DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES

CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA, CALIFORNIA 91125

GOVERNMENT REGULATORY BEHAVIOR:
A MULTIDISCIPLINARY SURVEY AND SYNTHESIS

Roger G. Noll

SOCIAL SCIENCE WORKING PAPER 62

October 1976
Rev. September 1982

ABSTRACT

Whereas much research has been devoted to the evaluation of regulatory policies, only in the past decade has attention turned to developing a theory of the regulatory process: why regulation comes about, and what factors determine its performance. As yet, the theory is still rudimentary, and large areas of positive political theory and organization theory have not been applied to the problem of understanding regulation. This paper summarizes the theory of regulation as it now stands and examines how additional ideas from more general theories in social science might be applied to regulation.

GOVERNMENT REGULATORY BEHAVIOR: A MULTIDISCIPLINARY SURVEY AND SYNTHESIS*

Roger G. Noll

Government regulation is a pervasive feature of the American economic system. It is a uniquely American approach to the introduction of political controls to market processes. The purpose of this chapter is to review the range of theories to explain the development and direction of regulatory policy and to point out fruitful but insufficiently developed lines for further research.

Before proceeding, a definition of regulation is in order. All levels of government attempt to control some private sector economic decisions to which the government is not a party. One such method of control is to assign to a government agency the responsibility to write rules constraining certain kinds of private economic decisions, using a quasi-judicial administrative process to develop these rules. The bureaus organized to undertake such tasks are herein referred to as regulatory agencies, a definition that is developed and defended in

* Parts of the financial support for preparing this essay was provided by the National R&D Assessment Program of the Natural Science Foundation, grant DA 39495. Research assistance was supplied by John Allen, Marcia Bencala, Maryly Crutcher and Barry Weingast. Especially helpful comments on an earlier draft were provided by Ross Eckert, Paul Joskow, Kai Lee, Michael Levine and Charles Perrow.

Noll (1980). Included in the classification are agencies that control aspects of transactions such as the price or the quality of the good transacted, that mandate certain features of the production process such as emissions control methods and worker safety requirements, or that control entry such as by licensing. Excluded are agencies that are public enterprises in that their primary function is either to procure private goods or to produce government goods, that try to prevent certain types of behavior or transactions rather than manage them, that manage government financial affairs, such as collecting taxes or controlling the money supply, or that try to alter market behavior by subsidy or by placing conditions on government procurement when the government is an important but not the sole entity on the demand side of the market.

The reason for the focus on regulation is more practical than theoretical. It may well be the case that the theory of regulation is very close to the general theory of government policy. But regulation is a distinct kind of policy that has spawned a distinct theoretical and empirical literature, especially in economics and law in which its study has been elevated to the status of a subdiscipline. Moreover, because the state of knowledge about the development of the character of public policies is still rather primitive, it probably makes sense to focus work at this stage on special theories of specific kinds of policies.

Regulatory agencies make many decisions that, in principle at least, affect economic efficiency. The economics literature as well as

regulatory law emphasizes the effects of regulation on static efficiency -- that is, the effect of regulatory decisions on costs, prices and product quality, given unchanging technology and consumer tastes. By controlling prices, profits, entry and the attributes of products or processes, regulators directly alter the net economic benefits derived from the regulated industry. To the extent that regulatory rules counteract market imperfections, they contribute to economic efficiency; to the extent that they reduce production efficiency or confer monopoly market positions on regulated firms, they reduce efficiency.

In addition, the policies of regulatory agencies also effect dynamic efficiency -- that is, the economic optimality of the rate and pattern of technological change. In some cases, agencies have an explicit mandate to influence technology, either by subsidizing research and development, as was the case of the Atomic Energy Commission prior to 1974, or by imposing technical requirements intended to improve the performance of a particular industry, such as the promotion of UHF television by the FCC (Webbink, 1969). More commonly, agencies play a more passive role, approving or disapproving the adoption of new technology on the basis of other policy mandates (Ackerman and Hassler, 1981; Capron, 1971; Peltzman, 1974; and Warford, 1971). Finally, agencies make decisions on matters not directly related to the choice of technology, but that, perhaps unexpectedly to the agency, indirectly influence technological change. Thus, regulatory lag -- the time required for regulators to change regulations in response to changed conditions -- may change the incentive of regulated firms to innovate, and rate-of-return regulation may bias innovation of regulated firms in favor of more capital-intensive technologies (Westfield, 1971).

The research literature on the effects of regulatory agencies on economic efficiency reaches generally harsh judgments. Government agencies are pictured as ineffective in dealing with market failure problems such as environmental externalities or monopolistic control of markets, while generating serious liabilities by protecting business against competition, thwarting warranted technological and economic changes, and imposing significant costs on consumers without much in the way of benefits (Joskow and Noll, 1981).

This chapter does not evaluate the empirical literature on the undesirable economic effects of regulatory agencies. Instead, it presumes that agencies do have such effects. The purpose here is to examine the literature on government processes and bureaucratic organizations in search of plausible explanations of the selection of regulatory policies. In principle, theories of government policymaking behavior could provide some basis for evaluating proposals to reorganize a regulatory agency, to redesign its mandate or to replace regulation with some other form of government policy, and for predicting the likely long-term effect of a regulatory agency.

As an illustration, during the first term of the Nixon Administration, the President's Advisory Commission on Executive Organization (1971) -- the Ash Council -- proposed a sweeping

reorganization of the executive structure of the federal government. The Council's report on regulatory agencies contained numerous proposals motivated in part by the perception that independent regulatory authorities create economic inefficiency. The proposals included transferring the agencies to the executive branch, replacing commissions with single administrative heads, streamlining the decisionmaking process and combining regulatory agencies with related responsibilities into single agencies. A relevant question is whether existing knowledge on the operation of government bureaucracies provides support for the notion that these organizational changes would significantly improve the policies of regulatory institutions and the performance of regulated firms.

Dissatisfaction with the performance of a regulated industry can lead to reform proposals of four types.

1. Reorganization. The theory underlying reorganization proposals is that the location of regulatory responsibility within the governmental hierarchy and the organizational structure of the agency significantly affect policy outcomes. Within this class of reforms are moving an independent commission into an executive department, combining several bureaus with related responsibilities into a new agency, changing the internal structure of a bureau such as by replacing a commission with a single administrator, or reshuffling policy responsibilities among agencies, such as the transfer of the maritime subsidy program from the independent Federal Maritime Commission to the Department of Transportation.

2. Procedural Reform. Administrative law, legal precedent and the operating rules adopted by agencies determine the flow of information into administrative proceedings and, in principle, constrain the decisionmaking power of agencies. A common complaint is that these procedures cause agencies to be too slow in making decisions and too inflexible, particularly in adjusting policies to changing external circumstances. Another complaint is that agencies systematically pay too little attention to some types of information. Reform proposals include changing the rules of evidence, relaxing the requirement that decisions take account of all evidence submitted but of no other factual material, imposing deadlines on agency decisions and requiring benefit/cost analysis.

3. Changing the Mandate. Another locus of criticisms of the regulatory process focuses on the objectives, methods and powers given to agencies by Congress through legislation and, to a lesser degree, by the President through executive order. If agencies adopt bad policies or overlook key issues, one possible solution lies in clarifying or correcting the mandate (Friendly, 1962). Another is to use a method other than regulation to achieve the same objectives, such as the use of taxes (Mills and White, 1978) or tradable permits (Hahn and Noll, 1982) to control pollution.

4. Altering the External Environment. If the interactions among an agency, a particular industry, other groups with a stake in the industry's performance, the courts and the Congress produce unsatisfactory results, one approach to reform is to restructure these

external institutions so that the agency is more able to produce the desired performance. For example, the single entity proposal for international telecommunications (Peck, 1970) -- that the international carriers be merged -- was based upon the presumption that the Federal Communications Commission could regulate the introduction of satellite technology more effectively if the industry were monopolized. At the other extreme, the antitrust case that successfully sought the dissolution of the American Telegraph and Telephone Company was based in part on the belief that the wealth and political power of AT&T made it essentially unregulatable. Public ownership is still another alternative arrangement of the managed industry. Other reforms of this type include proposals to create a special type of court to review regulatory decisions, to create a special agency to participate in regulatory decisions as representatives of consumer interests and to reorganize the Congressional oversight process.

All four types of proposals rest upon theoretical conceptions of the behavior of government agencies, private organizations and elected political officials. Yet the proponents of reform rarely justify their proposals by reference to explicit theoretical and empirical observations on the interactions among these groups. Nor is much thought normally given to the organizational problems of structuring an effective agency when legislation is adopted that establishes a new regulatory role for the government.

A useful theory of regulatory policy would provide empirically verifiable propositions on the relationships among structure, responsibility, powers and performance of regulatory agency, and subsidiary propositions about how private organizations influence the design of policy and cope with the particular government regime that is established. It would predict the capacity of an agency to control different aspects of private market behavior, and would identify optimal choices of agency organization, procedures and policy instruments for a given policy objective and a given structure of the private market to be managed. With regard to technological innovation, a useful theory would explain why an agency responds favorably to some innovations and unfavorably to others, and the extent to which its response is affected by controllable characteristics of the agency, such as its structure, procedures, instruments and responsibilities.

The remainder of this chapter examines the existing literature relating to the behavior of regulatory agencies in search of generalizations that are useful in the sense described above. Most of the literature surveyed here is not addressed specifically to the question of regulatory policy. Some is very general, addressed to the properties of all government policymaking processes or even all decisionmaking organizations. Some is more specific, but addressed to organizations other than regulatory agencies. Indeed, outside of law and economics, social scientists have paid little attention to regulation. Consequently, any attempt to suggest in a comprehensive fashion how these disciplines might enhance our understanding of the regulatory policymaking process must extract inferences from research that has been undertaken for other purposes.

The focus of the following is the regulatory agency: what factors determine the policies that it adopts. The discussion is divided into two parts. The first deals with organic theories of regulatory behavior: theories that characterize regulatory agencies as a coherent whole, having objectives that they rationally pursue. The second focuses on structural theories: explanations of regulatory performance that are based on analyzing agencies as collections of individuals with conflicting objectives whose behavior is coordinated by the selection of operating rules, hierarchies and methods of communication.

ORGANIC THEORIES

One approach to studying the behavior of organizations is to adopt the metaphor that an organization is an individual, having explicit objectives and choosing among alternative actions on the basis of their expected contributions to organizational goals. This approach abstracts from the influence that the structure of the organization and the experiences of its members may have on organizational outcomes. It also abstracts from the problems of managing the behavior of members of an organization so that their performance will be consistent with organizational objectives.

The appeal of so-called rational actor models lies in the powerful, empirically-testable hypotheses that can be derived from their simplistic motivational assumption. The power of organic theorizing is best demonstrated by the microeconomic theory of the firm, which assumes that private businesses are single-mindedly devoted to the maximization of some index of their financial success, such as profits or sales.

Goal-directed theories are not universally accepted. Before proceeding with a detailed discussion of them, a few remarks about the critics of these theories are in order.

Most of the criticisms of rational-actor theories are essentially commentaries on the failure to consider (1) how goals are formulated and (2) the importance of structural phenomena on behavior. In principle, both notions could be important. If one observed considerable differences among organizations engaged in the same general type of activities, more powerful theoretical predictions might be obtained by incorporating goal-formulation and structural features into a model of organizational behavior. In the following discussion, the process of goal formulation and emendation is accorded attention in several of the expositions of various organic theories, while the issue of the relationship between structure and performance is examined at length in the next section. In the end, whether one should abandon the simplicity of the model by incorporating these features rests on the empirical success of the simple model in actually providing good predictions about organizational behavior.

Another criticism of organic theories is that the concept of organizational goal lacks meaning and therefore should not be an admissible assumption in organization theory. Furthermore, such theories are said to be normatively inadmissible on the grounds that,

because they incorrectly assume the presence of an organizational goal, researchers necessarily find all organizations inefficient because they inevitably uncover some output of the organization that is inconsistent with the goal presumed by the researchers (Etzioni, 1960).

The alternative approach proposed by those subscribing to this particular criticism is that the objectives of the organization should be regarded as whatever the organization is currently doing and, according to its members, would like to do now and in the future. The normative standards for judging organizational effectiveness should be: (1) whether it can do whatever it now does or wants to do more effectively or efficiently by reallocating its resources (Etzioni, 1960) and (2) whether it is succeeding in obtaining sufficient resources to do what it is now doing most effectively (Yuchtman and Seashore, 1967).

The alternative formulation offered by Etzioni and his followers has very little merit. First, it is useful for predicting and explaining organizational actions only if it is converted to a rational actor theory (Mohr, 1973). Once one has observed organizational outputs and learned from its members what else they would like to do, one has a multidimensional goal for the organization. Moreover, the information gained about its goal is useful only if one presumes a regularity in goals through changes in time and conditions. If the Etzioni approach makes an assumption of regularity, then it boils down to an argument that better predictions will be made if one is more careful about stating the goal of the organization. If these regularities do not occur, there is little point from an explanatory perspective in observing the original goal in the first place, because each observation on organizational performance will be associated with a different, randomly selected objective.

From a normative point of view, the two criteria offered by Etzioni and his followers raise legitimate questions, but there is no reason to exclude others. In particular, citizens and government officials outside of a specific bureau can legitimately choose to judge an agency's performance by other standards. From the perspective of an analyst, it is a positive, not a normative, proposition to inquire whether the behavior of an agency is consistent with a particular objective. The Etzioni model explicitly disallows questions about whether the organization is producing the wrong mix of output. From the standpoint of policy formulation and evaluation, such a model is essentially useless.

The remainder of this section discusses several different organic, rational actor theories of regulatory agencies. The key element of a rational actor theory is the specification of the organizational objective. The number of organizational goals that have been hypothesized is nearly as large as the number of organization theorists -- for an interesting survey of the problem of defining organizational goals, see Mohr (1973). But, with respect to regulation, organic theories are usually based upon some form of one of three assumptions about the motives of regulators: they seek to serve the public interest, implicitly maximizing some usually undefined social welfare measure; they try to serve the interests of particular client groups, often by creating a legally enforceable cartel arrangement in an industry that would otherwise be competitive; or they attempt to maximize their own economic rewards or some measure of the financial success of their bureau.

Serving the Public Interest

A useful point of departure in a catalogue of theories of bureaucratic behavior is to consider models based upon the straightforward assumption that government agencies seek to maximize social welfare or the public interest. Numerous conceptual models of government bureaucratic behavior are based on this assumption. These models differ according to their descriptions of how government officials develop perceptions of the public interest that they seek to serve. Of course, the paradox established by the compensation principle controversy (Hicks, 1939; Kaldor, 1939; Scitovsky, 1942) and the literature on social choice theory beginning with the possibility theorem (Arrow, 1951) cast grave doubts on the existence of a well-defined, consistent public interest, but this does not imply any fundamental error in public interest theories of bureaucratic behavior. As long as officials believe that a public interest has been defined for them and, accordingly, act to serve it, the fact that the public interest they perceive lacks interesting normative properties is inessential to the positive theory of their behavior.

Traditional public interest theories -- those that were in general acceptance until around 1960 -- in economics, political science and sociology, while emphasizing different aspects of the social process, are quite similar in their basic conceptualization of bureaucratic behavior. Although the traditional view is no longer widely shared, it is a good place to begin. Traditional theory provides a benchmark for investigating other theories. Furthermore, much of more modern theory is rooted in the traditional approach.

Traditional sociology, developing from the ideas of Max Weber (1946), made few distinctions between public and private organizations. It viewed society as requiring the performance of certain functions for its survival. Society creates institutions or structures to perform these functions (Parsons, 1960). Bureaucratic institutions, with formal and impersonal rules carried out by professionals whose employment is based on expertise and other objective measures of competence, are the most effective mechanism for performing essential functions (Weber, 1946).

Traditional political scientists, naturally focusing on government institutions, emphasized the natural separation of functions among the branches of the government. Through the workings of the democratic process, legislation worked out by compromise and bargain among elected representatives reflected the public interest, while the development of a career civil service based upon expertise provided objectivity and freedom from partisanship in policy implementation (Bernstein, 1955).

Economists, interested in government agencies because of the microeconomic aspects of their policy mandates, viewed them as devices for correcting inefficiencies arising from various kinds of market imperfections: seller concentration, external effects, unpredictable fluctuations in supply and demand, and so forth. Strangely enough, the costs of government intervention have been systematically examined by economists only quite recently (Arrow, 1970; Breyer and MacAvoy, 1974; Williamson, 1970), despite the discipline's characteristic concern for costs and efficiency. Even the most developed current theoretical literature in economics on the costs of regulation, the so-called A-J effect on the efficiency of resource utilization that arises when rate-of-return regulation is imposed on profit-seeking enterprises, is otherwise traditional in approach (Averch and Johnson, 1962; Baumol and Klevorick, 1970). It assumes that the regulatory process is adequately described as simply limiting the profits of a firm that possesses market power, that the costs of determining and enforcing the regulatory constraint can be ignored, and that conditions of demand and technical change are sufficiently static that the principle effect of profit regulation on a firm's efficiency is through a bias in the selection of long-term capital investments. These assumptions are remarkably similar to the characteristics of sociological structural-functionalist theories, which economists have severly criticized (Harsanyi, 1969; Olson, 1971). They oversimplify the social function of an organization and give scant attention to the manner in which it establishes and adjusts policies in light of perceptions of the response of its environment to its actions and to other sources of change (Joskow, 1973; Burness, Montgomery and Quirk, 1980a).

Combining the traditional views of all three disciplines, the following characterization of regulatory policy emerges. An essential function of a capitalist society is to limit the inefficiencies arising from certain imperfections that can arise in private markets. One purpose of democratically elected legislatures is to detect serious market imperfections and establish administrative agencies to ameliorate them. Since these agencies can, by their decisions, generate substantial wealth, they are potential targets for corruption. Hence, they must be placed in the hands of experts who are removed from partisan politics and made subject to rules for reaching decisions that protect the process from bribery. When administrative policy fails, the causes can be found among the following: the administrators are poorly selected, being either corrupt or inexpert (Bernstein, 1955; Cary, 1967); the legislative mandate is faulty, either because it lacks clarity or because subsequent events have outdated it (Friendly, 1962); the agency has too few resources to implement its policy directive effectively (Cary, 1967); or the agency has been given a combination of objectives and powers that are incommensurate -- a mismatch of means and ends (Breyer, 1981). Solutions include better appointments, which may require giving the agency more prestige or greater insulation from corrupting influences, clear legislative mandates that are regularly reviewed, such as by including an expiration date in all legislation that creates an administrative

agency, and increases in agency budgets.

The traditional approach to the behavior of regulatory agencies has many weaknesses which are sufficiently obvious that they need not be elaborated. But those that stand out as particularly important should be emphasized.

First is the acceptance of the possibility of making a clear separation between policymaking and policy implementation, the former by political actors and the latter by experts. The need for expert policy implementation arises from the difficulties of establishing causal connections between policy actions and performance outcomes (March and Simon, 1958). To the extent that expert judgment is relied upon for estimates of the relationships between actions and outcomes, the actual policymaking authority resides at least in part in the expert (Bendix, 1968; Etzioni, 1959). The experts' control over information and access to sophisticated analytic techniques enables them to vitiate to some degree an attempt to alter policy objectives through clarifying and tightening the mandate. In fact, judging from the language of the laws that establish regulatory agencies, it is not apparent that Congress conceives of itself as doing more than setting loose guidelines within which policy will be formulated by the agency (Lowi, 1969). In general, agencies are admonished to serve an undefined public interest and given a conflicting set of general policy directions. To the extent that expert judgment is an essential ingredient to rational policy formulation, such behavior from Congress is to be expected.

At the same time, Congress hardly demonstrates a lack of interest in specific cases involving important constituents. Because Congress controls the budget and legislative authority of the agency, it can and does override expert judgments by the agency (Green and Rosenthal, 1963, re the AEC; Scher, 1960, re the NLRB; Weingast, 1982, re the FTC).

Second the traditional theory provides no logical foundation for the presumption that governmental organizations are inherently efficient (Blau and Scott, 1962). In economics, the assumption that the internal structure of the firm can be overlooked rests on the argument that, in competition, only efficiently organized firms will survive. Economists have recognized that the assumption of internal efficiency may not be satisfied in imperfectly competitive markets, and Leibenstein's (1966) empirical work argues for the presence of considerable internal inefficiency. By the same logic, the monopolistic position enjoyed by most agencies -- rarely do two agencies perform the same service -- could lead to the same type of organizational slack. The insulation of agencies from markets for their outputs or equities should leave them with less incentive than a private monopolistic firm to operate efficiently. Moreover, the interests of legislators in providing ombudsman services to constituents as a means for securing reelection can lead the legislature purposely to create excessively bureaucratic processes that provide opportunities for intervention by legislators (Fiorina and Noll, 1978). For example, the legislation establishing the Consumer

Product Safety Commission appears designed to produce an inefficient process (Cornell, Noll and Weingast, 1976). At best, the Weberian criteria for effective bureaucratic organizations are no more than necessary conditions for efficient operation.

In order for the public interest theory to be viable, it must have two components that are lacking in the traditional theory. It must include a model of how an agency comes to perceive the public interest and it must identify the source of an agency's motivation to pursue that objective with some degree of efficiency. Part of the motivational argument rests on the limitations for improving personal welfare in the government service. It is the contention of much of the literature in public administration that the income, status and rate of advancement of government employees, particularly in higher policymaking jobs, is largely determined by tenure in office, not performance (Bendix, 1949; Warner, et al., 1963). If so, secondary motivations, of which only one possibility is identifying and serving some public interest objective not associated with personal well-being, can dominate decision-making even by individuals who are normally driven by rational self-interest (Tullock, 1965).

Comanor and Mitchell (1972) have supplied one such motive. They contend that the Federal Communications Commission regards itself as an economic planning agency, basing their argument upon the generality of its legislative mandate. As a theory, however, their model is tautological, because it lacks an explanation of how public interest planning objectives are discovered. Since it would be impossible for an administrative agency to have absolutely no effect on resource allocation -- even if it were totally ineffective, resources would still be devoted to operating it -- the assertion that agencies engage in economic planning is incapable of disproof unless the purpose of the plans is specified. Once again, the essential ingredient of a theory is missing.

The obvious places to look for sources of a perception of the public interest are the institutions that in American society have some legitimate claim to speak for the public -- elected representatives, the press, the courts and leaders of broadly-based organizations. We will return to these external sources of objectives at the end of this section.

Capture-Cartel Theories

In contrast to the traditional view that bureaus attempt to serve the general welfare are theories that view bureaus as servants of some well-defined interest, either because the agency was set up to serve that client -- the cartel theory -- or because, through the years, agencies are vulnerable to being taken over by some special interest -- the capture theory. The special interest group that the organization serves is usually identified as the producers in the market the agency administers, although occasionally the agency's principal client has been said to be a professional elite, such as lawyers in the agencies with cumbersome procedures or physicists in the case of the old Atomic Energy Commission.

Marxist Theories. The Marxian perception of politics, which vests political control in the hands of those who control economic production, provides the simplest cartel theory. It sees American government as an instrument for protecting capitalist interests, with revolution being the only means of creating a government interested in the welfare of the working class. It follows without further argument that regulatory agencies are agents for increasing the wealth of producers, usually by establishing a legally enforceable cartel.

The Marxist argument has been used to explain the birth of the Interstate Commerce Commission and the regulation of railroads (Kolko, 1965, whose Marxism is explicit, and MacAvoy, 1965, whose analysis is not explicitly Marxist but is consistent with Kolko's). The argument here is not without controversy, however; whereas regulation may have benefited railroads by establishing a cartel, it imposed costs on another corporate sector -- manufacturing -- and probably benefitted rural agriculture and consumers (Spann and Erikson, 1970). Similar though more complicated cases have been made regarding regulation of banking and airlines (Davis and North, 1970) and professional licensure (Stigler, 1971).

Unfortunately, the Marxist cartel theory has several fatal flaws. It can provide no explanation for the few instances when regulation has been imposed on an industry against its will, such as government controls on coal mine safety, automobile safety and emissions, toy safety, pay television, the siting of electric power generation facilities and performance standards for medical instruments. Nor does it provide an explanation for the cases where industries have tried but failed, at least to date, to obtain an effective cartel, such as commuter airlines, wholesale and retail trade, and hospitals. It offers no explanation for agency policies that clearly run counter to producer interests in industries in which regulation is nevertheless generally favored. Railroads, for example, have favored innovations that were blunted or delayed by the ICC, such as the unit train, the piggyback flat car and the Big John hopper car (Gellman, 1971). More generally, some have argued that the principal beneficiaries of the regulation of several industries -- notably construction and trucking -- are employees. It has nothing to say about administrative agencies that referee conflicts among producer groups, such as Federal Energy Regulatory Commission regulation of the field price of natural gas, Federal Communications Commission regulation of the prices for interconnecting television networks or Bureau of Land Management control of the uses of public lands. Finally, it can not explain the deregulation of the 1970s in airlines, banking, securities and communications in which anticompetitive policies were abandoned.

The flaws in the simple cartel theory arise from its dichotomization of society into two interest groups, capitalists and workers. Only by adopting a more complicated model of society as a complex combination of numerous interests can one explain the diversity of regulatory institutions. Because more often than not regulatory agencies deal with policy issues having far more complexity than a simple conflict between capitalists and workers, Marxist theory is not

really appropriate for examining and explaining their behavior.

The Market for Regulation. Another cartel theory applies the economists' model of a market to the supply and demand of regulatory institutions (Stigler, 1971; and Peltzman, 1976). The presumption is that all producer groups stand to benefit from institutionalized protection from competition. The magnitude of the potential benefit creates a maximum payment the group is willing to make to legislators in order to obtain the institution. On the other side, legislators, seeking reelection, would like to confer benefits on voters and potential campaign contributors that would increase their reelectability. They are therefore willing to confer institutionalized protection from competition on the interest group only if the political costs of reducing competition are offset by political benefits flowing from the group's purchase of the institutional change. The currencies for this transaction are numerous: they may be direct payments in cash or in votes if the group is large enough to matter, or they may be indirect through improvements in service quality or the provision of uneconomic services to designated constituents of key legislators (Posner, 1971).

Political scientists have often thought of legislators as engaged in conferring private benefits on selected constituents (Mayhew, 1974; and Fiorina, 1977) and numerous empirical studies provide support for this view (Cary, 1967; Ferejohn, 1974; Scher, 1960). The political science view is more dynamic than Stigler's. The latter formally presents only a theory of the establishment of an agency, implicitly presuming that agencies behave as originally intended — the common presumption that the regulatory process is perfectly controlled and efficient, despite its insulation from a market test. The political science view focuses more on the steady stream of pressures for favors from legislators during the operating life of the agency.

Although few political scientists subscribe to Stigler's approach, their work on the role of private favors in legislative activities can be used to make Stigler's theory more dynamic. The result is a description of the regulatory process along the following lines: a producer group transmits a continual flow of requests to key legislators, usually those in the relevant subcommittees, who in turn pressure a regulatory agency to provide more institutionalized protection from competition. The legislator applies the pressure if the group agrees to certain other conditions in terms of direct and indirect political favors. The agency, responding to the directions of the legislator, obliges.

The preceding explanation of regulatory behavior has several problems. One is that it is tautological: it assumes its conclusion by presuming the existence of suppliers, demanders and an equilibrium between the two. It is impossible to conceive of a market managed by a regulatory agency that is as efficient as either a perfect cartel with legally enforceable rules or a perfectly competitive industry. Because everything else can be construed as a willful redistribution of income that stands at the intersection of

institutional demand and supply, the theory is incapable of disproof. To escape the tautology it must include some explanation of why certain groups receive benefits as successful purchasers of institutional protections, while still others receive no benefits at all but bear some costs through the economic inefficiencies of administrative management, as well as the factors that determine the relative sizes of these amounts. This explanation inevitably reduces to a theory of the emergence of political issues relevant to regulatory policies and of the relationship between interest-group characteristics and the effectiveness of groups in the political decisionmaking process. An explanation of why these factors lead to cartelization is not to be found in the cartel-theory literature, other than the inadequate simplification of Marxist theory.

Another problem is that it is not a theory of regulation, but a theory of government policy. Indeed, in Stigler's original paper almost all policies are called regulation, and his approach is really to view laws as a kind of commodity that is sold to the highest bidder. The theory has not developed as systemmatic analysis of why an interest group picks regulation as its source of public assistance.

<u>Goal-Deflection in Bureaus</u>

The goal-deflection model of agency capture stands between the other capture-cartel theories and the traditional public interest view. It postulates a concern within agencies to serve a broad public purpose but predicts goal deflection as the agency builds up relations with external clients and as the agency, through experience, comes to rely upon certain types of professional employees.

Conflict-Avoidance and Producer Capture. Goals become deflected in favor of producer interests, according to this theory, because agency personnel develop symbiotic relationships with their principal client group. The usual explanation for the development of a symbiosis lies in the desire to avoid conflict.

Administrative agencies see in producers potential allies in dealing with government budgeters (Wildavsky, 1964) or, what amounts to the same thing, as potential threats to the survival of the organization (Thompson and McEwan, 1958). Or perhaps both sides just prefer to avoid conflict with those with whom each is in constant contact (Gouldner, 1959). The result is a compromise of objectives between organizations. Neither organization remains as free to pursue its original objective, but in return both achieve regularity and predictability in their relationship as well as a reduction in conflict.

The feature of this theory that goes beyond the public interest theories is the value it presumes in regularization of interorganizational relationships. In the goal-deflection theory the existence of the original goal, like original sin, is accepted as an act of faith, much as in the traditional theories of administrative behavior. But acts to reduce conflict and tension represent an additional factor not derivable from the public interest theories. An agency, according to the theory, will consciously alter its objectives

to regularize relationships, perhaps because an agency can function more efficiently in the absence of conflict. Similarly, client organizations will bend their own actions to accommodate agencies, abandoning to some degree their profit orientation.

The most persuasive statements of this theory are in the context of two-way relationships. The importance of conflict-avoidance in a more complicated environment in which an agency is interposed between opposing organizations with unavoidable and perpetual conflicts of interest is less persuasively argued and certainly yet to be established empirically.

Internal Goal-Deflection and Lawyer Dominance. The second type of goal-deflection theory sees organizational goals being bent according to the interests and values of an elitist group in the organization. Perrow (1963), based on the observation that doctors tend to dominate policy decisions in hospitals, hypothesized that an internal group will control an organization if the services of its members are crucial to the success of the organization and if the group is the most skilled, highest status, most difficult to replace occupational group in the organization.

This theory goes beyond the normal economic predictions about monopolized factor markets, such as the Pauley-Redisch (1973) hypothesis that hospitals are essentially a physician's cooperative, for the theory contends that the key group will dominate organizational decisions on matters not closely related to its own welfare. For the present, we will abstract from the market imperfection effects and deal with key-factor dominance as a determinant of organizational objectives unrelated to the welfare of particular types of organization members. While the applicability of this theory to organizations producing private goods for competitive markets is certainly subject to serious question, it nevertheless is a serious candidate for explaining some of the behavior of institutions that are insulated from competition in product markets and, therefore, that can survive with considerable organizational slack or x-inefficiency, such as government bureaus or regulated monopolies.

Lawyers, who hold many key positions in regulatory agencies, clearly satisfy the conditions for key-factor dominance. Their services are essential to the operation of quasi-judicial processes. They are a highly skilled and well-organized professional elite.

Members of such professional groups, according to a substantial amount of sociological research, tend to be motivated in large measure by extra-organizational standards of their profession rather than by the objectives of the organization with which they are affiliated (Blau and Scott, 1962). Lawyers are trained to be concerned about the maintenance of due process, the protection of private equities and the ability of a system to achieve consensus. These concerns are not as dominant in other professional groups, although they appear in political science. For example, Lindblom's (1959) attack on benefit-cost analysis as a budgeting system is based upon its failure to account for these values.

The desire among lawyers to adhere to professional norms and to attain peer-group approval leads to a particular kind of goal and a motive to be efficient in achieving it. Peer-group approval will depend upon the extent to which the performance of the agency corresponds to the legal profession's measures of success including winning court challenges to agency decisions. This in turn will depend upon the extent to which the agency collects information and develops decisionmaking procedures that comport with the legal profession's conceptualization of a fair process. The elements of a fair process include adherence to legal rules of evidence and the dependence of decisions on evidence.

Another motive for developing fair procedures could be that they contribute to the psychological well-being of those who stand to lose. Michelman (1967) has hypothesized that arbitrary, capricious redistributions of income impose demoralization costs on the losers -- that is, they will take unproductive defensive actions against further redistributions, reduce their own productivity, or even seek revenge through destructive acts if they are not compensated. Williamson (1970) has incorporated the concept into a general model of optimal intervention into market failures, where intervention procedes to the point where administrative costs and inefficiencies are balanced, at the margin, with the reduction in demoralization costs they bring about. The mode can easily be extended to incorporate the additional dimension of fairness postulated above -- that demoralization effects are reduced if losers lose in a fair process rather than if they lose in an unfair, capricious one. Of course, while this is a clever, useful way to conceptualize how fairness enters into an efficiency argument, it seems to lack much operational importance. Demoraization costs can rarely be measured. In the end, this analysis cannot escape the absence of a metric for comparing fairness and economic efficiency.

A system that places a value that is independent of the outcome on decisionmaking processes having certain procedural characteristics creates inefficiency in the economist's sense of the term because a process that satisfies the lawyer's conception of fairness may not be the least expensive method for achieving the same policy outcome. This is not to argue that lawyers are indifferent to the procedural costs of decisionmaking, although there may be an element of this -- where an economist perceives a procedural cost a lawyer sees income. But even if lawyers who run administrative agencies attempt to achieve given degrees of institutionalized protection of private equities and of procedural nicety for minimum feasible cost, the performance of the managed market will still fail a test of economic efficiency.

To the extent that lawyers seek to preserve private equities through institutional protections rather than direct financial compensation, regulatory policy also leads to economic efficiencies in the performance of the regulated market. For example, the adoption of a new technology may be delayed while the agency determines its impact on each of the buyers and sellers of the service and develops a procedure for gradually adopting the new method in a manner that minimizes the losses of those with investments in the old method. This generates an

incentive to produce innovations that avoid the regulatory process or that do not threaten the existing distribution of wealth. While in terms of economic efficiency these effects may generate far greater costs from benefits, in terms of legal efficiency -- the extent to which private equities are protected and high procedural standards are maintained -- the process may be exemplary.

A lawyer-dominated system also creates problems of selective representation of interests in the decisionmaking process (Noll, 1971a). Among the characteristics of a procedural system that meshes with the values of lawyers are decisions based upon formal evidence admitted only according to strict rules, among them the right to rebut opposing arguments in an adversary process. Participation in such a process is expensive. Hence, the effectiveness of a group in having its private equities preserved depends upon the resources it has available to represent it in the decisionmaking process. Not all private equities of equal size will have equal representation. Generally, the smaller the group is, the higher is the per capita stake of the group members in the issue, and the more dependent is the success of the group on the participation of each member, then the greater is the likelihood that the group will become organized to represent its interests in a regulatory proceeding (Olson, 1965). To the extent that decisions depend upon the information derived from the regulatory process, the uneven representation of interests will lead to uneven concern for private equities. This causes a bias against change -- new policies, new organizations, new technologies -- in agency decisions. Because of the uncertainties attendant to a proposed change, some potential beneficiaries are likely to be unaware that they stand to gain from it. Consequently, they will not be as well organized as other groups with equal stakes, and some private equities will not even be represented. Furthermore, the rules of evidence will downgrade the conjectural information about the potential benefits of change in comparison with the more certain information about established methods and institutions, and the equities depending on their continuation. And, because the interests of consumers are widely diffused, they are also less likely to be effectively represented in the adversary process. This is a further bias against change insofar as its potential benefits in the end derive from consumer demand for the products affected by the innovation.

Perhaps the most important effect of lawyer-dominated agencies is the response they engender in private organizations. The more a private organization finds itself involved in regulatory proceedings which strongly influence its well-being, the more likely are lawyers to dominate that organization as well. In the extreme case in which agencies are willing to insulate a private organization from competition, success in dealing with government officials can be a far more important factor affecting the firm than the efficiency of its operations. For industry, the development of legal strategies becomes the most important ousiness activity, and persons who are especially adept at executing these strategies rise to the top of the firm. For society as a whole, the effect is to increase the demand for lawyers,

thereby sucking off a share of the most intelligent, creative minds into what is essentially an economically unproductive activity -- the care and feeding of government regulators.

The lawyer-dominance theory leaves many questions unanswered. Most important is the issue of its significance. Presumably this could be estimated at least qualitatively by comparing the performance of lawyer-dominated agencies and industries with those that appear not to be lawyer dominated, such as the institutions that manage medical care, agricultural production and atomic energy. With respect to the last, the Atomic Energy Commission appears to have been controlled primarily by scientists and engineers. The objectives of the agency appear to have been related to the key role of scientists. Its promotion of peaceful uses of atomic energy increased the demand for scientists and engineers, and contributed to assuaging the scientific community's lingering doubts about its participation in the development of atomic weapons. Also, procedures and private equities were less important concerns at the AEC than at other independent commissions until the rise of the environmental movement introduced serious conflict into AEC proceedings.

Another important issue is the cause of lawyer dominance. Some attention to legal process is necessary, of course, because of constitutional protections of private property, guarantee of due process and provision for the right to petition for redress of grievances. But agencies differ in the formality of their process, and some agencies are not dominated by lawyers. Hence, the question arises whether lawyer dominance is systematically related to some other feature of policy responsibility. It is possible that lawyer dominance just happens to be built into most agencies simply because the Congress includes many lawyers, and that the exceptions are anomalies. It is also possible that lawyer dominance is an effect of environmental factors that influence an agency's development over time. Lawyers may be observed to attain a dominant position in an agency because its responsibilities include resolving conflicts among several well-represented interests, leading it to adopt procedures and objectives that generate a demand for lawyers' skills in key policymaking positions (Eisenstadt, 1958). The absence of lawyer-dominance for two decades in the AEC, for example, may have been a result of the fact that until the late 1960s there were really not any significant private equities to be preserved in the nuclear energy business nor any serious conflicts over the technology. Or the removal of AEC regulatory powers to a specialized agency, the Nuclear Regulatory Commission, may have served to cut off some technical personnel from these policies, leaving the field easier for lawyers to dominate.

The Bureau as Enterprise

Another major theoretical approach to an organic theory of administrative behavior pictures an agency as having motivations similar to those of a private entrepreneur.

Budget-Based Theories. The most common approach is to assume that the agency attempts to maximize its budget (McKean, 1964;

Niskanen, 1971; Wildavsky, 1964). From this assumption, two general types of conclusions have been reached.

One set of conclusions follows from the observation that the budget-maximizing agency is roughly equivalent to a revenue-maximizing private enterprise, so that theoretical implications of the latter have counterparts in the theory of the former. The firm that maximizes total revenue, subject to the condition that its profits not fall below some minimum level, will, from the standpoint of economic efficiency, produce too much output if it exhibits decreasing returns to scale and operates in a market that is not perfectly competitive (Baumol, 1967). Such a firm increases output to the point where price equals average cost, which, incidentally, is the objective that is normally assumed for public utility regulation (Baumol and Klevorick, 1970), whereas optimal pricing from an economic efficiency standpoint depends upon the relationship between price and marginal costs (Baumol and Bradford, 1970; Dixit, 1970). By similar argument, the conclusion is reached that a budget-maximizing bureau will, in the presence of increasing returns, produce more service and obtain a larger budget than is economically efficient (Niskanen, 1971).

This conclusion depends upon the assumptions made about the relative bargaining power of an agency compared to budget decisionmakers. As Niskanen points out, whereas a bureau is normally a monopolistic supplier of its service, so, too, is the legislature a monopolistic demander. If the legislature is totally passive, exploiting none of its bargaining power, the revenue-maximizing bureau will expand until the social value of the agency, as measured by the legislators' demand, is zero; that is, it extracts sufficient budget from the legislature so that the latter is indifferent between abolishing the agency and continuing it at its current cost. If the agency and legislature have roughly equal bargaining strengths, one possible result is the one that would prevail under competition -- an agency of optimal size.

The second set of theoretical conclusions is derived from assumptions about the factors that influence the relative bargaining strengths of agencies and budgeters. In general, these ideas constitute arguments in support of the proposition that agencies have greater bargaining power than budgeters and hence are likely to be too large. They fall into the following general categories:

1. Budget Complexity. The budget of the entire government must be considered by budgetary decision-makers, while an agency considers only its own budget. Because the overall complexity of the budget is so great, budgeters can devote little attention to the particulars of the budget of most agencies. They respond by developing automatic rules of thumb for most budget items, examining only a few with care in any budget cycle (Wildavsky, 1964; Woll, 1963).

2. Building a Clientele. Recognizing the sensitivity of legislators to special interest lobbies, an agency can increase its bargaining strength by creating wealth among some well-defined, organized group whose well-being will be linked to the size of the agency's budget (Somers, 1965; Wildavsky, 1964). Conversely, the best

strategy for a private organization is to work out a symbiotic relationship with its overseeing agency.

3. Control of Information. Agencies are expert on their own activities and control the flow of most of the information relevant to evaluating their budgetary requests. This allows subjective opinions to be masqueraded as objective facts and gives an agency the opportunity to present a restricted list of alternatives that makes the policies they propose appear more desirable (Danziger, 1974; March and Simon, 1958; Wildavsky, 1964).

4. Private Favors. A legislator normally desires special favors for his constituents. An agency can increase its budget by working out special favors for those who support its overall budget request (Ferejohn, 1974; Wildavsky, 1964).

5. Competition for Control. Whereas the agency normally possesses a monopoly in its service, Congress and the executive may compete for control of agency policy; the executive may approve a budget it does not expect Congress to approve in order to curry favor; the Congress may exceed the executive request for similar reasons (Sayre, 1965).

While these arguments all establish plausible independent effects, they do not sum to proof that the agency has superior bargaining power. For example, the argument about the diffused budget process can cut both ways. Each agency budget is reviewed by two budget, two authorization and two appropriation committees, the first and last with more broadly based financial responsibilities that lead them to have relatively greater concern for overall spending. Furthermore, the sequential process of budget determination still yields one final budget figure, not separate contributions from different committees for different purposes. In such a decisionmaking process, the distribution of all individuals having a vote among the various committees considering the proposal and the sequence in which committees vote can have a major effect on the outcome (Shepsle, 1979). The fact that for most agencies the appropriations stage produces the binding figure probably reduces the bargaining power of the agency. This is consistent with the general belief that program budgets are higher with back-door financing — programs in which the appropriations committees have little influence because the authority to commit federal funds is made prior to appropriations (Plott, 1968).

The competition for control between executive and legislative branches could lead to higher budgets, but it will occur only when both branches find it worthwhile to control the agency. But, for reasons given in point (1), most agencies are not carefully scrutinized by Congress or the Executive Office of the President, in part because there is little to gain politically from controlling them (Cary, 1967).

Another feature of the theory that is open to serious doubt is its presumption that the proper characterization of the budgetary process is conflict resolution between agencies and Congress. If Congress, too, likes to build alliances with client groups through regulatory provision of private favors, the desires of the agency for larger budgets mesh with the desires of Congress to provide favors. In

this milieu the budget becomes a competition among agencies for developing client groups, regardless of the function of the agency. Assuming that the specific identity of the source of votes and campaign contributions does not affect their value, the monopolistic functional division of responsibilities may be without operative significance -- particularly in a process in which the budgets are, in general, determined by appropriations committees who will be in a better position than authorizations committees to trade the interests of one functional client group for the favor of another.

The welfare implications for the budget-maximizing bureau that parallel those for the revenue-maximizing firm are also subject to question. Welfare implications of price and output behavior in private markets are based on the derivation of market supply and demand schedules from actual resource costs and consumer preferences. Advocates of the budget-maximization theory make the point that the state of knowledge about the true resource costs of programs is obscure at best and may even be intentionally clouded as part of rational bureaucratic behavior (Wildavsky, 1964). But the theory's advocates have not fully realized that on the demand side, too, the connection between a Congressional willingness to budget and voter welfare is tenuous. Legislator prerogatives, or agreements that within limits certain personal favors can be accorded each legislator without review by his peers, make the acquisition of some favors of zero cost to legislators, so that the marginal value of expenditures on favors need not equal that for other public services (Ferejohn, 1974).

Furthermore, because of the nature of collective choice institutions, the stability and regularity of political outcomes do not require the attainment of even the existence of a political counterpart to general economic equilibrium. Consequently, the presumption that the expressed preferences of a legislature reveal information about the relative benefits at the margin of alternative public and private goods is without theoretical foundation (Plott, 1972). This means that the difference in output between a budget-maximizing and profit-maximizing bureau has, by itself, no normative significance.

The budget maximization hypothesis yields several predictions about the behavior of regulatory agencies that do not depend on its questionable assumptions about the behavior of budget decisionmakers, the bargaining process and the welfare implications of the model. In general, a budget-maximizing agency should react favorably to possibilities for expanding its sphere of control. In particular, opportunities for expanding the number of regulated markets should be regarded with favor, because they increase the workload of the agency and expand the number of clients. One would also expect budget-maximizing agencies to prefer to regulate competitive industries. More firms means that administering market behavior requires more resources. And more firms means a more loyal clientele because competition creates the greatest dependence of the industry on regulation to generate profits that exceed the normal earnings of competitive firms.

The actual behavior of regulatory agencies does not appear to fit these predictions.

Agencies have often opposed proposals to expand their responsibilities: examples are the Federal Power Commission and natural gas field prices, and the Food and Drug Administration and toy safety. Agencies appear to prefer fewer firms rather than more: for example, the promotion of mergers by the CAB and ICC, the receptive attitude of the Department of Interior to joint ventures in oil production on federal lands and the opposition of the Federal Communication Commission to pay television, cable television and spectrum reallocation, all of which could be used to expand broadcasting. Historically, extensions of authority have often been a reluctant response to the emergence of an unregulated, competitive threat to the structure of an industry that the agency has created, such as the movement of the FCC into cable television regulation because it threatened the agency's plans for broadcasting (Noll, Peck and McGowan, 1973). Of course, because inefficiency attracts competitive entry, agencies find the expansion of their responsibilities a continuing necessity (McKie, 1970).

The budget-maximization theory also predicts a tendency of administrative agencies to adopt formalized, lengthy procedures for reaching decisions because these, too, raise the costs of performing administrative tasks. But this leads to a dilemma. If Congress permits expenditures to grow in order to finance adversary procedures only when an agency is often called upon to resolve conflicts among represented groups, then agencies should have an incentive for creating conflict. This conclusion is at variance with the findings of most of the sociological research on bureaus and the observation of economists that agency's generally oppose new entrants with new technology. On the other hand, if Congress does not evaluate the necessity for formalized procedures on the basis of the existence of conflict, the presence of formalized procedures should not vary systematically with the existence of conflict among agencies -- the former will be sought regardless of the relevance of a conflict-resolution system. In fact, formalized procedures are highly correlated with the presence of conflict. At the FCC, for example, a formal inquiry into the pricing of interstate telecommunications prices was not held for over thirty years, while during the same period elaborate procedures were developed and continually amended with respect to competitive hearings for broadcast licenses. For licenses that are not limited in number or that are merely sold through competitive bidding, procedures are not so legally formalized, such as certifications that qualify housing for FHA or VA loan guarantee insurance, rights to log in national forests or CB and amateur radio licenses at the FCC.

The strength of budget-based theories depends in part on their ability to characterize accurately the budgeting process -- the focus of most of the above criticisms -- and in part on the validity of the simplifying assumption that budget is all that matters or is close enough to being all that matters to allow the simplified theory to make accurate predictions (Niskanen, 1971).

In the case of regulatory agencies, the theory just does not seem to work. These agencies have relatively small, stable budgets and very little programmatic responsibility. This sets them apart from superagencies such as the Department of Defense or the Department of Health and Human Services, which are the agencies that authors such as Niskanen (1971) and Wildavsky (1964) have in mind when theorizing about the budgetary process. Perhaps differences in agency purposes -- buying or producing a service versus regulating a private market -- give rise to different modes of behavior.

Some of the inadequacies of budget-based theories might be overcome if revenue-maximization (Miqué and Bélanger, 1974). Suppose that agencies maximize their discretionary budget -- or at least a weighted sum of budgetary components that favors discretionary funds -- where discretionary funds are the parts of the budget that the administrators of the agency are free to spend on themselves. Because administrators normally have salaries fixed by office and tenure, opportunities for increasing salary income are small. But administrators can receive some other types of income: a travel budget, a chauffered car, a large staff, a nicely decorated office and a fund to spend on friends through advisory groups, conferences, consultantships and so forth. When an agency has the opportunity to expand the domain of its authority, it might react according to the expected difference between the increase in revenues and the added costs associated with the new activity. Included among the benefits might be the budgetry reductions that might be made if the old client group was adversely affected by the new responsibility, either because its interests might conflict with the new client or because its affairs might receive less attention if the new responsibility were added.

The Venal Administrator. Another approach to viewing the agency as an enterprise is the theory that agencies are operated to maximize the permanent income of administrative heads. In some instances this is taken to mean that commissioners are simply bought and paid for by the industries they regulate (Schwartz, 1959). But, because the amount of money involved in most of the famous regulation scandals is so small, it seems unlikely that payoffs are the cause of a commission favoring a particular group so much as they are simple expressions of gratitude among friends of long standing. A more subtle version of this theory involves an analysis of the career opportunities of administrators. Because opportunities for increases in income while in the federal service are limited, agencies can be a vehicle for obtaining better employment in the private sector. A high-level official of a regulatory agency develops specialized skills regarding the operation of the regulatory process that are highly valued by regulated firms. Hence, regulatory officials, when their on-the-job training is complete, will take positions with the firms whose behavior they formerly regulated or with professional firms -- law, consulting, engineering -- who assist the regulated firms in representing themselves in regulatory proceedings. Their behavior while in the service of the agency will be oriented towards obtaining these more lucrative private sector positions, leading administrators to devote considerable effort to developing cordial relations with regulated firms (Eckert, 1972). While this behavior falls short of capture -- obviously some independence of mind and show of integrity is necessary to appear as an attractive future employee -- the predicted result is an agency operated in large measure in the interests of the regulated industry.

The empirical support for this position resides mainly in demonstrations of the free flow of personnel between administrative agencies and firms in the managed industry (Eckert, 1972; Noll, Peck and McGowan, 1973; U.S. Senate Committee on Government Operations, 1977). What has yet to be demonstrated is any connection between the observed employment pattern and the decisions made by regulatory officials. For example, no study has been made showing systemmatic differences in voting behavior among commissioners in a regulatory agency according to their employment histories before and after their terms of government service.

Probably the most interesting prediction derived from the permanent income theory relates to the planning horizon of the agency. Because officials expect to find greener, private pastures before too long, it is argued that they are only interested in the immediate results of agency policies. Decisions that resolve an issue temporarily or a lengthy procedure that postpones a decision until after the official's expected term of office will be more attractive than if the official expects to face the future consequences of present actions.

In practice, the tenure of administrative officials is, on average, very short (President's Advisory Council, 1971). This could explain why regulatory agencies tend to focus on short-run static efficiency problems relating to current prices and profits while forsaking long-term planning and technological change. Once again, though, this hypothesis has never been tested by examining the records of regulators with varying lengths of tenure. Conceivably short tenure could simply transfer more authority to permanent bureaucrats, whose experience could give them significant power because it makes them indispensable to agency operations when top level administrators lack expertise (Perrow, 1961b).

In any event, one does not need the permanent income theory to predict a short-run orientation of regulatory agencies. The behavior of a rational elected official will be heavily influenced by the necessity to get through the next election, producing pressures from the Congress and the political officials in the executive to deal with short-run problems. And postponing unpleasant decisions will always be appealing unless the likely unpleasantness of the decision grows more rapidly than the decisionmaker's rate of time preference. Here the existence ot fixed tenure of office provides an additional incentive, regardless of future employment, to postpone a decision that will inevitably create further problems for the agency beyond an official's term of office. In fact, the permanent income hypothesis might actually make officials somewhat more concerned about long-term consequences of decisions because their expected future jobs in the regulated sector gave them a stake in the operation of the industry that extends beyond the tenure of their office.

More generally, the principal deficiency with the permanent income theory is its absence of much predictive power. While it predicts a tendency towards favoritism of producer groups, it does no more than offer a qualitative judgment. And in conflicts among producer groups, it does not yield predictions of behavior. At best, it points to one of many ways in which represented interest groups influence regulatory outcomes.

External Signals

The last organic theory considered here is offered as an eclectic one, combining many features of the preceding theories. The discussion that follows is intended to outline the rudiments of a general theory of regulation, not to be a comprehensive statement of it. The latter requires much additional work, especially of a more formal nature. The underlying hypothesis of the external signal theory is that agencies try to serve the public interest but, because the public interest is such an elusive concept, have difficulty identifying it. Consequently, they judge the extent to which their decisions satisfy the public interest by observing the responses of other institutions to their policies and rules.

The external signals of agency performance are numerous. Agencies regularly perform in what I have somewhat pompously labeled theaters of external judgment -- institutional settings in which someone outside of the agency with some control over its policies and/or budget passes judgment on the agency's performance (Noll, 1971a). Among these sources of performance indicators are the courts, the legislative committees that decide upon the budget and legislative program of the agency, the relevant budget examiners in the Office of Management and Budget or corresponding state or local government agencies, the press, whose primary locus of concern is the regulated industry and who may criticize the agency if the performance of it deteriorates, and the constituent interest groups participating in agency procedures who, if dissatisfied with an agency decision, can appeal it to the courts or can take their case to the politicians or the press.

From each theater of external judgment -- courts, Congress, constituents, executive and press -- the agency receives a flow of success indicators: actions that express approval or disapproval with the agency's decisions. It is plausible that agency's will view the public interest as being served if the success indicators indicate approval: budget requests and legislative proposals are generally well-received by OMB and the overseeing congressional subcommittees; encounters with Congress, whether in private or at open congressional hearings, are free of serious conflict; agency decisions are rarely appealed to the courts; when appeals are made the courts normally uphold the agency decision; and the performance of regulated firms is sufficiently good that journalistic inquiries into the agency's policies are rarely made. Behaviorally, an agency may actively seek to maximize the extent to which its feedback is positive, or it may act more passively, seeking to avoid negative feedback or to receive

positive signals to some satisfactory extent. Downs' theory sees the agency passing from the active to the passive mode as it grows older (Downs, 1968). The satisfying model may be most relevant for relatively small, unimportant agencies that normally escape notice (U.S. Bureau of the Budget, 1950). Bernstein's (1955) life-cycle theory of regulatory agencies constitutes an argument for this view.

The three sources of signals that most plausibly could represent the public interest to an agency are the courts, elected political officials and the general public (including the press in all agencies except the FCC). Since the retreat of the courts from substantive due process in the early decades of the twentieth century, the courts' primary role has been to signal procedural fairness and a rational basis to agency decisions. The role of political leaders is more complex. To the extent a politician uses regulatory policy to further reelection aims he or she may seek to provide favors to specific constituents, to respond o general political swings in the electorate or even to act as a political entrepreneur or leader by creating a new salient issue with which he or she can be identified. If the latter two, the purpose of regulation among the general population is important to the extent that the democratic process succeeds in leading to the election of political officials whose opinions reflect the center of public sentiment on salient issues. This public rationale for regulation can be one of several possibilities: to correct market imperfections, to effect a redistribution of wealth from sellers to buyers (e.g., controls on residential rents or fuel prices) or to avoid markets in cases in which consumers do not like negotiating or want to increase stability of prices and production (Owen and Braeutigam, 1978).

Whether the general voting population is a consideration to politicians depends on the salience of regulatory policy -- that is, whether at any given time regulation, generally or a specific part of it, is important enough in relation to other issues that voters will give it significant weight in making voting decisions. This depends in part on whether markets (regulated or not) are perceived to be performing poorly, as well as on the state of affairs in other policy areas such as foreign relations or public services.

Direct citizen participation in regulatory affairs is relatively rare and when it does occur is usually parallel with a rise in the political salience of regulatory issues. But one form is probably not sensitive to politics -- the activities of the academic policy-research community. The presence of academic research critical of ineffective or inefficient regulatory policies played a key role in the 1970s battles over deregulation of cable television (Besen et al., 1977) and airlines (Breyer, 1981).

Research can effect regulatory policy in three ways. First, it can be used as a weapon by interest groups in agency, court and congressional processes. The advantage of this pathway is that decisionmakers are forced to consider it in making decisions; however the disadvantage is that its scientific objectivity is highly suspect. Second, it can suggest to political entrepreneurs possibilities for

gaining recognition by successfully raising a new salient public issue. The lead role played by Senator Edward Kennedy in airline deregulation illustrates this pathway (Breyer, 1981). The problem here, of course, is the rarity of its occurrence. Third, to the extent that public officials regard themselves as serving a deeper public purpose than creating institutionalized protection for special interests, they will be interested in scholarly work evaluating their performance and will respond to it if it is regarded as of high quality. This pathway is illustrated by the role of research in turning around the FCC on cable television deregulation. This pathway is in some sense the purest and has the greatest aura of scientific objectivity. While it also appears somewhat more trodden than the second path, its major disadvantage is still its rarity. Obviously, a necessary condition is that the research be known to the agency. This in turn requires that the agency include some people -- usually high level professional staff -- who keep abreast of research in pertinent areas or that the research community plays an active role in making its results known to policy officials. Until the mid-1970s the former was rare among regulatory agencies, and few academics have pursued with the latter; hence the situation -- uncomfortable to academics -- that the first pathway predominates (Noll, 1973).

Playing a ubiquitous role in the provision of signals to the agency are the interest groups who are organized to participate in agency information-gathering processes, to challenge agency decisions in the courts and to lobby politicians. The sensitivity of government policy in a representative democracy to pressures from interest groups has long been recognized. James Madison in Federalist 10 understood that a key constitutional problem was how to build a democratic government that protected individual rights but that was not controlled by special interests. Madison's solution was to construct a legislature in which all important interests were likely to be represented but were unlikely individually to have much power. Regulatory agencies, because of their single-purpose mission and relatively small size, do not have this Madisonian protection when undertaking their quasi-legislative functions, hence their susceptibility to becoming dominated by special interests.

Until the 1960s, whereas the role of interest groups was recognized, relatively little attention had been given to the process by which interest groups are formed and become effective politically. The theory of interest-group mobilization is an important part of the theory of agency behavior because it enables us to predict the kind of signals an agency will receive both through its own processes and from legal and political sources. Economists have formalized this theory, although it is still largely qualitative in terms of its predictions (Olson, 1965; Davis and North, 1970; Buchanan, 1965). According to this point of view, an interest will be represented in a political process if it expects to gain more from representation than the costs of participating and if it can avoid the problem of free-riding among its members.

Being represented in a regulatory proceeding can be very expensive. When an important issue is at stake, agencies can take years to reach a decision, and all the while a represented group must retain the services of high-cost professionals -- lawyers, engineers, economists. Then, after an agency announces its decision, court appeals and political lobbying may still be necessary. An individual or a group whose members share an economic interest must be willing to pay these costs plus any costs of organizing and maintaining the solidarity of the group in order to be represented effectively.

In general, the larger and more diverse is the group, the greater are the expenses of becoming organized, deciding upon policies and strategies, and obtaining effective representation. And, in general, a firm or individual is more likely to associate with a group to secure representation the higher is its stake in the outcome and the more important to achieving its objectives is its own participation in group activities. An individual is not very likely to join very large organizations that seek ends that are not seen as very important or that is likely to achieve its goal even if the individual does not pay a fair share of the costs. As a result, a group will commit more resources to being represented in the regulatory process the higher is the per capita stake of the members in the issue. If the sum of the economic stakes in an issue for all members is the same for two groups, the smaller group, with lower group organization costs and a higher per capita stake, will be more effectively represented.

The economic model of interest-group representation leads to the prediction that the information and success indicators flowing to the government will be biased in favor of small groups with large per capita stakes in political issues and against large, diverse groups whose members individually have little stake in the outcome but, because of their greater members, may have a larger total stake. Agency capture is predicted as a special case that occurs when (a) only one interest group has sufficient per capita interest in the issue to be effectively represented and (b) only interest-group pressure -- not, for example, the press or Naderesque intervenors -- can activate politicians, other bureaus or the courts to affect agency decisions. Historically, most regulated monopolies have fallen into this category, and predictably, little effect of regulation on these firms can be found (MacAvoy, 1970 and 1971; Moore 1970). Another illustration of the importance of condition (b) is argued in an interesting comparative study of four government agencies that support basic research (Weiner, 1972). Apparently independent bureaus facing only budgetary examination -- NSF, NIH -- are far more likely to exhibit capture than agencies that are part of larger, mission-oriented bureaus -- ONR, OSR -- even though in all four cases the research community is the only external group in significant contact with the agency.

The external signal theory provides an explanation of the conditions under which Congress and the executive will engage in effective oversight of agencies. As discussed above, some attribute poor regulatory performance to a persistent tendency of political

leaders to ignore regulatory policy. The problem with this view is that on occasion Congress or the executive decides to play a major role. Sometimes Congress does so by writing regulations itself (the Coal Mine Safety Act of 1967, the fleet fuel efficiency standards for automobiles, the Delaney Amendment to the Food, Drug and Cosmetic Act, the new source performance standards for coal-fired electric generation facilities). Other times it does so through signalling its aims in the oversight process. The executive branch sometimes deals with agencies only by appointing people to them who deserve political awards. But sometimes it selects appointees very carefully for a well-developed policy purpose, and sometimes it institutionalizes its own oversight, such as by creating a regulatory review bureau in the Executive Office of the President. The deeper question is why the executive and Congress sometimes becomes extraordinarily active. External signals provide an answer. When the clients of an agency are happy and the agency is not receiving public attention, there is no reason for extensive political oversight. But when agencies are in conflict, appeals are made to the political system and/or regulatory policy becomes salient. And agencies that are always a focus of political conflict ought systemmatically to receive more political attention than their more placid siblings. This is born out by the turbulent politics of natural gas regulation (Sanders, 1981) and broadcasting. Even better evidence is the transition of telecommunications regulation from relative political obscurity to rather extensive political oversight in the 1970s. Decisions by the FCC to allow new firms into telecommunications as satellite operators or specialized common carriers created an organized interest in opposition to AT&T in the late 1960s. By the early 1970s, the executive branch had created the Office of Telecommunications Policy (later the National Telecommunications and Information Administration) and Congress had reinvigorated the subcommittees overseeing the FCC.

The external signal theory provides a similar explanation for the tendency of some agencies to develop cumbersome procedures and to exhibit excessive concern for the preservation of the most important private equities, which are the motivational assumptions of the lawyer-dominance, goal-deflection model. These tendencies are an agency's natural response to the attempts of competing organized groups to influence agency decisions.

The protection of private equities is in part caused by Constitutional protection of rights and property, but it also arises from the nature of the representation process. A group which has become organized to represent itself in the deliberations of the regulatory agency is also a threat to appeal the agency's decision to the courts, to lobby congressmen about the error of the agency's ways and to wage a public relations campaign in support of policies contrary to those established by the agency. An agency attempting to avoid negative feedback from the providers of success indicatrs will seek to protect the equities of the organized groups in order to avoid the negative feedback the groups can trigger.

An agency will also develop complicated decisionmaking procedures for reasons related to representation. First, they will enable the agency to gauge the stake of the represented groups in the issue at hand and thereby better to estimate the probability each one will appeal any particular decision. Second, they will make participation in the process more expensive, which will reduce the number of groups entering the process. This in turn reduces the amount of information the agency must process and the number of threats to appeal agency decisions. Third, they will give outsiders the impression that the agency has behaved fairly in gathering information and listening to divergent points of view. Because courts review agency decisions almost exclusively on the basis of procedural issues, the chance the agency will win an appeal to the courts is greatly enhanced by the adoption of complex procedures (Woll, 1963). Fourth, an agency truly interested in serving the public interest and aware of the subconscious subjectivity in evaluating information from wealthy, prestigious sources will want to formalize procedures as a mechanism for depersonalizing information. The import and even perceived validity of information may depend upon its source. In part this is due to the possibility that only information from well-represented groups is likely to be used in legal, political or public relations attacks on the agency. But in part the reason may be entirely subconscious. Psychologists have found that judgments about purely physical characteristics of objects such as weight and size, as well as recall of events, depend upon the value of the object used in the experiment and the demeanor and status of those offering opinions (Asch, 1955; Bruner and Goodman, 1947; Sherif, 1935).

Unfortunately, formal procedures can not be wholly successful in dealing with the problem of obtaining objective, complete information. The sources of relevant information are normally the private organizations participating in the process. To the extent that information affects outcomes, firms have an incentive to use information strategically (Owen and Braeutigam, 1978). While selectivity in introducing information into regulatory proceedings is one possibly productive strategy, especially in uncontested processes, other, more subtle strategies are also available. One is information overload. When a firm profits from delay in decisions, it can benefit itself by introducing so much information into the proceeding that the agency can not digest it all in a timely fashion. Another strategy is to organize the regulated firm in such a way that certain types of information that might be damaging are never collected or are evaluated and dealt with at a low, probably undetectable level in the organization. Normally a private business would find information about customer complaints of value; however, in the context of economic or safety regulation, such data could damage the enterprise more than help it. A firm, in making certain that damaging information is kept unavailable, reduces the chance that its opponents will succeed in challenging an agency policy that the firm finds beneficial.

The extent of observed lawyer-dominance in a regulatory agency is, according to the external signal theory, a consequence of

the extent to which the clients of the agency are well-organized, have mutually conflicting interests and are likely to turn to the courts rather than to politicians or the press for relief of decisions that threaten their interest. For example, Elling's (1963) case study of hospital planning describes a decisionmaking process that sought to balance conflicting, well-organized interests and was extremely slow in reaching decisions, but, because the principal theaters in which pressures were exerted were political and economic, did not exhibit lawyer-dominance. Similarly, the agricultural sector is diffuse and rather weakly organized, and its chief mechanisms for generating feedback to the agency are through the press and the Congress, rather than by appeals to the courts. Only in rare instances are representatives of other organized interests participants in making agricultural policies, and when they are so represented the process appears to exhibit more lawyer-dominance -- the Packers and Stockyard Administration and the Commodity Exchange Authority operate in much the same fashion as the independent regulatory commissions that have similar responsibilities, in comparison to the far less open and structured process by which agricultural prices, acreage allotments and marketing quotas are decided (Bonnen in Noll, 1971b). Finally, the decision-making structure in Sweden concerning health and safety regulation -- less formal less adversarial and probably more effective --- corresponds to a situation in which court appeals are essentially foreclosed (Kelman, 1981).

In the case of the Atomic Energy Commission, the loosely organized scientific community would be expected to dominate its decisionmaking process only until the agency succeeded in creating a commercial nuclear energy industry. The prospect of widespread commercial use of atomic power creates large private equities which conflict with the interests of scientists and of other groups, as witnessed by the debate about the safety and environmental implications of nuclear electric power generators. This generates a demand for the special skills of lawyers at building and operating systems for the resolution of conflict in a fair, equitable manner. And as the importance of the lawyers increases, the scientists are transformed from the dominant force in setting agency objectives to one of the weaker interest groups represented in an adversary process that reflects the values of lawyers. The consequence is a slower, more costly process, but one that is more likely to address a range of political issues that is broader than the purely technical (Cohen, 1980).

The preceding suggests an inherent dilemma in the regulatory process. For policies favored by producers, agency procedures will be most conducive to their timely adoption if only the producers are represented in the process and if their principal threat to the agency is through political and public relations appeals, rather than appeals to courts. But this type of regulatory environment will not be favorable for otherwise desirable policies that the principal producer group perceives as opposed to its interests, such as when the policy would allow more competition or, as is often the case, when the only

effect of a policy change is an improvement in product or worker safety, a reduction in the environmental damage associated with producing a product or even a reduction in costs under certain methods of price and profit regulation, such as was offered by the unit train (MacAvoy and Sloss, 1967). These types of changes may receive more favorable attention if those who would benefit by them were given representation in the proceedings, such as by the creating a Consumer Advocacy Agency or nongovernmental public-interest lobbying organizations (Terris, 1971). But when the regulatory agency becomes the adjudicator of conflicts among divergent, represented groups who, among other things, threaten court appeals of agency decisions, lawyer-dominance, with its slow procedures and relatively low concern for economic efficiency, results in retarded rates of adoption of all changes, not just the ones opposed by the regulated industry. In similar fashion, more diverse representation makes agencies more likely to exercise effective control over producers and thereby to make some inroads on ameliorating market imperfections, but by the same token it will increase the delay and the costs of adopting economically warranted changes in technology or market structure that are supported by producers.

This dilemma provides an argument against proposals to combine agencies with overlapping responsibilities in related industries. The purpose behind these proposals is to promote rational planning: only by having control of all policy areas affecting a particular sector can an agency be expected to adopt efficient policies. For example, the creation of the Department of Energy, a superagency including nearly all existing regulatory and other agencies with responsibilities in managing the energy sector, was defended because it would produce policy that was more sensitive to the interactions among separate energy industries, that contributed to a better balanced development of alternative sources of energy and that was more able to weigh the benefits and costs of alternative policies towards the safety and environmental effects of new institutions and technologies. Similarly, the Ash Council proposed that the regulatory agencies responsible for various components of the transportation sector -- the Interstate Commerce Commission, the Civil Aeronautics Board and the Federal Maritime Commission -- be combined so that cross-modal effects of policies would be given more weight.

The counterargument to these proposals is that agencies who must adjudicate disputes among conflicting, well-represented interests assign a low priority to the very purpose of establishing a comprehensive agency -- the economically efficient operation of the sector over which it has authority. In principle, DOE could have become a comprehensive energy planning agency. In practice, it structured itself into quasi-independent, technology-based bureaus each serving a particular constituency in the energy sector. In principle, the ICC certainly is better able to implement a rational multimodal surface transportation policy than would be a collection of agencies, one for each surface transportation industry. In practice, rational intermodal planning never occurred because the ICC exhibited little

concern for economic efficiency, basing decisions about prices and route structure almost totally on preserving the relative private equities in the national surface transportation system (Friedlaender, 1969). And, because the ICC was not particularly interested in efficiency, it should be no surprise that, as time has passed, the regulated firms lost some of their zeal for efficient operation.

The possible escapes from the Hobson's choice of which type of progress to retard all involve fundamental changes in the regulatory environment. One approach is to merge the opposing interests in order to reduce the number of conflicts an agency must settle. The rationale for the single entity proposal in international communications was that only through merging the international carriers would the Federal Communications Commission and the industry make a rational choice among technologies -- cables versus satellites (Peck, 1970). Of course, such mergers improve the ability of producers to represent themselves effectively, but it also reduces the control of the agency over the regulated market. Moreover, if some groups remain unrepresented, the result is a coalition against them. For example, Ackerman and Hassler (1981) argue that a coalition of western environmental groups and the eastern coal industry led to the adoption of stack-gas scrubbers as mandatory for new coal-fired electric generation facilities. Both groups wanted to avoid the development of a western coal industry and the regulation eliminated the incentive to use low sulphur western coal. The nascent western coal industry and eastern environmentalists were poorly organized and not well represented, and hence lost out.

Another approach is to replace institutionalized protection of private equities with direct compensation. The disappearance of the CAB's subsidies of domestic airlines did not result in the bankruptcy of inefficient carriers or the abandonment of subsidized routes; rather the direct subsidies were replaced by the use of price regulation to protect high-cost firms and to create cross-subsidization -- the transfer of excess profits on some routes to offset losses elsewhere within the same firm -- or, in Posner's (1971) term, taxation by regulation. Because institutionalized protection causes loss of production efficiency, direct compensation should be a cheaper way to obtain subsidized services. Direct compensation would, in several instances, have led to more rapid adoption of new technologies which were retarded or prevented because of their likely effect on the existing distribution of equities: piggyback truck-rail shipping (Gellman, 1971) and cable television (Noll, Peck and McGowan, 1973) are cases in point. Of course, direct compensation is not without costs. It requires a complicated procedure for determining equity losses and blunts incentives for efficiency and innovativeness: if competition proves too tough, compensation awaits. Whether these costs outweigh the costs of institutionalized preservation of equity remains to be determined; certainly a definitive study of the effects of the abandonment of truck airline subsidies in the 1950s would contribute to that end.

A third approach is to break away from the model of regulation by expert judgment. One possibility is to free regulators from formal

rules of procedure but to make their decisions only advisory to the legislature, putting policy responsibility on the shoulders of politically accountable officials. Another possibility is direct election of regulatory authorities or referenda on regulatory policies, either of which would add a direct signal from the electorate to the others received by the agency. In some states, public utility commissions are directly elected, but no work has ever been done on whether this affects agency behavior. An important paper on local urban renewal authorities does illustrate that a requirement to pass a referendum on a urban renewal plan substantially reduces the extent to which an urban renewal plan substantially reduces the extent to which an urban renewal authority designs projects to suit special interests, particularly developers (Plott, 1968).

These more political approaches raise new problems. Most obviously, because it is not clear that agency policies stray from the intent of Congress, the effect of making these policies more directly related to politics could be minimal. An election-referendum system, given the extent of regulation, would lead to a horrendously complicated ballot. States in which referenda and initiatives are relatively easy to place on the ballot have proverbial bedsheet ballots which require considerable voter sophistication if the results are to be valid indicators of preferences, particularly given the incentives for rational ignorance in a multi-issue, multi-choice, large-electorate election (Downs, 1957). An alternative to direct elections is a collegial body of representatives of different constituencies, such as is sometimes used in establishing water basin planning authorities and, in Illinois, the state air pollution control agency. These attempts to conserve on the limited attention span of voters in direct elections by creating decisionmaking subsets of the electorate that are somehow representative of the divergence of views on the issue. Of course, in this type of body, the voting rules and the distribution of voting strengths among constituencies have very important -- and very complicated -- affects on outcomes (Haefele, 1973; Dorfman and Jacoby, 1970; Levine and Plott, 1975).

Concluding Observations on Organic Theories

One principal conclusion to be derived from the discussion of organic theories of regulatory agencies is that simple analogies to the theory of the firm and markets do not appear to be very powerful in explaining processes in which the outcome is determined by interest-group aggregation. This is due in part to important differences between decentralized and collective decision processes and in part to the nature of administrative jobs. The American federal service is a remarkably effective device for turning agencies away from objectives based solely on financial measures such as personal income and agency budget (Tullock, 1965; Warner et al., 1963). This feature strengthens the case for a perceived public interest model of decisionmaking like the external signal theory. Harsanyi (1964) has speculated that one axiom of individual preference theory should be low-cost objectivity -- that an individual has to have a significant stake in an issue before

behavior becomes motivated by self-interest. It so, the insulation of decisionmakers from much of a direct financial stake in any single issue breeds an attitude of detachment and objectivity. Combined with the uncertainties and informational problems faced by agencies, as emphasized by March and Simon (1958), a public-interest orientation seems to lead inevitably to an external-signal behavioral system.

Another general conclusion is that regulation does not have an immutable tendency to create cartels. Indeed, a captured agency is a predictable result of a specific set of political conditions, just as is an agency which focuses primarily on economic efficiency or an agency which is primarily interested in preserving historical relationships among different categories of suppliers.

The final conclusion is that a general theory of regulatory activity is a promising possibility. In particular, positive political theory, built upon the rational-actor hypothesis, provides falsifiable propositions about the sources of changes in regulatory policy. Moreover, these propositions appear to explain a great deal of regulatory history. Of course, much work remains to establish this conclusion firmly. The alternative view that there is no general political theory of regulation, defended most strongly by Wilson (1980), cannot yet be dismissed.

STRUCTURAL THEORIES

An enormous literature -- far more extensive than the literature on organic theories of agency behavior -- has developed on how and why organizations become structured as they do, and what differences structure makes in an agency's performance. Yet almost none of this literature is focussed on regulation per se. The highlights of the former will be summarized before proceeding with the literature relating structure to performance and with an attempt to connect this theory to regulatory behavior.

Determinants of Structures

No rigorous, formal theory of the structural development of organizations has been developed. Instead, the literature on the topic consists of a series of partial, single-effect-single-cause conjectures. Most are based implicitly at least on a rational-actor conception of organizational structure -- that is, organizations develop as they do because it is efficient for them to do so. Of course, because much of the relevant theorizing is by sociologists, the rational choice process is rarely made explicit, a notable exception being Blau (1970).

A major line of theoretical inquiry has been directed towards justifying Weber's unproven assertion about the optimality of bureaucratic structures, which he described as having the following key characteristics: functional specialization of jobs, formal rules to make decisions impersonal, a hierarchical authority structure for communication and control, and employment based upon objective measures of competence and qualification.

One body of theory (Blau, 1970; Blau and Schoenhen, 1971) flows from the following set of assumptions: organizations are goal-directed and attempt to achieve efficient operation; individuals have limited capacities for receiving communication and controlling subordinates; and, a la Adam Smith, increasing specialization of jobs leads to increasing worker productivity. As an organization grows, then, it will have ever-expanding opportunities for engaging in division of labor but ever-increasing problems in monitoring and controlling individual performance. In order to sacrifice as little division of labor as possible while retaining control, an organization will have specialized subunits as numerous as is consistent with communication and control capabilities, and the number of hierarchical levels will depend on the size of the organization and the extent of division of labor that is practiced. Furthermore, to expand the ability of superiors to control subordinates, parallel hierarchical structures will be split along functional lines so that the subordinate group of any superior is more homogeneous. In organizations with diverse activities the number of administrators required to control specialized associates may increase more rapidly than the total number of employees as the organization grows (Aiken and Hage, 1968; Blau, 1970; Terrien and Mills, 1955).

To increase the ability of superiors to control subordinates and to reduce communications per organization member, as much as possible of the activity of the organization will be routinized through formal rules. Formal rules can be consulted by subordinates without communication with the superior and can be a reference point for communicating changes. Hence, as an organization grows, its optimal structural arrangement becomes more hierarchical -- both the number of parallel hierarchies and the number of hierarchical levels increase -- and more formalized, impersonal and routinized in operations.

The extent of hierarchical development and functional grouping of increasingly narrower tasks depends upon the nature of the activities of the organization (Blau and Scott, 1962). Hierarchies present problems of communicating performance information upwards and commands downwards through multiple levels because at each stage some information and some control are lost. The extent of hierarchical development that is optimal will, therefore, depend upon the extent to which coordination, information and instruction are needed: units along an assembly line, for example, require far more coordination -- and hence a better information-control system -- than departments in a retail store. Conversely, the greater are the gains from division of labor, the greater is the optimal degree of hierarchical structure.

Another body of theory flows from the observation that organizations develop for the purpose of finding solutions to problems that no single individual could solve. It is based on the view that part of the process of solving a problem is developing alternatives from uncertain information about cause and effect and about the environment in which the organization operates (March and Simon, 1958). Organizations will divide unsolvable problems into manageable components, with those responsible for each subproblem attempting to

reduce informational uncertainties and find acceptable, but not necessarily optimal, partial solutions. The solution to the problem that is finally developed, still being based to some extent on uncertain information and on a marriage of acceptable solutions to component problems, will depend heavily on the initial factoring of the problem and the sequence in which information and subproblem solutions are generated. As time progresses, the organization learns by experience which methods of factoring problems and generating information tend to produce desirable results, and will regularize them (Cyert and March, 1963). By this process the functional divisions within the organization are developed.

Another line of theory flows from assumptions about the reaction of an organization to its environment. If the organization is threatened by external groups, it will alter its structure to ease the threat. One mechanism is to set up substructures that permit the external client group to influence the organization (Selznick, 1943; Thompson and McEwen, 1958). This structural response causes debureaucraticization in the sense that those at the bottom of the structure, because they interfere with the potentially threatening client, transmit the client's policy wishes up the hierarchy (Aiken and Hage, 1968; Corwin, 1972). Another possible structural response is to develop protective relations with other client groups that offset the threat of the first client group (Blau and Scott, 1963). A third structural response is to develop regularized relations with external organizations to reduce uncertainties about the outcomes of alternative courses of action (Cyert and March, 1962). In this instance the other organization is not so much a threat as a presence whose behavior is unpredictable unless some sort of normalized relationship can be developed by connecting the organizational structures. All of these possibilities apply equally to agencies and the organizations with which they deal. The symbiosis grows upwards in both organizations from the point of contact, making it especially difficult to undo through changes at the top -- such as by appointing new administrators.

Structure and Performance

The development of causal conceptual models of the structure of organizations inevitably led to the discovery of costs as well as benefits in Weber's ideal bureaucratic structure. Most of these ideas have appeared in the literature of sociology; however they have not been particularly well developed, owing to an unexplainable abandonment of the presumption of rational development once a potential cost is identified. This criticism will become more apparent as the various theoretical ideas are explored.

Division of Labor. One of the consequences of division of labor into homogeneous groups with specialized tasks is the creation of clusters of organization members who possess expertise and technical skills. Their technical sophistication makes them more difficult to monitor and control, for their superiors in the organization become unable to comprehend the requirements of the job they perform. By originating the upward flow of information, these groups can deflect

organizational objectives (Blau and Scott, 1962; Eisenstadt, 1958).

By similar argument, the development of structures for dealing with external threat creates a specialized, expert group with control over an important block of information. This group, too, has a perception of identity. Because of its close association with the external group, its mandate to build working relations with it and its unusual ability to translate policy upward through the hierarchy, it can have its own objectives and, through its control of information and partial policymaking authority, direct the operation of the organization towards serving some combination of its own welfare and that of its external client (Eisenstadt, 1958).

The preceding model has serious problems when applied to competitive, profit-oriented enterprises because it abstracts from the participation of the firm in factor and product markets, and hence from the variables that determine the amount of slack in the organization and the bargaining strengths of superiors and subordinates. When applied to regulatory agencies and regulated firms, it makes more sense. Agencies deal with ambiguous problems involving substantial technical expertise, and the firms are partially protected from competition, so conditions are present for inefficiency to be possible. The issue boils down to an empirical one: do superiors receive sufficient information from subordinates to judge the performance of the subordinates and to make rational decisions?

Kaufman and Couzens (1973) asked exactly this question in examining information flows in nine government agencies and found that in seven cases the information received by the agency decisionmakers was accurate enough, complete enough and digestible enough (it was neither impossibly voluminous nor excessively technical) so that administrators did know what subordinates were doing and how to alter their behavior if they so desired. The study concluded that subordinate behavior that was inconsistent with publicized agency policy was either desired by the administrator or of too little consequence to generate compensating action.

These findings should not be surprising, for they are consistent with the same theoretical model that led to the predictions of how structure would develop in the first place. The argument that structural differentiation of responsibilities proceeds along rational, goal-directed lines should lead to the conclusion that among the costs entering the decisions about structure will be whatever loss of control the administrator must fact under alternative structural regimes. If a structure is created that gives substantial discretionary authority to a particular subgroup of the organization, it is because that particular structure seemed to produce more desirable results than the alternatives. In particular, if the substructure organized to deal with a threatening client gains ascendency, it seems sensible to make the causal influence the threatening client, not the resulting substructure. Arnold Weber's (1973) discussion of the decision to create an independent price control authority indicates awareness of precisely the factors discussed here at the highest level of the executive. In any event, a

rationalistic structural theory based upon the benefits of divided labor and the costs of maintaining coordination and control is not logically consistent with an assumption that the administrator ignores the costs of creating an organizational subgroup with autonomous power.

When applied to regulation, the principal implication of this theory is that regulatory agencies will tend to structure themselves by creating separate hierarchies for each client group. An example is the creation of the Cable Television Bureau at the FCC after the agency asserted jurisdiction over cable and began to regulate it. A second implication is that these functional divisions will develop close associations and even a merged identity with their related clients, and will grow into powerful influences from the bottom up on agency policy. This provides an explanation for a capture theory of regulation that does not depend on the nature of appointments at the top of the agency or on the delivery of favors by elected politicians, except insofar as administrators or politicians consciously structure agencies for such reasons. A third implication is that in some circumstances the structuring process leads to reform. Specifically, when client groups conflict, so do their bureaus. Hence, the creation of a cable bureau guaranteed that cable deregulation eventually had to be faced squarely by the FCC.

Formalized Rules. Another set of arguments relating structure and performance focuses on the effects of formalized rules. The impersonal and communications-conserving features of formalized rules may generate benefits of the kind described above, but they may have undesirable side-effects as well. First, being based on a minimum acceptable performance, they weaken incentives for better performance by extramarginal workers (Gouldner, 1954) and promote conformity of behavior among workers and through time (Thompson, 1965). Second, rules initially designed to bring subordinates under better control develop over time into a statement of the rights and duties of a class of workers. As such, their maintenance becomes an objective of its own, creating inflexibility and rigidity in the organization (Merton, 1936). Both are examples of what Merton calls false-generalization -- a procedure that works once is permanently adopted with unanticipated counterproductive long-term consequences.

The same argument could be applied to rules and procedures relating to the relationship between an organization and its clients. What is originally designed as a mechanism for acquiring information and exercising control may become a right that is valued by clients as they adjust their behavior to accommodate the system (Dill, 1962).

The generalization of the preceding argument is that there is a factor that retards organizational adaptability, a kind of structural inertia. It is somehow more expensive to change existing structures and patterns of relationships than to construct new ones, so that when a structure becomes outdated due to external changes it is inhibited in its ability to adjust. Otherwise, when an administrator observed performance standards and procedural rules leading to diminishing productivity, he would simply alter the structure, rules and procedure. In short, rules and procedures create valuable property rights for

those who enforce or are protected by them. Hence, a group is created to defend them that did not exist -- and therefore did not work for them -- at their creation.

Perhaps a fruitful theoretical path in developing a model of organizational inertia would follow from the concept of learning by doing (Arrow, 1962). Individuals schooled in an old structure may have to go through a period of unlearning old rules and methods before they can master the new. This would occur if, as some have found, formal rules lead to a reduced ability to cope with unusual events and a mechanical reliance on established methods (Shepard, 1967; Warner _et al_., 1963). Without job tenure organizational structures could freely change, but with job tenure it could be more costly to change to a new system and live through the unlearning process than to start the system from scratch.

Arguments predicting long-term rigidities in an agency can not be readily dismissed by appeals to the rational choice model of structuring. Given the presence of a discount rate or of a planning horizon fixed by tenure of office, long-term consequences of present structural and procedural decisions are likely to be given little weight. The problem is aggravated to the extent that the administrators face a situation of bounded rationality in which more problems clamor for attention than can ever be solved and in which the future is uncertain.

The key empirical prediction of this theory is that formalized organizations like regulatory agencies are resistant to change. This should lead regulatory agencies to try to solve new problems with old methods and could account for the shortsightedness in decisionmaking mentioned in the discussion of the permanent-income theory. In the case of a new policy issue, old practices may be inappropriately applied and thereby prevent or retard a response. Furthermore, because many of the formalized rules and practices apply to relations between the agency and its client, they are likely to retard policy changes in client organizations as well. This offers an alternative explanation to the one based on preservation of private equities for bias in the rate and pattern of innovation and change in regulated industries.

The structural inertia theory suggests that an apt characterization of the life history of a regulatory agency is that, as a result of a short-term planning horizon arising from rational individual behavior by administrators, performance is relatively efficient in the beginning but steadily deteriorates as the agency grows older. An organizational structure is thus quite similar to a very long-lived capital asset with high disposal costs — like a central city whose large buildings were designed according to rational comparison of the net value of alternatives, based upon calculations many decades ago that placed virtually no weight on the disposal problems that eventually had to be faced. Present problems of replacing these capital assets, nineteenth century buildings or outmoded organizational structures, can be viewed as an inevitable outcome of decisions arising from individual rational choice processes.

Some ideas have been offered on how to structure organizations so that they are more flexible and adaptable. Generally, the most important result is that structures that do a relatively good job in dealing with recurring problems also do relatively poorly when faced with a new problem requiring creative, adaptive behavior, and vice versa (Burns and Stalker, 1966; Shepard, 1967; Thompson, 1965). Adaptive behavior requires looser, less hierarchial, more informal arrangements, which reduce the extent to which behavior can be controlled from above (Aiken and Hage, 1968; Hage and Aiken, 1967; Weiner, 1972). This suggests that regulatory agency will be better prepared to deal expeditiously with changes in the regulated industry, such as those created by technological advances, if one of its functional divisions is a planning and research staff with minimal formal responsibilities and some real authority.

Most agencies, especially in response to the wave of enthusiasm over cost-effectiveness analysis that swept through Washington in the 1960s, have created planning offices along the lines the theory suggests (Schultze, 1968). Regulatory reform at the CAB and FCC in the 1970s, for example, began with the creation of first-rate offices for policy analysis, staffed primarily by economists. Of course, while this creates a potential source of adaptive responses to changing external conditions, it does not guarantee responsiveness by the agency, as those who have filled planning functions can attest (Joint Economic Committee, 1969). The creation of a planning institution does not give administrative leaders more motivation to consider the long-term consequences of their actions. In order for agencies to develop more flexible policies, they must possess the incentive as well as the ability to do so (Mohr, 1969; Weiner, 1972).

Several proposals to provide an incentive for long-term planning have been made. Agencies could be required to submit regular multi-year plans for future policy to the legislature (Cary, 1967). Congress could include an expiration date in the legislation establishing administrative agencies that would lead to periodic review of the agency's purpose and performance (Friendly, 1962). The tenure of administrative policymaking positions might be lengthened, perhaps to lifetime appointments as with Supreme Court justices, not only to increase independence through job security but to lengthen the planning horizon of the decisionmaker (Bernstein, 1955). Whether these changes can overcome the short-term focus of the political system remains unproven. Similarly, also remaining unproven is how much the active resistance to change by regulatory agencies is accounted for by these structural explanations and how much by the sensitivity to private equities in the status quo hypothesized in the external signal theory. The more important is the latter, the less is the likelihood that structural changes will matter.

Fuzzy Output. Another structural explanation of deteriorating performance arises from the difficulty of defining and measuring the output of most government agencies. A hypothesized first law of public administration is that measuring the output of public activities is systematically more difficult than measuring output in private

production, leading to an especially great difficulty in attaining technical efficiency in a public agency (Olson, 1973). Nevertheless, for external and internal reasons, agencies must develop performance measures and standards. The more ambiguous is the product of the agency, the further removed is the performance measure from a true index of the product the agency is designed to produce and the greater is the likelihood that the agency will, over time, assign increasingly greater weight to the measurable component of output (Cohen, 1965; Perrow, 1961b).

This tendency is certainly observable in some regulatory agencies. One example is the enormous attention paid by the Federal Trade Commission during the 1960s to its rather mundane responsibilities in textile and fur labeling (Noll, 1971b). Another example is the procedures adopted by the Federal Power Commission to measure its activity -- namely, specific price decisions -- and the result it created in terms of thousands of meaningless cases (MacAvoy, 1971). Still another is the attempt of the FCC to establish criteria for assessing the extent to which an applicant for a broadcast license was likely to serve the public interest (Spitzer, 1979). Attention to these measurable components may also influence technical decisions in regulated firms as both regulator and producer became oriented towards suboptimizations of an incomplete characterization of industry performance.

As with the other partial theoretical observations, this argument has not been established to have a great quantitative significance in terms of regulatory behavior. It stands as another addition to the file of potential costs to be considered when establishing a regulatory agency.

Observations on Structural Theories

The overriding characteristic of all of these structural arguments is that empirical tests are woefully lacking particularly with respect to regulatory agencies. In order for structural theories to be treated seriously in the public policy process, the literature must be extended beyond the current status of essentially wise musings about partial, *ceteris paribus* effects. Cases of structural change in agencies should be studied with an eye towards estimating the significance of the structural effects on agency policies and producer performance, not only in the short run, which tends to pick up primarily Hawthorne effects (Blau and Scott, 1962; Roethlisberger and Dickson, 1939), but also in the long run.

COMMON THEMES

Several consistent themes run through the numerous conceptual models of administrative behavior. To a significant degree the theoretical models are alternative explanations for essentially the same phenomena which, in all disciplines, scholars have generally come to agree are characteristic of regulatory policies.

First, to the extent that a consistent majority opinion in the electorate exists and can be characterized as representing a definition

of the public interest, the delegation of decisionmaking to regulatory agencies leads to policies that drift from this position. This suggests a loss of public control through successive delegations -- to Congress to subcommittee to agency to lower hierarchical levels in the agency. Furthermore, for a given agency and policy the drift grows larger through time until performance is bad enough to recreate political salience to the regulatory policy.

Second, capture by clients is common. The direction of drift from the hypothetical majority opinion is in the direction of the welfare of the particular groups in greatest contact with the regulatory agency and is most pronounced in agencies with very narrow responsibilities that have contact with few interest groups.

Third, regulatory agencies are inflexible and rigid, too slow to adapt policies to changing external conditions. Decisions tend to be based excessively upon short-run considerations and upon the preservation of the existing socioeconomic structure, which leads agencies to retard technological advancement and to resist new sources of competition unless they can be shown to leave the existing institutional system and distribution of wealth largely unchanged.

Fourth, regulation causes changes in client organizations that detract from their efficiency and perhaps even their viability in an unregulated environment. It affects the selection of leaders by private organizations, placing premiums on personnel who can deal effectively with government officials and legal processes rather than on those who do best at the primary function of the organization. It deflects resources and attention to a fundamentally unproductive activity, participation in formalized processes. And it sacrifices some warranted innovations and other economic changes by raising the costs of creativity and the wages of inefficiency through protecting the established ways of doing business.

Fifth, cures may lie in two general directions: reducing the advantage of small, well-organized groups in political and regulatory decisionmaking and making more flexible the various organizational structures through which authority is delegated. Among proposals that might accomplish these objectives are: (1) public interest lobbyists that would give representation to less well-organized groups having a large, aggregate stake in a regulatory issue; (2) greater insulation of the political process from organized interests, such as by changing the method of financing political campaigns and requiring complete financial disclosures by candidates; (3) changes in the congressional committee structure, such as by finding an alternative to the divisions of responsibility among subcommittees according to agencies and functions; (4) greater politicization of regulatory decisions by making offices elected, by allocating positions to constituencies or by making decisions advisory to political bodies; (5) simplifications in agency procedures that would make participation in the process by outsiders less expensive and that would free agencies from formal rules of evidence; (6) alterations in the structure and nature of the participants in the regulated market such as by nationalization, dissolution of large firms, mergers of small firms or legal

redefinition of property rights; or (7) formalization of a long-term planning process by creating a permanent, well-staffed, nonhierarchical planning group within each agency, by requiring regular submission of long-term policy plans and by including expiration dates in regulatory laws.

A conventional economic argument against incentive systems for promoting any particular kind of behavior is that they are insufficiently selective -- that is, that the extra-marginal decisions which will not be affected by the incentives are nevertheless subsidized or taxed. The folk wisdom on regulatory agencies suggests that the regulatory solution has its own problems, which may tip the efficiency balance the other way. Specifically, regulatory agencies can come to represent the interests of their clients. The key to wise choice among instruments of public policy -- regulation versus incentives versus reorganization of firms -- is to be able to characterize accurately the conditions that are more or less conducive to effective regulation.

Unfortunately, more definite specification of the causal relationships between policy actions and performance is not justified on the basis of the current state of knowledge about regulatory decisionmaking. The theory of regulatory behavior is rudimentary and fragmentary, although it is promising and progressing. Empirical work is almost nonexistent on the kinds of issues of interest to policy makers.

Certainly the most productive areas for further scholarly research at this stage are for detailed studies of how regulatory agencies actually work and what factors influence their performance. In order to understand how, if at all, regulatory processes can be improved, scholars must start investigating the empirical importance of political and organizational influences or decisions.

Many more case studies of agencies and policies must be undertaken to provide an empirical basis to begin sorting out which theoretical models seem to work best. Examples of the kind of work that needs to be done are Weingast (1982) on congressional control of the FTC and Cohen (1980) on the process of nuclear safety regulation. It is no longer enough for a researcher to identify some egregious example of regulatory malfeasance; that agencies create significant inefficiencies is well established. What is now required is some insight into how this performance can be improved, and this requires more study of the relationships among private sector performance, the decisionmaking process within the agency and the nature of the political process.

REFERENCES

Ackerman, Bruce, and William Hassler. 1981. Clean Air/Dirty Coal. New Haven: Yale University Press.

Aiken, Michael, and Jerald Hage. 1968. "Organization Independence and Intra-organization Structure." American Sociological Review 33.

Arrow, Kenneth J. 1951. Social Choice and Individual Values. New York: John Wiley and Sons.

__________. 1962. "The Economic Implications of Learning by Doing." Review of Economic Studies 29.

__________. 1964. "Control in Large Organizations." Management Science 10.

__________. 1970. "Political and Economic Evaluation of Social Effects and Externalities." In The Analysis of Public Output, edited by Julius Margolis. New York: National Bureau of Economic Research.

Asch, Solomon E. 1955. "Opinions and Social Pressure." Scientific American 193.

Averch, Harvey, and Leland L. Johnson. 1962. "Behavior of the Firm Under Regulatory Constraint." *American Economic Review* 52.

Baumol, W. J. 1967. *Business Behavior, Value and Growth*. New York: Harcourt, Brace and World.

__________, and D. F. Bradford. 1970. "Optimal Departures From Marginal Cost Pricing." *American Economic Review* 60.

__________, and A. Klevorick. 1970. "Input Choices and Rate-of-Return Regulation: An Overview of the Discussion." *Bell Journal* 1.

Bendix, Reinhard. 1949. *Higher Civil Servants in American Society*. Boulder: University of Colorado Press.

__________. 1968. "Bureaucracy." *International Encyclopedia of the Social Sciences*. Vol. 2. New York: Macmillan.

Bernstein, Marver H. 1955. *Regulating Business by Independent Commission*. Princeton: Princeton University Press.

Besen, S. M., B. M. Mitchell, R. G. Noll, B. M. Owen, R. E. Park, and J. N. Rosse. 1977. "Economic Policy Research on Cable Television: Assessing the Costs and Benefits of Cable Deregulation." In *Deregulation of Cable Television*, edited by Paul W. MacAvoy. Washington: American Enterprise Institute.

Blau, Peter M. 1970. "A Formal Theory of Differentiation in Organizations." *American Sociological Review* 35.

__________, and Richard A. Schoenhen. 1971. *The Structure of Organizations*. New York: Basic Books.

__________, and W. Richard Scott. 1962. *Formal Organizations*. San Francisco: Chandler.

Breyer, Stephen G. 1981. *Regulation and its Reform*. Cambridge: Harvard University Press.

__________, and Paul W. MacAvoy. 1974. *Energy Regulation by the Federal Power Commission*. Washington, D.C.: Brookings Institution.

Bruner, Jerome S., and Cecile C. Goodman. 1947. "Value and Need as Organizing Factors in Perception." *Journal of Abnormal Psychology* 42.

Buchanan, James. 1965. "An Economic Theory of Clubs." *Economics* 32.

Burness, H. Stuart, W. David Montgomery, and James P. Quirk. 1980a. "Capital Contracting and the Regulated Firm." *American Economic Review* 70:342-354.

Dixit, A. K. 1970. "On the Optimum Structure of Commodity Taxes." American Economic Review 60.

Dorfman, Robert, and Henry D. Jacoby. 1970. "A Model of Public Decisions Illustrated by a Water Pollution Policy Problem." In Public Expenditures and Policy Analysis, edited by Robert H. Haveman and Julius Margolis. Chicago: Markham Publishing Co.

Downs, Anthony. 1957. An Economic Theory of Democracy. New York: Harper and Row.

__________. 1967. Inside Bureaucracy. Boston: Little, Brown and Company.

Eckert, Ross D. 1972. "Spectrum Allocation and Regulatory Incentives." In Conference on Communications Policy Research: Papers and Proceedings. Washington, D.C.: Office of Telecommunications Policy.

Eisenstadt, S. N. 1958. "Bureaucracy and Bureaucratization." Current Sociology 7.

Elling, Ray H. 1963. "The Hospital Support Game in Urban Center." In The Hospital in Modern Society, edited by Eliot Friedson. New York: Free Press.

Etzioni, Amitai. 1959. "Authority Structure and Organizational Effectiveness." Administrative Science Quarterly 4.

__________. 1960. "Two Approaches to Organizational Analysis: A Critique and a Suggestion." Administrative Science Quarterly 5.

Ferejohn, John A. 1974. Pork Barrel Politics. Stanford: Stanford University Press.

Fiorina, Morris P. 1977. Congress: Keystone of the Washington Establishment. New Haven: Yale University Press.

Friedlaender, Ann F. 1969. The Dilemma of Freight Transport Regulation. Washington, D.C.: Brookings Institution.

Friendly, Henry J. 1962. The Federal Administrative Agencies: The Need for Better Definition of Standards. Cambridge: Harvard University Press.

Gellman, Aaron J. 1971. "Surface Freight Transportation." In Technological Change in Regulated Industries, edited by William M. Capron. Washington, D.C.: Brookings Institution.

__________. 1980b. "The Turnkey Era in Nuclear Power." Land Economics 56:188-202.

Burns, T., and G. Stalker. 1966. The Management of Innovation. London: Tavistock Publications.

Capron, William M., ed. 1971. Technological Change in Regulated Industries. Washington, D.C.: Brookings Institution.

Cary, William L. 1967. Politics and the Regulatory Agencies. New York: McGraw-Hill Book Company.

Cohen, Harry. 1965. The Demonics of Bureaucracy. Ames: Iowa State University Press.

Cohen, Linda. 1980. "Innovation and Atomic Energy: Nuclear Power Regulation, 1966-Present." Journal of Law and Contemporary Problems 43.

Comanor, William S., and Bridger M. Mitchell. 1972. "The Costs of Planning: The FCC and Cable Television." Journal of Law and Economics 15.

Cornell, Nina W., Roger G. Noll, and Barry Weingast. 1976. "Safety Regulation." In Setting National Priorities: The Next Ten Years, edited by Henry Owen and Charles Schultze. Washington, D.C.: Brookings Institution.

Corwin, Ronald. 1972. "Strategies for Organizational Innovation: An Empirical Comparison." American Sociological Review 37.

Cyert, Richard M., and James G. March. 1963. A Behavioral Theory of the Firm. Englewood Cliffs, New Jersey: Printice-Hall.

Danziger, James N. 1974. "Explaining 'Who Gets What?': Comparing Approaches to the Study of Financial Resource Allocation." In Comparative Public Policy: Issues, Theory and Method, edited by Craig Liska, William Loehr and John McCamant. Beverly Hills: Sage Publications.

Davis, Lance, and Douglass North. 1970. "Institutional Change and American Economic Growth: A First Step Towards a Theory of Institutional Innovation." Journal of Economic History 30.

Dill, William. 1962. "The Impact of Environment on Organizational Development." In Concepts and Issues in Administrative Behavior, edited by E. Vanness. Englewood Cliffs, New Jersey: Prentice-Hall.

Gouldner, A. W. 1954. Patterns of Industrial Bureaucracy. New York: Free Press.

______. 1959. "Reciprocity and Autonomy in Functional Theory." In Symposium on Sociological Theory, edited by L. Gross. New York: Row, Peterson and Company.

Green, Harold P., and Alan Rosenthal. 1963. Government of the Atom: The Integration of Powers. New York: Atherton Press.

Haefele, Edwin T. 1973. "Environmental Quality as a Problem of Social Choice." In Environmental Quality Analysis: Studies in the Social Sciences, edited by Allen V. Kneese and Blair Bower. Baltimore: Johns Hopkins Press for Resources for the Future.

Hage, Jerald, and Michael Aiken. 1967. "Program Change and Organizational Properties: A Comparative Analysis." American Journal of Sociology 72.

Hahn, Robert W., and Roger G. Noll. 1982. "Designing a Market for Tradable Emissions Permits." In Reform of Environmental Regulation, edited by Wesley Magat. Cambridge: Ballinger.

Harsanyi, John C. 1969. "Rational-Choice Models of Political Behavior Versus Functionalist and Conformist Theories." World Politics 21.

Hicks, J. R. 1939. "The Foundations of Welfare Economics." Economic Journal 49.

Joint Economic Committee, Subcommittee on Economy in Government. 1969. The Analysis and Evaluation of Public Expenditures: The PPB System. Washington, D.C.: Government Printing Office.

Joskow, Paul L. 1974. "Inflation and Environmental Concern: Structural Change in the Process of Public Utility Price Regulation." Journal of Law and Economics 17.

______, and Roger G. Noll. 1981. "Regulation in Theory and Practice: An Overview." In Studies in Public Regulation, edited by Gary Fromm. Cambridge: MIT Press.

Kaldor, N. 1939. "Welfare Propositions in Economics." Economic Journal 49.

Kaufman, Herbert, and Michael Couzens. 1973. Administrative Feedback: Monitoring Subordinates' Behavior. Washington, D.C.: Brookings Institution.

Keeler, Theodore E. 1972. "Airline Regulation and Market Performance." *Bell Journal* 3.

Kelman, Steven. 1981. *Regulating America, Regulating Sweden*. Cambridge: MIT Press.

Kolko, Gabriel. 1965. *Railroads and Regulation*. Princeton: Princeton University Press.

Leibenstein, Harvey. 1966. "Allocative Efficiency Versus 'X-Efficiency.'" *American Economic Review* 56.

Levine, Michael E. 1965. "Is Regulation Necessary? California Air Transportation and National Regulatory Policy." *Yale Law Journal* 74.

__________, and Charles R. Plott. 1975. "On Using the Agenda to Influence Group Decisions: Theory, Experiments, and an Application." Social Science Working Paper No. 66, California Institute of Technology.

Lindblom, Charles E. 1959. "The Science of 'Muddling Through.'" *Public Administration Review* 19.

Lowi, Theodore. 1969. *The End of Liberalism: Ideology, Policy, and the Crisis of Public Authority*. New York: W. W. Norton and Company.

MacAvoy, Paul W. 1965. *The Economic Effects of Regulation: The Truckline Railroad Cartels and the ICC Before 1900*. Cambridge: MIT Press.

__________. 1970. "The Effectiveness of the Federal Power Commission." *Bell Journal* 1.

__________. 1971. "The Formal Work Product of the Federal Power Commissioners." *Bell Journal of Economics* 2:379-95.

__________, and Roger G. Noll. 1973. "Relative Prices on Regulated Transactions of the Natural Gas Pipelines." *Bell Journal* 4.

__________, and James Sloss. 1967. *Regulation of Transport Innovation: The ICC and Unit Coal Trains to the East Coast*. New York: Random House.

March, James G., and Herbert A. Simon. 1958. *Organizations*. New York: John Wiley and Sons.

Mayhew, David R. 1974. Congress: The Electoral Connection. New Haven: Yale University Press.

McKean, Roland. 1964. "Divergences Between Individual and Total Costs Within Government." American Economic Review 54.

McKie, James W. 1970. "Regulation and the Free Market: The Problem of Boundaries." Bell Journal 1.

Merton, Robert K. 1936. "The Unanticipated Consequences of Purposive Social Action." American Sociological Review 1.

Michelman, Frank I. 1967. "Property, Utility and Fairness: Comments on the Ethical Foundations of 'Just Compensation' law." Harvard Law Review 80.

Mills, Edwin S., and Lawrence White. 1978. "Government Policies Towards Automotive Emissions Control." In Approaches to Controlling Air Pollution, edited by Anne F. Friedlaender. Cambridge: MIT Press.

Miqué, Jean-Luc, and Gerard Bélanger. 1974. "Toward a General Theory of Managerial Discretion." Public Choice 17.

Mohr, Lawrence B. 1969. "Determinants of Innovation in Organizations." American Political Science Review 63.

__________. 1973. "The Concept of Organizational Goals." American Political Science Review 67.

Moore, Thomas G. 1970. "The Effectiveness of Regulations of Electric Utility Rates." Southern Economic Journal 37.

Niskanen, William. 1971. Bureaucracy and Representative Government. Chicago: Aldine-Atherton.

Noll, Roger G. 1971a. "The Behavior of Regulatory Agencies." Review of Social Economy 29. (Also in Technological Change and Welfare in the Regulated Industries. Brookings Reprint, No. 219. Washington, D.C.: Brookings Institution.)

__________. 1971b. Reforming Regulation. Washington, D.C.: Brookings Institution.

__________. 1973. "Selling Research to Regulatory Agencies." In The Role of Analysis in Regulatory Decisionmaking: The Case of Cable Television, edited by Rolla Edward Park. Lexington: Lexington.

__________. 1980. "What is Regulation?" Social Science Working Paper No. 325, California Institute of Technology.

__________, Merton J. Peck, and John J. McGowan. 1973. Economic Aspects of Television Regulation. Washington, D.C.: Brookings Institution.

Olson, Mancur. 1965. The Logic of Collective Action. Cambridge: Harvard University Press.

__________. 1970. "An Analytic Framework for Social Reporting and Policy Analysis." Annals of the American Academy of Political and Social Sciences 388.

__________. 1973. "Evaluating Performance in the Public Sector." In The Measurement of Economic and Social Performance, Vol. 38 of Studies in Income and Wealth, edited by Milton Moss. New York: Columbia University Press.

Owen, Bruce, and Ronald Braeutigam. 1978. The Regulation Game. Cambridge: Ballinger.

Parsons, Talcott. 1960. Structure and Process in Modern Societies. New York: Free Press.

Pauley, Mark, and Michael Redisch. 1973. "The Not-for-Profit Hospital as a Physician's Cooperative." American Economic Review 63.

Peck, Merton J. 1970. "The Single-Entity Proposal for International Telecommunications." American Economic Review 60.

Peltzman, Samuel. 1974. Regulation of Pharmaceutical Innovation: The 1962 Amendments. Washington, D.C.: American Enterprise Institute.

__________. 1976. "Toward a More General Theory of Regulation." Journal of Law and Economics 14:109-148.

Perrow, Charles. 1961a. "Organizational Prestige: Some Functions and Dysfunctions." American Journal of Sociology 66.

__________. 1961b. "The Analysis of Goals in Complex Organizations." American Sociological Review 26.

__________. 1963. "Goals and Power Structures: A Historical Case Study." In The Hospital in Modern Society, edited by Eliot Friedson. New York: Free Press.

__________. 1967. "A Framework for the Comparative Analysis of Organizations." American Sociological Review 32.

Phillips, Almarin, ed. 1975. Promoting Competition in Regulated Industries. Washington, D.C.: Brookings Institution.

Plott, Charles R. 1968. "Some Organizational Influences on Urban Renewal Decisions." American Economic Review 58.

________. 1972. "Ethics, Social Choice and the Theory of Economic Policy." Journal of Mathematical Sociology 2.

Posner, Richard A. 1971. "Taxation by Regulation." Bell Journal 2.

President's Advisory Council on Executive Organization. 1971. A New Regulatory Framework: Report on Selected Independent Regulatory Agencies. Washington, D.C.: Government Printing Office.

Roethlisberger, F. J., and William J. Dickson. 1939. Management and the Worker. Cambridge: Harvard University Press.

Sanders, M. Elizabeth. The Regulation of Natural Gas: Policy and Politics, 1938-1978. Philadelphia: Temple University Press.

Sayre, Wallace, ed. 1965. The Federal Government Service. Englewood Cliffs, New Jersey: Prentice-Hall.

Scher, Seymour. 1960. "Congressional Committee Members as Independent Agency Overseers: A Case Study." American Political Science Review 54.

Schultze, Charles L. 1968. The Politics and Economics of Public Spending. Washington, D.C.: Brookings Institution.

Schwartz, Bernard. 1959. The Professor and the Commissions. New York: Alfred A. Knopf.

Scitovsky, Tibor. 1942. "A Note on Welfare Propositions in Economics." Review of Economic Studies 9.

Selznick, Philip. 1943. "An Approach to a Theory of Organizations." American Sociological Review 8.

Shepard, Herbert. 1967. "Innovation-Resisting and Innovation-Producing Organizations." Journal of Business 40.

Shepsle, Kenneth. 1979. "Institutional Arrangements and Equilibrium in Multidimensional Voting Models." American Journal of Political Science 23:27-59.

Sherif, Muzafer. 1935. "A Study of Some Social Factors in Perception." Archives of Psychology 187.

Somers, Herman. 1965. "The President, the Congress and Federal Government Service." In The Federal Government Service, edited by Wallace Sayre. Englewood Cliffs, New Jersey: Prentice-Hall.

Spann, Robert, and Edward Erickson. 1970. "The Economics of Railroading: The Beginning of Cartelization and Regulation." Bell Journal of Economics 1:227-44.

Spitzer, Matthew L. 1979. "Multicriteria Choice Processes: An Application of Public Choice Theory to Bakke, the FCC, and the Courts." Yale Law Journal 88:717-779.

Stigler, George J. 1971. "The Theory of Economic Regulation." Bell Journal 2.

Terrien, F. C., and D. C. Mills. 1955. "The Effect of Changing Size Upon the Internal Structure of an Organization." American Sociological Review 20.

Terris, Bruce J. 1971. "A Critique of the Agencies as Presently Constituted and of the Council's Recommendations for Realignment and Reorganization." Administrative Law Review 23.

Thompson, James D., and William J. McEwan. 1958. "Organizational Goals and Environment: Goal-Setting as an Interaction Process." American Sociological Review 23.

Thompson, Victor A. 1965. "Bureaucracy and Innovation." Administrative Science Quarterly 10.

Tullock, Gordon. 1965. The Politics of Bureaucracy. Washington, D.C.: Public Affairs Press.

United States Bureau of the Budget. 1950. "Project Summary, Survey of Regulatory Commissions." Washington, D.C.: U.S. Government Printing Office.

United States Senate Committee on Governmental Affairs. 1978. Study on Federal Regulation, Vol. II: Congressional Oversight of Regulatory Agencies. Washington, D.C.: U.S. Government Printing Office.

Warford, Jeremy J. 1971. Public Policy Toward General Aviation. Washington, D.C.: Brookings Institution.

Warner, W. L., P. Van Riper, N. Martin, and O. Collins. 1963. The American Federal Executive. New Haven: Yale University Press.

Webbink, Douglas W. 1969. "The Impact of the All-Channel Television Receiver Law." Journal of Law and Contemporary Problems 34.

Weber, Arnold R. 1973. In Pursuit of Price Stability. Washington, D.C.: Brookings Institution.

Weber, Max. 1946. "Bureaucracy." In From Max Weber: Essays in Sociology, translated and edited by H. H. Gerth and C. Wright Mills. New York: Oxford University Press.

Weiner, Sanford L. 1972. "Resource Allocation in Basic Research and Organization Design." Public Policy 20.

Weingast, Barry, and Mark Moran. 1982. "Bureaucratic Discretion or Congressional Control: Regulatory Policymaking by the Federal Trade Commission." Working Paper No. 72, Center for the Study of American Business, Washington University.

Westfield, Fred M. 1971. "Innovation and Monopoly Regulation." In Technological Change in Regulated Industries, edited by William M. Capron. Washington, D.C.: Brookings Institution.

Wildavsky, Aaron. 1964. The Politics of the Budgetary Process. Boston: Little, Brown and Company.

Williamson, Oliver E. 1970. "Administrative Decisionmaking and Pricing: Externality and Compensation Analysis Applied." In The Analysis of Public Output, edited by Julius Margolis. New York: National Bureau of Economic Research.

Woll, Peter. 1973. American Bureaucracy. New York: W. W. Norton and Company.

Yuchtman, Ephaim, and Stanley Seashore. 1967. "A System Resource Approach to Organizational Effectiveness." American Sociological Review 32.