supplier and the past performance that he has demonstrated, and then decides to order from one of them. The supervisor occasionally consults with each purchasing agent to see if they need help, and the supervisor strictly reminds each and every person that under no conditions are they ever to accept gifts of any sort from any supplier. Now what is the control mechanism here?

Analysis of the Example

Three mechanisms have been identified: a market mechanism, which primarily characterized the purchasing function; a bureaucratic mechanism, which primarily characterized the warehousing function; and an informal social mechanism, which was mentioned in passing. This example illustrates that the mechanisms themselves overlap in organizations; although it may be helpful to treat them as conceptually distinct from one another, they in fact occur in various combinations.

Market Mechanisms

The work of the purchasing agent is, largely, subject to market mechanisms. At least two important effects are evident. First, the work of each agent is greatly simplified because he is relieved of the necessity of determining, for each part purchased, whether the supplier's intended manufacturing and delivery process is the

most efficient possible. Instead, he simply puts each part out for competitive bids and permits the competitive process to define a fair price. In the second place, the work of the manager who supervises these agents is also greatly simplified, because he needs only to check their decisions against the simple criterion of cost minimization rather than observing the steps through which they work and forming an assessment of their unique skills and effort (however, this is a bureaucratic mechanism). Clearly, a parts division which chose to ignore market information and relied instead upon its own internal evaluation of the particulars of each bid would be at a significant cost disadvantage due to the much greater administrative overhead that it would incur.

As a pure model, a market is a very efficient mechanism of control (cf. Arrow [4, pp. 1–29]). In a market, prices convey all of the information necessary for efficient decision-making. In a frictionless market, where prices exactly represent the value of a good or service, decision-makers need no other information. Arbitrary rules such as those found in the warehouse are unnecessary. In addition to information, prices provide a mechanism for solving the problem of goal incongruity. Given a frictionless price mechanism, the firm can simply reward each employee in direct proportion to his contribution, so that an employee who produces little is paid little, and all payments, being exactly in proportion to contribution, are fair.

Of course, in this perfect example of a frictionless market, there is little reason for a formal organization to exist at all (Coase [9]). The fact that purchasing takes place within the corporate framework in our example suggests that some major market defects must exist. At least some of the parts purchased are sufficiently unique that only one or two potential manufacturers exist, so that a more detailed evaluation of those contracts is necessary, and a more thorough bureaucratic surveillance of the purchasing agents in such cases is also called for (see Williamson, [48] for a more complete discussion). More importantly, the work of the purchasing agents themselves is controlled through a process of bureaucratic surveillance rather than through a price mechanism. That is, the director of purchasing does not simply determine a market price for purchasing agents and then occasionally audit performance. Rather, he agrees upon an employment contract with each purchasing agent at some price (cf. Simon [37, pp. 183–195]) and then resorts to hierarchical order-giving and performance evaluation to control them. It is important to distinguish between the market mechanism employed by purchasing agents and the bureaucratic mechanism to which they are subject. Thus, in reality, there is a mixture of market and bureaucratic mechanisms which provide control in the case of purchasing, although it is the market mechanisms which are most clearly evident in this example.

Bureaucratic Mechanisms

In marked contrast to purchasing, warehousing in our example is subject to a variety of explicit routines of monitoring and directing which conform quite closely to the bureaucratic model described by Weber [46]. The fundamental mechanism of control involves close personal surveillance and direction of subordinates by superiors. The information necessary for task completion is contained in rules; these may be rules concerning processes to be completed or rules which specify standards of output or quality. In any case, rules differ from prices in the important sense that they are partial rather than complete bundles of information. A price implies that a comparison has taken place; a comparison between alternative buyers or sellers of the value of the object in question. A rule, however, is essentially an arbitrary standard against which a comparison is yet to be made. In order to use a rule (e.g., a budget, or cost standard), a manager must observe some actual performance, assign some value to it, and then compare that assigned value to the rule in order to determine whether the

actual performance was satisfactory or not. All of this consumes a good deal of administrative overhead. If the rule is expressed qualitatively rather than quantitatively, the cost of administration can be expected to be even higher.

Given these inadequacies of bureaucracy, one might reasonably ask why the warehouse does not emulate the purchasing office and rely instead upon a price mechanism. The answer to that question has been the subject of a good deal of recent work by institutional economists, but an organization theorist might focus on one or two dimensions of the problem. Let us approach the question by beginning with the scenario of a warehouse manager who indeed decides to manage through an internal price mechanism. His first task is to set a price for each task, a job that may be impossible since many of the tasks are at least in part unique and thus not subject to market comparisons. Supposing that he can establish reasonable prices for a number of tasks, he must then have a mode of determining when an assigned task has been completed. Unlike the purchasing manager, who can sample delivered products for the purposes of determining contractual satisfaction, the warehouse manager has no correspondingly inexpensive way to determine performance and will have to establish a set of performance standards. In order to see that these standards are applied, he will have to create a system of hierarchical superiors who will closely monitor the performance of individual workers. Furthermore, he will have to create an atmosphere in which the workers willingly permit this close surveillance, or else morale and productivity will suffer. In some cases, tasks will inherently require teamwork, and then superiors will have to apply judgment to attribute value added among the team members. In order to simplify these problems of surveillance, the manager will attempt to create sub-specialties within the warehouse to more readily permit comparison of performance between like workers. Finally, when one task becomes particularly critical, the manager will want to increase the price that he will pay for it in order to increase the supply of workers who are willing to perform it. If he is unable to exactly price the critical task, he will have either an oversupply or an undersupply of workers performing it, to the detriment of the warehouse. Given the difficulty of correctly pricing any task, he will instead invest hierarchical superiors with the right to direct the efforts of subordinates on an *ad hoc* basis; and again he will need to create an atmosphere in which such directives will be willingly followed.

Having done all of these things, our warehouse manager who set out to create an internal market will have exactly instituted a bureaucratic hierarchy instead. Both bureaucratic and market mechanisms are directed towards the same objectives. Which form is more efficient depends upon the particulars of the transactions in question. Indeed, at this point we have an answer to the original dilemma: how can the purchasing department carry out its tasks with so few people compared to the number in warehousing? Purchasing in this example participates in a market mechanism, which is a far more efficient mechanism of control in terms of the administrative overhead consumed. Prices are a far more efficient means of controlling transactions than are rules. However, the conditions necessary for frictionless prices can rarely be met, and in such conditions the bureaucratic form, despite its inadequacies, is preferred.

Clan Mechanisms

The example also mentioned briefly the informal social structure which, in addition to market and bureaucratic mechanisms, also contributes to control in the warehouse. In order to illustrate the operation of these clan mechanisms, let us return briefly to the example.

Consider the foreman in the warehouse. His task is to oversee the work of pickers and packers. How is the warehouse manager to evaluate the work of the foreman? To

some extent, he can rely on bureaucratic mechanisms such as output schedules, budgets, and inventory rules, but these in turn require surveillance. Given that the task of the foreman is significantly more subtle than that of the picker, the manager's task of bureaucratically supervising the foreman becomes very complex. However, if the manager is capable of selecting for promotion to foreman only that subset of workers who display a high internal commitment to the firm's objectives, and if he can maintain in them a deep commitment to these objectives, then his need for explicit surveillance and evaluation is reduced. In short, once the manager knows that they are trying to achieve the "right" objectives, he can eliminate many costly forms of auditing and surveillance.

Consider a different example—the general hospital. In the case of many health care employees, even the most dedicated attempts at systematic performance auditing would be frustrated. Task performance is inherently ambiguous, and teamwork is common, so that precise evaluation of individual contribution is all but impossible. In such cases, we observe a highly formalized and lengthy period of socialization during which would-be doctors and nurses are subjected not only to skill training but also to value training or indoctrination. When they are certified, they are certified with respect not only to their technical skills but also with respect to their integrity or purity of values.

When these socialization processes characterize groups such as physicians or nurses who occupy different organizations but with similar values, we refer to them as professions. When the socialization process refers to all of the citizens of a political unit, we refer to it as a culture. When it refers to the properties of a unique organization, we may refer to it as a clan. The functions of socialization are similar in professions, cultures, and clans, but our present interest centers on the clan.

The discovery that an informal social system characterizes most work organizations was noted first in the Hawthorne Studies (Roethlisberger and Dickson [36]). The subtle and widespread impact of local values on behavior has been thoroughly documented (Selznick [38], Gouldner [16]) as well as theoretically treated (Blau [6], Blau and Scott [7, pp. 89–99]). In organizational studies, the socialization mechanisms have been found to be unique to a particular organization (Trist and Bamforth [44]), to an industry (Lipset, Trow, and Coleman [24], Kaufmann [19]), or they may characterize most of the firms in an economy, as in the case of Japan (Nakane [29], Dore [12], Rohlen [37]).

Until recently, however, organization theorists have regarded this informal social system as either an anomaly or an epiphenomenon, not as the subject of analysis central to the problem of organization. However, a clan may serve as the basis of control in some organizations, just as the market was the basic form in the purchasing function and bureaucracy the basic form in the warehouse.

3. The Social and Informational Prerequisites of Control

It is possible to arrange the three modes of control along each of two dimensions: the informational requirements necessary to operate each control type, and the social underpinnings necessary to operate each control type. These are summarized in Table 1.

Let us consider first the social requirements, and then we will consider the informational issues. What we mean by social requirements is that set of agreements between people which, as a bare minimum, is necessary for a form of control to be employed. Any real organization, of course, will have developed a highly elaborated set of understandings which goes far beyond this. At the moment, however, our task is to understand the bare minimum without which a control mechanism cannot function.

TABLE 1
Social and Informational Prerequisites of Control

Type of Control	Social Requirements	Informational Requirements
Market	Norm of Reciprocity	Prices
Bureaucracy	Norm of Reciprocity Legitimate Authority	Rules
Clan	Norm of Reciprocity Legitimate Authority Shared Values, Beliefs	Traditions

A market cannot exist without a norm of reciprocity, but it requires no social agreements beyond that. A norm of reciprocity assures that, should one party in a market transaction attempt to cheat another, that the cheater, if discovered, will be punished by all members of the social system, not only by the victim and his or her partners. The severity of the punishment will typically far exceed the crime, thus effectively deterring potential future opportunists (Gouldner [17]). The norm of reciprocity is critical in a market if we think, for a moment, about the costs of running a market mechanism as opposed to the costs of any mechanism of control. In a market mechanism, the costs of carrying out transactions between parties have mostly to do with assuring oneself that the other party is dealing honestly, since all information relevant to the substance of the decision is contained in prices and is therefore not problematic. If honesty cannot be taken for granted, however, then each party must take on the crippling high costs of surveillance, complete contracting, and enforcement in order not to be cheated (Williamson [48]). These costs can quickly become so high that they will cause a market to fail.

When a market fails as the mechanism of control, it is most often replaced by a bureaucratic form. A bureaucracy contains not only a norm of reciprocity, but also agreement on legitimate authority, ordinarily of the rational/legal form (see Blau and Scott [7, pp. 27–36] for a discussion). In a bureaucratic control system, the norm of reciprocity is reflected in the notion of “an honest day’s work for an honest day’s pay”, and it particularly contains the idea that, in exchange for pay, an employee gives up autonomy in certain areas to his organizational superiors, thus permitting them to direct his work activities and to monitor his performance. These steps are possible only if organization members accept the idea that higher office holders have the legitimate right to command and to audit or monitor lower persons, within some range (also known as the “zone of indifference”, see Barnard [5]). Given social support for a norm of reciprocity and for the idea of legitimate authority, a bureaucratic control mechanism can operate successfully.

A Clan requires not only a norm of reciprocity and the idea of legitimate authority (often of the “traditional” rather than the “rational/legal” form), but also social agreement on a broad range of values and beliefs. Because the clan lacks the explicit price mechanism of the market and the explicit rules of the bureaucracy, it relies for its control upon a deep level of common agreement between members on what constitutes proper behavior, and it requires a high level of commitment on the part of each individual to those socially prescribed behaviors. Clearly, a clan is more demanding than either a market or a bureaucracy in terms of the social agreements which are prerequisite to its successful operation.

The Informational Prerequisites of Control

While a Clan is the most demanding and the Market the least demanding with respect to social underpinnings, the opposite is true when it comes to information. It

has been observed (see Galbraith [15], Lawrence and Lorsch [21]) that, within large corporations, each department tends to develop its own peculiar jargon; it does so because the jargon, being suited to the particular task needs of the department, provides it with a very efficient set of symbols with which to communicate complex ideas, thus conserving on the very limited information-carrying capacity of an organization. We can also think of the accounting system in an organization as the smallest set of symbols which conveys information that is relevant to all organizational subunits. An accounting system is a relatively explicit information system compared, say, to the traditions of the U.S. Senate (see Matthews [27]). Each of these mechanisms carries information about how to behave, but the accounting system, being explicit, is easily accessed by a newcomer while the traditions of the Senate, being implicit, can be discovered by a freshman senator only over a period of years. On the other hand, the explicit system is far less complete in its ability to convey information and it has often been noted (see, for example, Vancil [45]) that there is no accounting measurement which fully captures the underlying performance of a department or corporation, since many of the dimensions of performance defy measurement (see Ouchi and Maguire [30]). Typically, an explicit information system must be created and maintained intentionally and at some cost, while an implicit information system often "grows up" as a natural by-product of social interaction.

In a true market, prices are arrived at through a process of competitive bidding, and no administrative apparatus is necessary to produce this information. However, many economists have argued that the conditions necessary for such perfect prices are rarely if ever met in reality, with the result that inefficiencies are borne by the parties to the market. Although some would contend that markets are explicitly not organizations (Arrow [4]), we can consider as a limit case the profit—or investment—center in a business as an attempt to control an organization through a price mechanism. In some large organizations, it is possible, with great effort and a huge accounting staff, to create internal numbers which will serve the function of prices. That is, if division general managers and department heads attempt simply to maximize their profit by taking the best prices available within the firm, then the firm as a whole will benefit. These "transfer prices" should not be confused with output, cost, or performance standards which are common in all organizations: those measures are effectively bureaucratic rules. The critical difference is that an internal price does not need a hierarchy of authority to accompany it. If the price mechanism is at work, all that is needed in addition to prices is a norm of reciprocity, accompanied by self-interest.

Only rarely is it possible for an organization to arrive at perfect transfer prices, however, because technological interdependence and uncertainty tremendously complicate the problem for most organizations, to the point where arriving at prices is simply not feasible. Under that condition, the organization can create an explicit set of rules, both rules about behavior and rules about levels of production or output. Although an organization can never create an explicit set of rules that will cover every situation that could possibly confront any of its employees, it can cut the information problem down to size by writing a relatively small set of rules that will cover 90% of all events and depending upon hierarchical authority to settle the remaining 10% of events. Thus, we see again that acceptance of legitimate authority is critical to a bureaucracy, since it is that property which enables the organization to incompletely specify the duties of an employee, instead having the employee agree that, within bounds, a superior may specify his or her duties as the need arises (Williamson [48, pp. 57–81]). In this manner, the organization deals with the future one step at a time, rather than having to anticipate it completely in advance in a set of explicit rules.

In a Clan, the information is contained in the rituals, stories, and ceremonies which convey the values and beliefs of the organization (Clark [8]). An outsider cannot

quickly gain access to information concerning the decision rules used in the organization, but the information system does not require an army of accountants, computer experts, and managers: it is just there. Ivan Light [22] has described the Chinese-American *Hui* and the Japanese-American *Tanomoshi*, revolving-credit lending societies which provide venture capital for starting new businesses. They carry out all of the functions of any Wall Street investment bank, but, within their ethnic group, they are able to make loans which would be far too risky for any bank because they enjoy considerable advantages in obtaining, interpreting, and evaluating information about potential borrowers or members. None of their practices are explicit—even the rate of interest paid by borrowers is left unspecified and implicit. Entry into a *Hui* or *Tanomoshi* is strictly limited by birthright, a practice which guarantees that each member is a part of a social and kinship network which will support the values and beliefs upon which the control mechanism is founded. Clearly, the Clan information system cannot cope with heterogeneity nor with turnover, disadvantages which make it all but infeasible as a central mechanism of control in modern organizations, but the Clan, like the market, can operate with great efficiency if the basic conditions necessary to its operation can be met.

If the price requirements of a Market cannot be met and if the social conditions of the Clan are impossible to achieve, then the Bureaucratic mechanism becomes the preferred method of control. In a sense, the Market is like the trout and the Clan like the salmon, each a beautiful, highly-specialized species which requires uncommon conditions for its survival. In comparison, the bureaucratic method of control is the catfish—clumsy, ugly, but able to live in the widest possible range of environments and, ultimately, the dominant species. The bureaucratic mode of control can withstand high rates of turnover, a high degree of heterogeneity, and it does not have very demanding informational needs.

In reality, of course, we will never observe a pure market, a pure bureaucracy, or a pure clan. Real organizations will each contain some features of each of the modes of control. The design problem thus becomes one of assessing the social and informational characteristics of each division, department, or task and determining which of the forms of control ought to be emphasized in each case. Present organization theory, however, concentrates on the bureaucratic form to the exclusion of all else. The work of March and Simon [25] deals with decision-making in bureaucratic organizations, Parsons [32] describes problems of vertical control in bureaucracies, Perrow [33] concentrates on rules as a control mechanism in bureaucracies, and Argyris [3], Likert [23], and Tannenbaum [42] prescribe techniques for reducing some of the undesirable by-products of what remains an essentially bureaucratic mode of control.

Let us next consider some of the cost implications of each form of control. We will approach this task by looking at each of the stages at which an organization can exercise discretion over people. By doing so, we may discover some additional design variables which can influence the form of organizational control.

4. Designing Control Mechanisms: Costs and Benefits

Basically, there are two ways in which an organization can achieve effective people control: either it can go to the expense of searching for and selecting people who fit its needs exactly, or else it can take people who do not exactly fit its needs and go to the expense of putting in place a managerial system to instruct, monitor, and evaluate them.

Which of these approaches is best depends on the cost to the organization of each. On the one hand, there is a cost of search and of acquisition: some skills are rare in the labor force and the organization wanting to hire people with those skills will have

to search widely and pay higher wages. Once hired, however, such people will be able to perform their tasks without instruction and, if they have also been selected for values (motivation), they will be inclined to work hard without close supervision, both of which will save the organization money. On the other hand, there is the cost of training the unskilled and the indifferent to learn the organization's skills and values, and there is the cost of developing and running a supervisory system to monitor, evaluate, and correct their behavior. Once in place, however, such a system can typically take in a heterogeneous assortment of people and effectively control them; in addition, its explicit training and monitoring routines enable it to withstand high rates of turnover. High turnover is costly if search and acquisition costs are high, but turnover is relatively harmless to the organization if it hires all comers.

It has also been observed, by sociologists (Etzioni [13]), social psychologists, (Kelman [20]), and economists, (Williamson [48]), that various forms of evaluation and control will result in differing individual levels of commitment to or alienation from the organization and its objectives. In general, a control mode which relies heavily on selecting the appropriate people can expect high commitment as a result of internalized values.

At the other extreme, a control mode which depends heavily upon monitoring, evaluating, and correcting in an explicit manner is likely to offend people's sense of autonomy and of self-control and, as a result, will probably result in an unenthusiastic, purely compliant response. In this state, people require even more close supervision, having been alienated from the organization as a result of its control mechanism. Indeed, as is always true of any form of measurement, it is not possible for an organization to measure or otherwise control its employees without somehow affecting them through the very process that it uses to measure them: there is no completely unobtrusive measurement in most organizations. In general, the more obvious and explicit the measurement, the more noxious it is to employees and thus, the greater the cost to the organization of employing such methods. However, other conditions may demand the use of these more explicit yet offensive techniques of control. We can summarize these in Table 2.

TABLE 2
Organizational Control: People Treatment

People Treatment	Form of Commitment*	Corresponding Control Type
Totally Unselective; take anyone, no further treatment	Internalization	Market
Selection/Screening		Clan
Training —Skill Training —Value Training	Identification	Bureaucracy
Monitoring —Monitor Behavior —Monitor Output	Compliance	

* Taken from Kelman [20].

At one extreme, an organization could be completely unselective about its members, taking anyone (although we assume that everyone is to some extent self-interested, hedonistic, or profit-maximizing). At the other extreme, an organization

could be highly selective, choosing only those individuals who already have both the skills and the values which the organization needs; this practice is most common in the "professional bureaucracies" such as hospitals, public accounting firms, and universities. In an apparent paradox, these most and least selective kinds of organizations will both have high levels of commitment; that is, members will have internalized the underlying objectives of the organization. Of course, the paradox is resolved by noting that the completely unselective organization relies on commitment of each individual to self, since it employs a market mechanism of control in which what is desired is that each person simply maximize his or her personal well-being (profit). Since the organization's objective is thus identical to the individual's objective, we can say that internalization of objectives exists and thus no close supervision will be necessary, and enthusiasm for pursuing the organization's goals will be high (since they are also the individual's selfish goals).

Most organizations, however, cannot take on all comers (they do not have a price mechanism) and they can rely upon selection and screening only to a limited extent, that is, they can select partially for the skills and values desired but will not be able to find people who fit exactly their needs. In this case, the organization may rely on training, both in the form of formalized training programs and in the form of on-the-job or apprenticeship training, to impart the desired skills and values. Typically, training will result in the trainee identifying with either the trainer (who may also be a respected superior) or with the work group or department. In this case, the employee will possess the necessary skills and will pursue the organization's objective, but only because he or she identifies with and wants to emulate the respected person or group, not because the underlying objectives have been internalized to the point where the employee believes them to be good and desirable objectives in their own right.

The link between forms of commitment and types of control is quite direct. Internalized commitment is necessary for a market, since a market possesses no hierarchical monitoring or policing capabilities. Internalization is also necessary to a clan, which has weak monitoring abilities, that is, evaluation is subtle and slow under this form of control, and thus, without high commitment, the mechanism is capable of drifting quite far off course before being corrected. A clan can also be supported with identification, however, and over time, the identification may be converted into internalization of the values of the clan.

Identification is also compatible with bureaucratic control, although it exceeds the minimum commitment that is necessary in a bureaucracy. Compliance is the minimum level of commitment necessary for bureaucratic control, but it is beneath the threshold of commitment necessary for the clan and market forms. The social agreement to suspend judgment about orders from superiors and to simply follow orders (see Blau and Scott [7, pp. 29–30]) is fundamental to bureaucratic control.

The issue of commitment and control may also pose a moral question of some significance. If organizations achieve internalized control purely through selection, then, it would seem, both the individual and the organization are unambiguously satisfied. If internalization is achieved through training of employees into the values and beliefs of the organization, however, then it is possible that some individuals may be subject to economic coercion to modify their values. Indeed, this kind of forced socialization is common in certain of our institutions (what Etzioni refers to as "coercive" organizations) such as the U.S. Marine Corps and many mental hospitals. In some such cases, we accept the abrogation of individual rights as being secondary to a more pressing need. In the case of a company town or a middle-aged employee with few job options, however, we are less likely to approve of this kind of pressure. As long as organizations maintain an essentially democratic power structure, this

danger remains remote. If the hierarchy of authority becomes relatively autocratic, however, the possibility of loss of individual freedom becomes real.

5. Loose Coupling and The Clan as a Form of Control

In the present literature on organizations, a new and somewhat revolutionary view of “organizational rationality” is developing which has direct implications for our view of designing control mechanisms. This new view, which is coming to be known as “loose coupling” (see Weick [47]), implies that bureaucratic forms of control are unsuitable for many contemporary organizations. Let us briefly consider the underlying “organizational rationality” which dominates the current view of control, and then we will consider the loose coupling perspective.

The essential element which underlies any bureaucratic or market form of control is the assumption that it is feasible to measure, with reasonable precision, the performance that is desired. In order to set a production standard which effectively controls, it is essential that the industrial engineers or accountants be able to measure the desired output with some precision. In order to effectively control through the use of rules, it is essential that the personnel department know which rules to specify in order to achieve the desired performance. Indeed, the ability to measure either output or behavior which is relevant to the desired performance is critical to the “rational” application of market and bureaucratic forms of control. Table 3 specifies the contingencies which determine whether or not measurement is possible.

TABLE 3
Conditions Determining the Measurement of Behavior and of Output

Ability to Measure Outputs		Knowledge of The Transformation Process	
		<i>Perfect</i> Behavior or Output Measurement (Apollo Program)	<i>Imperfect</i> Output Measurement (Women's Boutique)
	<i>High</i>		
	<i>Low</i>	Behavior Measurement (Tin Can Plant)	Ritual and Ceremony, "Clan" Control (Research Laboratory)

In order to understand Table 3, let us agree, for the moment, that if we wanted to control an organization, we would have to monitor or measure something and that, essentially, the things which we can measure are limited to the behavior of employees or the results, the outputs of those behaviors. If we understand the technology (that is, the means-ends relationships involved in the basic production or service activities) perfectly, as is the case in a tin-can plant, then we can achieve effective control simply by having someone watch the behavior of the employees and the workings of the machines: if all behaviors and processes conform to our desired transformation steps, then we know with certainty that proper tin cans are coming out the other end, even without looking. By specifying the rules of behavior and of process, we could create an effective bureaucratic control mechanism in this case.

On the other hand, suppose that we are designing a control system for a high-fashion women's boutique. What it takes to be a successful buyer or merchandiser is beyond our understanding, so we could not possibly hope to create a set of rules which, if followed by our buyers, would assure success. We can measure with precision, however, the average markdowns which each buyer's leftover dresses must

take, the average inventory turnover for each buyer, and the sales volume and profit margin of each buyer, thus giving us the alternative of an output control mechanism. If our output control mechanism consists of this multiple set of objectives, then it is effectively a bureaucratic mechanism which will be managed by having a superior in the hierarchy who will monitor the various indicators for each buyer and, using the legitimate authority of office, will enforce not only close monitoring but also will order the necessary corrections in the buyer's decisions.

In the third case, we could be designing a control mechanism for the Apollo moon-shot program. We can completely specify each step of the transformation process which must occur in order for a manned capsule to get to the surface of the moon and back to earth, thus giving us the possibility of behavior control. However, we also have an unambiguous measure of output: either the capsule gets there and back, or it doesn't. Thus we have a choice of either behavior control or of output control. In such a case, the lower cost alternative will be preferred; clearly, since the cost of one failure is prohibitive, we will choose an elaborate behavior control mechanism, with literally hundreds of ground controllers monitoring every step of the process.

Finally, suppose that we are running a research laboratory at a multibillion dollar corporation. We have no ability to define the rules of behavior which, if followed, will lead to the desired scientific breakthroughs which will, in turn, lead to marketable new products for the company. We can measure the ultimate success of a scientific discovery, but it may take ten, twenty, or even fifty years for an apparently arcane discovery to be fully appreciated. Certainly, we would be wary of using a strong form of output control to encourage certain scientists in our lab while discouraging others. Effectively, we are unable to use either behavior or output measurement, thus leaving us with no "rational" form of control. What happens in such circumstances is that the organization relies heavily on ritualized, ceremonial forms of control. These include the recruitment of only a selected few individuals, each of whom has been through a schooling and professionalization process which has taught him or her to internalize the desired values and to revere the appropriate ceremonies. The most important of those ceremonies, such as "hazing" of new members in seminars, going to professional society meetings, and writing scientific articles for publication in learned journals, will continue to be encouraged within the laboratory.

Now, it is commonly supposed that such rituals, which characterize not only research laboratories but also hospitals, schools, government agencies and investment banks, constitute quaint but essentially useless and perhaps even harmful practice. But if it is not possible to measure either behavior or outputs and it is therefore not possible to "rationally" evaluate the work of the organization, what alternative is there but to carefully select workers so that you can be assured of having an able and committed set of people, and then engaging in rituals and ceremonies which serve the purpose of rewarding those who display the underlying attitudes and values which are likely to lead to organizational success, thus reminding everyone of what they are supposed to be trying to achieve, even if they can't tell whether or not they are achieving it?

Whereas output and behavior control (see also Ouchi and Maguire [30], Ouchi [31]) can be implemented through a market or a bureaucracy, ceremonial forms of control (see Meyer and Rowan [28]) can be implemented through a clan. Because ceremonial forms of control explicitly are unable to exercise monitoring and evaluation of anything but attitudes, values, and beliefs, and because attitudes, values, and beliefs are typically acquired more slowly than are manual or cognitive abilities, ceremonial forms of control require the stability of membership which characterizes the clan.

Loose Coupling

It has recently become fashionable among organization theorists to argue that relatively few real organizations possess the underlying "rationality" which is assumed in market and bureaucratic forms of control. Parsons [32], Williamson [48], and Ouchi [31] have argued that most hierarchies fail to transmit control with any accuracy from top to bottom. Simon has made a convincing case that most organizations do not have a single or an integrated set of goals or objectives [41] and that the subunits of organizations are, as a matter of necessity, only loosely joined to each other [40]. Evan [14], Pfeffer [34], and Aldrich [2] have argued that the structure of most organizations is determined more by their environment than by any purposive, technologically-motivated managerial strategy. Hannan and Freeman [18] have argued even more strongly that organizational form is isomorphic with ecological conditions, thus implying that organizations can be designed only by nature, through a process of selection; and Cohen, March, and Olsen [10] have argued that organizational decision processes are far from our view of "rationality" and have chosen instead the metaphor of the "garbage can" to describe them.

If there is any truth in this very considerable attack on our notions of the orderliness and rationality with which organizations function, then we must guess that the forms of control which are dominant today may be inappropriate in future organizations.

Under conditions of ambiguity, of loose coupling, and of uncertainty, measurement with reliability and with precision is not possible. A control system based on such measurements is likely to systematically reward a narrow range of maladaptive behavior, leading ultimately to organizational decline. It may be that, under such conditions, the clan form of control, which operates by stressing values and objectives as much as behavior, is preferable. An organization which evaluates people on their values, their motivation, can tolerate wide differences in styles of performance; that is exactly what is desirable under conditions of ambiguity, when means-ends relationships are only poorly understood; it encourages experimentation and variety.

6. A Few Closing Observations

Organizations vary in the degree to which they are loosely or tightly coupled. Many organizations, particularly those in relatively stable manufacturing industries, fit the requirements for behavior control or for output control. Control mechanisms of the market or bureaucratic variety can be designed into such organizations. Organizations in the public sector, in service industries, and in fast-growing technologies may not fit these specifications and perhaps should have cultural or clan forms of control instead.

The student of organizational control should take care to understand that clans, which operate on ceremony and on ritual, have forms of control which by their nature are subtle and are ordinarily not visible to the inexperienced eye. Many is the eager young manager who has taken a quick look around, observed that no control mechanisms exist, and then begun a campaign to install a bureaucratic or market mechanism of some sort, only to trip over the elaborate ceremonial forms of control which are in place and working quite effectively.

This paper has presented the argument that the design of organizational control mechanisms must focus on the problems of achieving cooperation among individuals who hold partially divergent objectives. Basically, such a collection of people can be moved towards cooperative action through one of three devices: a market mechanism which precisely evaluates each person's contribution and permits each to pursue non-organizational goals, but at a personal loss of reward; a clan mechanism which

attains cooperation by selecting and socializing individuals such that their individual objectives substantially overlap with the organization's objectives; and a bureaucratic mechanism which does a little of each: it partly evaluates performance as closely as possible, and it partly engenders feelings of commitment to the idea of legitimate authority in hierarchies.

There are two underlying issues which are of central importance in determining which form of control will be more efficient. First is the question of the clarity with which performance can be assessed. Second is the degree of goal incongruence. These two dimensions are intimately related in determining the forms of control that will emerge, but each of these dimensions is shaped by an independent set of forces.

The intimate relationship between the two dimensions is evidenced in the observation that high levels of goal incongruity can be tolerated only so long as performance can be evaluated with precision. Conversely, high ambiguity concerning performance can be tolerated only if goal incongruity is trivial. In everyday language, people must either be able to trust each other or to closely monitor each other if they are to engage in cooperative enterprises.

However, the possibility of goal compatibility is shaped by forces independent of those which determine the level of performance evaluation. It has long been argued by sociologists and organization theorists that geographical mobility, urbanization, and industrialization, which tend to occur together, all undermine the basic forms of goal compatibility on which communal trust is founded. While these arguments have been advanced to explain the increasing bureaucratization of whole societies, they apply equally to work organizations. Growth, turnover, and specialization all undermine the possibility of developing goal congruence in work organizations and thus imply the dominance of bureaucratic and market forms.

On the other hand, it has equally been argued by organization theorists that technological interdependence is inimical to clear performance assessment, and that such interdependence will increase over time among organizations generally. This argument forecloses the development of market and bureaucratic forms, which require clarity of assessment.

In the immediate sense, the problem of organization design is to discover that balance of socialization and measurement which most efficiently permits a particular organization to achieve cooperation among its members. In the longer run, the problem is to understand how, in a society that is increasingly pluralistic and thus goal-incongruent, in which interest groups become more distinct and in which a sense of community seems remote, the control of organizations can be achieved without recourse to an unthinking bureaucratization which is at odds with the increasing interdependence and ambiguity which characterize economic organizations.¹

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