

LEVEL #

BS

AD A105237

THE EFFECTS OF FISCAL CONTRACTION ON
INNOVATION IN THE PUBLIC SECTOR

Warren E. Walker
Jan M. Chaiken

April 1981

DTIC
ELECTE
OCT 8 1981

A

DTIC FILE COPY

81 10 7 041 ✓ P-6610

X
BS

The Rand Paper Series

Papers are issued by The Rand Corporation as a service to its professional staff. Their purpose is to facilitate the exchange of ideas among those who share the author's research interests; Papers are not reports prepared in fulfillment of Rand's contracts or grants. Views expressed in a Paper are the author's own, and are not necessarily shared by Rand or its research sponsors.

The Rand Corporation
Santa Monica, California 90406

6

THE EFFECTS OF FISCAL CONTRACTION ON
INNOVATION IN THE PUBLIC SECTOR

10

Warren E. Walker
Jan M. Chaiken

12) 57/

11

April 1981

14) RAND/P-6640

Title	
Author	
Date	
Project	
Notes	
By: _____ Director's Office Local Policy Center District _____ Location _____ A	

* This paper was prepared for the National Institute of Education's Program on Research and Educational Practice. A briefing based on the paper was presented at a conference entitled Prospects for Local Government: Coping With the New Fiscal Environment, held at The Rand Corporation, April 27-28, 1981.

296611 104

1. INTRODUCTION

1.1 BACKGROUND

After a period of explosive growth in fiscal resources, personnel, and services in the 1960s and early 1970s, the public sector, and local government in particular, has entered a period of fiscal contraction and decline that is likely to continue through most of the 1980s. There are many sources of the fiscal limits being faced by local governments. In the northeast they are primarily related to shrinking tax bases, as population and industry shift out of the frost belt into the sun belt. In other localities, such as in California, they have resulted from taxpayer revolts, which seek to limit the growth in expenditures or taxes, or to cut existing taxes. Moreover, the effort to cut back on the expenditures of the federal government will lead to further reduction in the fiscal resources of all levels of government.

These changes in the fiscal environment portend significant changes in the degree to which innovations are introduced into local government, the types of innovations that are introduced, and the process by which they become introduced--all of which depend to a large extent on how localities respond to the new realities of their situation. Fiscal constraint can alternatively be viewed as introducing major obstacles to innovation or as providing an opportunity to make innovative changes that would have been more difficult to implement during a time of expanding budgets.

The 1960s and early 1970s witnessed no dearth of creative responses by local governments to their problems. However, during that period

continued growth of their budgets enabled them to be innovative while avoiding hard resource allocation decisions. All services and functions could be given more resources since the budget pie was expanding. If projected revenues fell short of the amount needed to support all the desired activities, taxes were raised to fill the gap. The process was succinctly described by Bolten (1975): "Both expenditures and revenues rise to meet each other, no matter which one may be in excess."

Many of the advocates of tax-cutting and expenditure limitation measures articulate favorable expectations about what will happen to innovation when there's less money. They anticipate a reversal of the past patterns of bureaucratic behavior, which they view as stagnating, self-serving to the government employee rather than helpful to the taxpayer, and unnecessarily overloaded with administrative procedures and paperwork. They expect a budget crunch to force local governments to face the hard choices they had previously been able to ignore. They anticipate that local officials will rethink their priorities, reexamine the way they allocate resources, and streamline their organizational and operational systems and procedures. The net result, in this view, will be a healthy breeze of reform and change.

The counterview is that fiscal constraints are likely to stymie efforts at innovation in government. Not only will innovative practices be halted now, but also there will be even more deleterious long-term effects. The equipment, management information, bright and innovative personnel needed to plan for the future will not be present in governments facing fiscal constraints.

In this paper we examine these two views and conclude that most factors conducive to innovation are much less likely to be present in

a public sector organization in a period of fiscal contraction. Hence we conclude that generally there will be less innovation, and such innovation as does occur will be increasingly difficult to introduce. However, we identify those factors that a creative, innovative administrator can use to advantage in a period of fiscal constraints to bring about innovation. And we identify types of innovations that are likely to succeed.

1.2 OVERVIEW

We have reached our conclusions by reviewing the existing literature on factors related to innovation in public service agencies^{*} and rethinking its implications in the new fiscal environment. Most of the literature was written during periods of fiscal expansion, and therefore it does not directly address the questions that we raise here. But by taking a new perspective on old literature, we have found that a fairly consistent pattern of conclusions emerges.

We have described our topic as "innovation," rather than knowledge utilization or technology transfer, primarily to match our own familiarity with the literature. However, there is much ambiguity about the definitions of these terms, and they overlap in various ways, depending on the author (Bowman, 1980). For our purposes, an "innovation" is a change in equipment, practices, or procedures that is introduced with an expectation among its proponents that it will lead to improvements or benefits of some kind. (Of course, many don't work out as anticipated!) Innovation is not change that is forced on an agency with the

* See, for example, Glaser (1976), Hayes (1972), Public Affairs Counseling (1976), Rothman (1974), Yin (1976), and Zaltman et al. (1973).

general expectation that its consequences will be negative. Nor is innovation definitionally equivalent to efficiency or productivity improvement.

Although this paper is essentially nonempirical, we do illustrate some of our observations with examples from a study of the early effects of Proposition 13 on California's criminal justice system (Walker et al., 1980; Chaiken et al., 1981). In that study, officials in four counties and over 10 cities in those counties were interviewed about their agencies' responses to Proposition 13, and the county and city budgetary changes were analyzed.

Most of the literature on innovation in public service agencies has been directed at identifying the factors that appear to be critical to the innovative process. Although various studies have reached different conclusions about the relative importance of the specific factors and how the factors are related to the process of innovation, there seems to be broad agreement on the types of factors that appear to be relevant in one way or another to the process. For purposes of our discussion, we have divided the factors into three categories:

- o Environmental Factors. These factors are external to the organization, but influence their operations in a fairly direct way. They include the economic and political environment in which the organization functions, and, in the case of governments, the characteristics of the community being governed.

- o Organizational Factors. These factors relate the internal characteristics of an organization to its innovativeness. Included in this category are such factors as the organization's size, degree of centralization, and amount of "slack" (uncommitted resources).
- o Staff and Personnel Factors. These factors relate to the individuals in the organization who are involved in the innovative process. Among the factors included in this category are the amount of interaction between the individuals within the organization and those outside it, their morale, and their degree of unionization.

The following three sections discuss each of these categories of factors in turn. In each case we assess the impact that a reduction in the fiscal resources of a generic local government agency is likely to have on the factors that are thought to facilitate innovation in local government. The specific factors discussed within each category correspond to those in the synthesis of the literature presented in Yin (1976). We have not attempted to discuss all the factors mentioned in the literature--only those that are likely to be affected by fiscal constraints. After discussing the three categories of factors related to innovation, we describe the types of innovations that are likely to succeed in the new fiscal environment.

Since our previous experiences with public sector organizations have been primarily with fire departments and criminal justice agencies, we illustrate our assessments with examples from these agencies. The general principles we discuss appear, from the cited literature, to

apply more broadly to public service delivery agencies. However, our familiarity with innovation in educational agencies is very limited, and we must leave the reader with the burden of finding analogies between our observations and likely developments in the educational field.

In compiling and examining the various factors that we have deemed conducive to innovation in public service agencies, we cast a wide net. We are not asserting that we believe each of them to be valid, or that each has been empirically proved to have a positive influence on innovation. (On the contrary, the influence of many of the factors has been called into doubt.) But our examination reveals a general pattern of relationships with fiscal contraction—a pattern that seems resistant to modification based on the invalidity of one or two components.

2. ENVIRONMENTAL FACTORS

Environmental factors relate to the political, social, economic, and technological climate within which a local government agency operates. In this paper we view one of the environmental factors--economic conditions--as the key independent variable, and all other factors--political, bureaucratic, organizational, etc.--as dependent variables in assessing what will happen to innovation as a result of fiscal contraction. We assume that the fiscal resources of our generic local government agency are cut in real terms and ask what the impacts on the agency's innovative behavior are likely to be.

It is generally acknowledged that an environment in which resources are expanding is conducive to innovation. For example, in a private sector example, Utterback (1971) has shown that the frequency of innovation by a firm producing a product increases when the market for that produce is expanding. To our knowledge, there have been no studies of the impact of fiscal contraction on innovation in public sector organizations.

The squeeze on an agency's resources need not be caused by a reduction in its budget. If an agency's budget increases by less than the rate of inflation, its resources are being reduced in real terms. In the past few years, inflation has been running over 10 percent per year. Thus, agencies whose budgets do not increase at over 10 percent per year are experiencing fiscal contraction. In addition, the demands on local government service agencies (e.g., fire departments

and police departments) seem to be continually increasing. Thus, to maintain the same level of service effectiveness, these agencies need increasing real amounts of resources.

Besides economic conditions, the primary environmental factors that influence innovation in local government are (1) the characteristics of the community being served and (2) political and bureaucratic factors.

2.1 CHARACTERISTICS OF COMMUNITY

Size and Urbanization

It has been found that the size and degree of urbanization of a community are important characteristics in determining the amount of innovation that takes place in the community's government. Governments in large, urban communities tend to be more innovative than those in small cities or in rural areas (Aiken and Alford, 1970; Rothman, 1974, p. 425). This seems to be due to many factors. For example, there are bigger pools of better-trained, more professional talent in large urban areas. In addition, it is easier to establish coalitions to implement an innovation in a large, more structurally-differentiated community.

Large cities have been among the first to be hit by fiscal contraction--primarily due to increasing service delivery costs combined with shrinking tax bases. To the extent that they were a major source of innovative ideas, and that their innovative behavior is reduced, there may be an impact on innovation in other communities; the source may be drying up.

Wealth

The wealth of a community--quite apart from the size of the budgets of its local government agencies--is an important environmental determinant of innovation in local government (Yin, 1976, p. 82). In the 1960s and early 1970s, the real income of most Americans was increasing. In such an environment there was not a great amount of resistance to allowing local governments to tax away a portion of the increased incomes. Thus, standards of living and local government budgets could both expand in real terms. Innovative approaches to improving and expanding local government services were welcomed. Income transfers to increase the standards of living of the less fortunate could be sold to the public in terms of "legitimate compassion for the less fortunate, a compassion which was affordable in those good times. Economic expansion provided a ready and relatively painless means of social management" (Rader and Lang, 1979).

However, in the latter part of the 1970s the real incomes of Americans began to grow less rapidly, and eventually began to fall. Their interest in supporting government programs and sharing their wealth with others began to turn into a need to support their own families.* This change in attitude translates into a desire on the part of the public to stop governments from expanding their services and to concentrate on providing existing services more effectively. So far, there does not seem to be an actual reduction in the public's expectations about what services their governments should be providing.

* This reduction in an individual's "excess" resources and its effects is not unlike the concept of organizational slack in an organization, which is discussed in Section 3.

Quite the contrary, the public seems to want government to maintain all services it has been providing (including those added during the preceding period of expansion, with the possible exception of welfare programs) in the face of shrinking revenues and increased demands. The feeling seems to be that if the "fat" in government could be eliminated there would be more than enough money to support all desired services.*

The failure of public expectations for services to decrease as the resources of government decrease places severe constraints on the options available to governments for coping with the new fiscal environment. Cutbacks--either across the board or selective--are seen to be the only politically feasible course of action. More innovative approaches--such as those that would involve prioritization of functions and complete elimination of those with low priority in order to free up resources to support the remaining functions--are difficult to carry out.

The *relative* wealth of a community is another factor that affects innovation in local government. Even though real incomes are declining in most communities, the people in communities whose populations are relatively more wealthy tend to participate more in the affairs of the community. Such external participation, especially by persons with appropriate professional skills, has been found to increase the amount of innovation that occurs in the local government (Rothman, 1974, p. 459). We found in our study of the impact of Proposition 13 in California that

* For example, a poll taken in California on the day the public voted for Proposition 13 showed that most people felt that state and local government could provide the same level of service with 10 percent less money (*The California Poll*, June 1978).

public participation--especially volunteer activities--seems to be increasing as local resources are reduced. This might serve to stimulate more innovative behavior in these communities.

2.2 POLITICAL AND BUREAUCRATIC FACTORS

Bureaucratic Self-Interest vs. Production Efficiency

Decisionmakers in public organizations base their decisions on a large number of factors, many of which are bureaucratic in nature and unrelated to the achievement of greater service efficiency or effectiveness. Although political and bureaucratic factors are also important in profitmaking organizations, the availability of objective performance measures (such as costs and profits) tends to make improvements in efficiency more important to the decisionmaker in such an organization. For public organizations the situation is quite different. According to Yin et al. (1976, p. 109):

Attainment of self-interest goals often depends less upon market performance (and hence service efficiency or effectiveness) than upon bureaucratic and political factors. Furthermore, although an innovation that is adopted by a public organization may also produce service improvements, the problems of defining and measuring the appropriate service outputs of public organizations may help to keep improved service efficiency only secondary to the self-interest goal.

According to this view, the main goal of the public sector bureaucrat is to survive the next election or organizational change. The behavior that is most likely to lead to survival is to encourage the growth of his agency in status and power. Operationally, this generally means maximizing his agency's budget and widening its constituency. He, therefore, tends to favor an innovation that would expand

his agency's service, rather than one that would make the existing service more efficient or effective (Feller, 1980). Evidence for this type of behavior by government bureaucrats can be found in Lambright et al.'s (1977) study of the diffusion of 20 technological innovations in upstate New York cities.

It is clear that fiscal contraction will change the process by which government bureaucrats can achieve prestige and power. Empire building will become considerably more difficult. Government services will not be able to expand, so service-augmenting innovations will not be adopted. As Cyert (1978, p. 345) put it, "Everyone concerned with organizations in our society needs to readjust his/her thinking with respect to the criterion of success."

If service-augmenting innovations are unlikely to be adopted during a period of fiscal contraction, the focus on innovations (if there are to be any at all) must shift to those that improve the efficiency and effectiveness of the service. However, Yin (1977) has found that the implementation of such innovations involves a fundamentally different process. He calls this process (which is more commonly found in the private sector) *production efficiency*, and calls the process that is most commonly found in the public sector *bureaucratic self-interest*. Shifting government bureaucrats towards production efficiency is not an easy job. Among other things, it requires a restructuring of their reward system, with more emphasis being given by government leaders and by the public to service delivery systems. McKean, for example, has argued that the public has generally had more interest in service-augmentation and little interest in service improvement because the benefit "that individual voters could receive from

incremental efficiency is small, while the cost to each of acquiring information, forming pressure groups, and monitoring government officials is large." And Feller (1980) concludes that entire "groups of voters can become better off when they are the recipients of new programs from which they derive benefits in excess of the costs they bear."

The production efficiency approach to innovation also requires the use of different resources than are used for selecting innovations that are in the bureaucrat's self-interest. It generally involves a more analytical evaluation of the innovation together with other alternatives. The evaluation is often performed by government planners, and makes use of management data, mathematical models, and objective performance measures. Levine (1978, p. 317) claims that, paradoxically, the capacity of a local government to perform such analysis is built up during a period of expansion but used rarely. ("Under conditions of abundance, habit, intuition, snap judgments and other forms of informal analysis will suffice for most decisions." A more important use of resources during this period is to build prestige and political constituencies.) However, this capacity is an early casualty of fiscal contraction, so that when these tools are needed to help minimize the risk of making mistakes, they are not available:

The scenario goes something like this: First the most capable analysts are lured away by better opportunities; then freezes cripple the agency's ability to hire replacements; and finally, the remaining [analytical] staff is cut in order to avoid making cuts in personnel with direct service responsibility. (Levine, 1979, p. 180)

In our study of the impacts of Proposition 13 (Walker et al., 1980) we found that, in the year following its passage, substantial cuts were made in budgeted expenditures for planning, research, and management information system activities. For example, the Los Angeles City Attorney cut his staff in the planning and research division by more than 50 percent. He explained that it was a question of weighing the alternatives. The potential costs of reducing the planning function are great, but "in the scale of priorities it is more important to prosecute than to plan programs."

In the short term, aside from some disruptions in operating systems, costs in planning, research, and information system functions are reduced with no reduction in direct services to the public. However, these reductions mean that the data needed for effective problem identification, planning, and management are not available; that new planning tools are not being developed or used; that talented personnel who could suggest long-term solutions are not being retained or kept knowledgeable; and that innovative responses to fiscal constraints are unlikely to be forthcoming.

Risk of Failure

In the absence of an overwhelming public mandate for change and innovation, there are few incentives for a government bureaucrat to do much more than seek to maintain the status quo, even during times of fiscal expansion. As the leader of California's Senate said when asked about the secret of his political longevity: "Do nothing and you'll get elected forever."

The bureaucrat's normal inclinations toward maintaining the status quo and avoiding risky changes are intensified during a period of fiscal contraction. When services are expanding, an innovation that does not work will generally be able to be absorbed without great political repercussions. However, as Elmore and McLaughlin (1981) point out: "Since fiscal retrenchment effectively removes all risk capital from the system, policy 'mistakes' become unacceptably expensive. Legislative logic thus dictates that, where possible, policies continue the known and predictable."

Fiscal contraction requires budget reductions. However, the bureaucrat's inclination for maintenance of the status quo will lead him to make cuts that are largely invisible to the public. These are generally the opposite of what is needed to promote innovation. For example, as already mentioned, we found in our research that one response by local governments to Proposition 13 was to reduce expenditures on planning and research activities, postpone the development of management information systems, and more generally, shun all innovative approaches to management that have high front-end costs.

Another "invisible" way in which local governments reacted to Proposition 13 was to defer equipment purchases, capital improvements, and maintenance of existing capital stock. Cutbacks such as these may be invisible for a while, and may be able to be carried out for a year or two without much harm. But they quickly lead to the deterioration of a city's capital stock and physical plant. Replacement and repair of equipment that breaks down because it was not maintained will generally cost more than the maintenance would have cost.

Performance Gaps

The existence or perception of a performance gap has been found to be one of the most essential factors in motivating organizational change. According to Zaltman et al. (1973): "The impetus to innovation arises when organizational decisionmakers perceive that the organization's present course is unsatisfactory." This factor is most often mentioned in the context of the production efficiency process of innovation. (In fact this process is often referred to as the "problem-solving" approach.)

Fiscal contraction is likely to generate an increasing number of performance gaps in the service delivery systems of local government. For example, streets and parks in New York City have become significantly dirtier, the average time for police operators to answer calls for service in Los Angeles has increased, and nursing services in California schools have practically disappeared.

The literature on innovation suggests that these conditions should serve as catalysts to innovation. Many of the voters supporting fiscal limitations were also expecting them to lead to more efficiency in government. However, the many other factors governing bureaucratic behavior seem to be serving as barriers to increased innovation, more than outweighing the positive force of performance gaps. The short-term actions by local governments we have studied have clearly been made in the most politically expedient manner. Whether the pressure from the existence of performance gaps can overcome the barriers to innovation from other factors in government remains to be seen.

The State and Federal Role

Until as recently as 40 years ago, the local, state, and federal governments in the United States operated relatively independently in their respective spheres of influence. Since then, state governments, and subsequently the federal government, have played larger and increasingly important roles in local affairs. Local governments are now heavily dependent on federal and state money. For example, in FY 1979, 38 percent of the revenue of California's Alameda County came from state subventions, and 34 percent from federal subventions.

The federal government has played a major role in getting local governments to adopt innovations (primarily technological). A number of studies of the adoption of new technologies (e.g., Feller et al., 1974) have found that Federal money was either critical to adoption or provided an important incentive. For example, the grants distributed to local criminal justice agencies by the Law Enforcement Assistance Administration went in large part for testing new technology and innovative programs. It may be true that, as Berman and McLaughlin (1977) point out in the context of education, "many [school] districts obtained federal dollars opportunistically--just because money was available--rather than securing these special project funds to deal with a well-defined delivery need." However, the grants do supply additional funds to the local government agency, even if only temporarily, enabling it to do something it would have been unable to do without the funds.

During the 1970s local officials complained that LEAA grants could be obtained to fund new activities whose worth was unproven, but not

ongoing activities with proven value. Ironically, these complaints may have contributed to the demise of LEAA, so that local criminal justice agencies no longer even have this source for funding innovations.

Fiscal contraction in local government is likely to lead to even bigger efforts by local governments to obtain federal and state funds. This offers a potential opportunity for the state and federal governments to have an even greater impact on innovation in local government.

In the past, the primary emphasis of the federal government was to foster the spread of technological innovations among state and local governments. Although technological change has undoubtedly contributed to increased levels of productivity within state and local agencies, Feller (1980) has noted that most productivity improvements in local government (such as better work procedures and improved resource deployment) are not related to technology. They have generally been initiated and carried out by local government personnel with little outside assistance. "Underscoring the indigenous character of these efforts, the bulk of funds allocated to productivity programs in most local jurisdictions comes from local sources."

If, as we have posited, innovative changes in local government during fiscal contraction must be focused on improvements in efficiency and effectiveness, to be most helpful federal and state efforts to foster research utilization, information dissemination, and capacity building should also be redirected toward generating production efficiencies. The fact that prior federal efforts at increasing innovation in local government have not had this focus in the past is con-

firmed by a recent report of the General Accounting Office (1978), which stated: "We did not find any case in which the availability of federal technical assistance provided the major impetus for state and local productivity programs."

The fact that the availability of state and federal funding is a major factor in determining the amount of innovation that occurs in local governments has another implication in an era of fiscal contraction. Local governments are not alone in experiencing fiscal contraction. State governments are having an increasing number of taxing and spending constraints placed on them,^{*} and cutbacks are being made in many federal programs. Reductions in state and federal funding of local government may lead directly to reductions in innovative behavior in local government agencies.

^{*}See Pascal et al. (1979).

3. ORGANIZATIONAL FACTORS

In the previous section we discussed factors external to the local agency and general political and bureaucratic factors that relate to innovative behavior. This section focuses on characteristics of a particular agency that may hinder or motivate innovations, and discusses the impact that a reduction in the agency's budget is likely to have on these characteristics, and hence on innovation in the agency.

3.1 ORGANIZATIONAL SLACK

Organizational slack is the difference between the resources required to maintain an organization (and enable it to carry out its basic functions) and the resources available to the organization. Ever since the concept was defined by Cyert and March (1963) it has occupied an important position in many theories of organizational innovation. Organizational slack basically determines whether or not the organization can afford innovation. As summarized by Rosner (1968), "the existence of slack means that the organization can afford (1) to purchase costly innovations, (2) to absorb failures, (3) to bear the costs of instituting the innovation and (4) to explore new ideas in advance of an actual need."

The fiscal expansion of governments in the 1960s and 1970s was accompanied by increases in organizational slack. The traditional functions of local government (e.g., fire, police, and sanitation services) were relatively well-funded, and local governments were

able to expand their scope to include services not being provided previously. Early in this expansion phase, innovative behavior was common.

This was the era of technological innovation. The federal government supported a number of efforts to apply technologies that were able to "put a man on the moon" to the problems of the cities. And many innovations were adopted. However, since bureaucratic self-interest predominates in government organizations, most of the innovations were designed to enhance the prestige and power of the innovative agency and its administrator. Relatively few were designed primarily to increase the efficiency or effectiveness of the agency.

Organizational slack in the 1960s and early 1970s also enabled the demands of competing interest groups on various issues to be mediated by giving something to each group. Thus, innovative programs and policies could be introduced by forming coalitions of support.

As described by researchers such as Riker (1962), coalitions form to make or to influence government decisions. The ability of disparate elements of a coalition to reach agreement is based in large part on internal exchanges of benefits among coalition members, which are often referred to as "side payments." The more public resources to be divided, the greater the incentive to participate. The exchange of benefits is the critical element in holding the coalition together.

Fiscal contraction reduces and eventually eliminates organizational slack. When there are not even enough resources available to

maintain the organization, essential services begin to be cut back. Well researched and well analyzed innovative solutions to problems become luxuries that cannot be afforded and "organizations engage in highly constrained searches to find immediate solutions to pressing problems" (Yin et al., 1976, p. 87). As mentioned above, the solutions are often short-sighted solutions that may lead to bigger problems later on. They are also rarely technological solutions, since these generally have high front-end costs.

Coalitions that could be counted on to support innovations during fiscal expansion fall apart during contraction. It is clear that acceding to the demands of one special interest group means denying the demands of another. According to Elmore and McLaughlin (1981):

Special interests can no longer play the role that was defined during expansion. . . . Granting of special interest requests no longer means an add-on. The fiscal reality of Proposition 13 approximates a zero-sum game in which even a modest gain is made at the expense of other interests. Sidepayment support must be taken from another existing pot.

In the same vein, Levine (1978, p. 317) concludes that "without slack resources to produce 'win-win' consensus-building solutions and to provide side payments to overcome resistance to change, organizations will have difficulty innovating."

The fiscal and political realities inherent in the disappearance of organizational slack in government agencies leads us to the same conclusion we reached in the preceding section: Innovations that are implemented during fiscal contraction will tend to be limited to those that reduce cost and/or increase the productivity of an agency's resources.

3.2 ORGANIZATIONAL STRUCTURE

Not surprisingly, researchers on organizational change have found that a number of specific characteristics of an organization's structure are related to the innovativeness of the organization. More surprising, perhaps, is the fact that they have found that some of the factors that are most closely correlated with the *initiation* or creation of new ideas are least correlated with their *adoption* and institutionalization. According to Wilson (1966), "the climate required to induce innovative behavior in organizations may be the same climate which will prohibit the implementation of innovative proposals."

Organizations whose structure has been found to nurture innovative ideas have been labeled "organic" by Burns and Stalker (1961). They have applied the label "mechanistic" to organizations that are more successful in adopting innovations (but whose structure tends to hinder their initiation).

The four major dimensions on which organic and mechanistic organizations differ are:

- o Diversity, which refers to the number of occupational specialties, technologies, incentives, and rewards employed within the organization.
- o Formalization, which refers to the specificity and rigidity of the rules and procedures set down for performing jobs within the organization.
- o Centralization, which refers primarily to the degree to which the organization has a narrowly constructed hierarchy of authority.
- o Staff participation in decisionmaking.

Organic organizations tend to be highly diverse, with little formalized task structure, weak communication hierarchies, and considerable staff participation in decisionmaking. Mechanistic organizations, by contrast, are less diverse, have more formalized task structures, a more centralized hierarchy of control, and less participative decisionmaking (Yin et al., 1976, p. 84).

It is a rare government agency that does not fit the description of a mechanistic organization--constrained by rigid rules and regulations, centralized bureaucratic hierarchies, with little diversity within the agency, and a distinct lack of employee participation in decisionmaking. Thus, it is not surprising that few innovative ideas are generated internally. If anything, fiscal contraction will intensify the degree to which local government agencies fit the mechanistic mold, reducing even further the initiation of new ideas.

3.3 SUPPORT OF THE AGENCY HEAD

In mechanistic agencies, implementation of innovations is highly dependent on the role played by the agency head. If the head of the agency favors innovation and spends time supporting innovative projects, he or she can bring about their implementation rather easily. In the opposite situation--a non-innovative agency head--nearly all innovative activity can be stymied. The literature repeatedly suggests that strong, visible support by top leadership is the most important factor in the success of any innovative endeavor. (See, for example, Zaltman et al., 1973.) Colton (1978) gives several case

studies of innovations in police departments that progressed under innovative leaders and failed elsewhere. In fact, within a single agency a change in one top leader can prove fatal to innovation.

The principle is so well established that most evaluation reports on experimental programs in police and fire departments or handbooks of guidance to police or fire chiefs mention it with considerable emphasis. Chaiken (1979) says, "the chief executive must go to bat for change" if it is to occur. Greenberg and Wasserman (1979) state that a "condition for success" of a program for improving detective investigation procedures is "commitment from top management." They continue, "the implementation [of this program], like any public program, is dependent on a commitment from the administration to the goals of the program and a willingness to alter policy and procedure in response to the dictates of the program design."

An innovative agency head or chief executive in a time of fiscal contraction can be well positioned to carry out major innovations. The environment created by fiscal realities and the mood of the public make it possible to change policies and procedures that previously resisted modification. When budget amendments providing for increased wages are actually impossible, it becomes easier to stand up to union demands. In the interests of fiscal responsibility, it becomes possible to enact pension reform and civil service reform. When costs can actually be reduced, it becomes possible to contract out for services previously provided by government workers or to consolidate the operations of agencies in adjoining jurisdictions. Productivity improvements can be demanded as part of labor negotiations.

(This approach has been used, with limited success, in New York City.) Layoffs can be presented as the alternative to increases in productivity.

However, the multiplicity of opportunities for innovation by an agency head that fiscal constraints raise are usually more than offset by countervailing influences. If an agency's proposed budget declines in real dollars, the agency head faces very difficult problems, including allocation of the remaining budget, possible termination of ongoing programs, reassignment of key personnel whose current positions have been eliminated, and even specifying particular individuals for termination or layoff. The budgetary process, which previously may have been managed by subordinates, requires detailed attention from the agency head. Labor negotiations become more tense, difficult, and protracted, also requiring greater time commitments by the agency head. In short, the demands on the chief executive's time to handle matters relating to the agency's survival may be so great as to prevent attention to new or innovative projects, whatever their long-term importance. In sum, although fiscal contraction provides an opportunity for a production-efficient agency head to be innovative, it would appear that he can devote less attention and support to innovative projects during fiscal contraction than during fiscal expansion.

3.4 ORGANIZATIONAL SIZE AND GROWTH

An organization's size and whether or not it is growing have been found by some researchers to be closely associated with the organization's innovativeness. However, those who did find this relationship (such as Mohr (1969)) tend to agree that size and growth

are most likely to be proxies for other factors, such as organizational slack. Large size or growth makes available greater resources, which then facilitate innovativeness. Smaller organizations, and those undergoing contraction, may be forced to apply all of their resources to carry out their existing commitments and satisfy the overriding organizational imperative of survival.

Organizational growth also allows the addition of new occupational specialties and new functions. This increases the diversity and complexity of the organization (makes it more "organic), which tends to lead to more innovative behavior. Conversely, organizational decline leads to increasing centralization and less opportunity for organizational change.

4. STAFF AND PERSONNEL FACTORS

4.1 MORALE AND JOB SATISFACTION

Several studies relate high staff morale to organizational innovativeness. People who are satisfied with their jobs are more committed to the organization; consequently, they are more receptive to new ideas for improving the agency's products or services. Hage and Aiken (1967) contend that "only if the organization has high morale can it successfully implement the new activity and weather the ensuing organizational stress."

High morale and job satisfaction are directly related to conditions found during a period of fiscal expansion and inversely related to conditions during fiscal contraction. For example, between 1949 and 1969, average real compensation for state and local government employees increased about 13 percent faster than it did for employees in the private sector. This, coupled with better job security than offered by the private sector, made public employment increasingly attractive. Government was increasingly able to attract the "best and the brightest" at all levels.

However, much of the burden of fiscal contraction has been placed on the shoulders of public sector employees. They see that their hard-fought gains of the last few decades are now being eroded. In particular, they are facing uncertainty over job security; * increases in salaries and benefits that do not keep up with inflation;

* Layoffs of public employees, which once were unthinkable, have been carried out in a number of localities.

reduced chances for advancement; deteriorating working conditions (including an increase in workload and a decrease in clerical support for professional staff); and a decline in the prestige of their jobs and in their job satisfaction.*

Such changes in an agency's working environment will inevitably reduce the quantity and quality of the innovative behavior of its employees. Those employees who have the option, will leave the public sector and join private sector organizations. The most mobile people tend to be the most skilled and creative--attorneys, computer programmers, nurses, legal secretaries, etc. They also tend to be those who follow what the literature on innovation calls a "cosmopolitan career pattern" (see Rogers and Shoemaker, 1971), meaning that they are usually young, enthusiastic, well educated, and use their training and experience to seek innovative solutions. Often, employees who leave are not replaced.** This reduces the infusion of new ideas into the agency. In cases where the people who leave are replaced, we have indications from our research that the quality of new recruits is declining.

Those who remain in the contracting agency are much less likely to participate in innovative behavior than they would be in an expanding agency. There is an erosion in staff vitality,

* For a discussion of the impact of Proposition 13 on criminal justice agency personnel in California, see Chaiken et al. (1981).

** Attrition combined with a hiring freeze is the most common "policy" approach local governments have used in response to fiscal contraction. In the first year after the passage of Proposition 13, the state and local governments in California lost approximately 100,000 positions--almost all due to the combined effects of rapid attrition and hiring freezes.

an increase in the average age of the staff, and a lessening of its public service orientation. Hage and Aiken's empirical research (1967) revealed a considerable resistance to change because of low job satisfaction. In California, since the passage of Proposition 13 we found evidence of lessened job satisfaction. For example, the Alameda County Administrator admitted to a lowered sense of satisfaction among county employees and the Oakland police chief told us that declining morale in his department has had a more deleterious effect on its operations than has the loss of positions. Writing about fiscal contraction in universities, Cyert (1978) remarked:

Where solutions are hard to find, and they are harder the greater the contraction, the danger is that aspirations for the organization and for the individual will be reduced in the minds of faculty members. The real danger in contraction is that individuals who by nature desire excellence will begin to settle for mediocrity out of frustration.

4.2 PROFESSIONALISM AND LINKAGE SYSTEMS

The characteristic of staff professionalism appears to be positively related to organizational innovativeness. (See, for example, Glaser, 1976, p. 26.) Professionalism is defined by Yin et al. (1976) as "an orientation to the norms and values of an extraorganizational professional group." Professionals tend to communicate with each other about their activities, and pride themselves on innovative behavior.

There are a number of "linkage systems" that facilitate the diffusion of knowledge about relevant innovations among the local

government professionals who would be interested in them. Chief among these are professional meetings, professional magazines and journals, and training courses. For example, Coleman et al. (1966) found that early adopters of a new therapeutic drug were doctors who read more journals and went to more professional meetings.

We found that the first cutbacks to be instituted in a period of fiscal contraction usually include (1) cancellation of subscriptions, (2) elimination of funds for travel to conferences, and (3) reduction in the amount of training opportunities available to employees. These cuts remove some important links in the diffusion networks that have served, however primitively and inefficiently, to link the sources and users of knowledge and thereby to facilitate innovation. Although clearly not in the direction of innovation in government, the cuts are consistent with the bureaucratic reaction to fiscal contraction, which is to make cutbacks that are as invisible to the public as possible.

4.3 LABOR ORGANIZATIONS

Yin et al. (1976) note that active employee unions may constitute a significant barrier to innovative efforts. During the period of economic expansion of the 1960s and early 1970s they did act as a conservative influence on the policies and procedures of local government agencies. However, there may be strong pressures on them during a period of fiscal contraction to support activities designed to increase effectiveness and efficiency.

One of the most important goals of a union during fiscal contraction is to protect the jobs of its members. Thus, the threat of

layoffs may carry a great deal of weight in labor negotiations during such a period. In exchange for an agreement not to lay off any personnel, or in exchange for agreements on salaries, benefits, and working conditions, an innovative agency negotiator might be able to obtain agreements on productivity improvements that unions would have blocked during fiscal expansion. Such an approach to labor negotiations, which has been called "productivity bargaining," has been tried in New York City recently in negotiations with the city's transit and sanitation unions. (See, for example, Smothers (1980).) The results have been mixed, but encouraging.

5. INNOVATIONS LIKELY TO SUCCEED

The literature points to many intrinsic features of innovations that appear to be favorably related to successful implementation. However, most of them, such as simplicity of use, divisibility, and reversibility of the introduction of the innovation, are unrelated to the presence or absence of fiscal constraints. So, rather than discussing such features here, we shall describe some types of innovations that appear relatively likely to succeed in times of fiscal constraint.

5.1 LOW COST INNOVATIONS

During recent periods of fiscal expansion, the relationship between cost and chances of implementation has been fairly hotly debated. Generally, a distinction was made between *initial* cost and *continuing* cost. One argument held that high initial cost favors implementation and routinization (if not adoption), because small or inexpensive items are not sufficiently important to engage the attention of top management. Moreover, innovations with low front-end cost were viewed as unlikely to produce a written commitment to proceed that can survive changes in administration. The counterarguments held that the commitment of resources to low-cost innovations is quicker and easier, and that high initial cost can draw critical and evaluative attention to the proposed innovation before it has been fully designed and tested.

Now, under circumstances of fiscal constraint, the chances that innovations with high initial cost will be implemented appear to be dramatically reduced. Not only are local governments incapable of

producing the required funds out of their operating budgets, but the mechanisms for obtaining funding from other sources are often curtailed as well. For example, the planning and research personnel needed to prepare a successful grant application to a higher level of government, a private foundation, or other funding source may have been eliminated in the course of budgetary reductions. Moreover, state and federal governments have discontinued many of the grant programs under which innovations were previously funded.

The political climate of fiscal constraint prevents most local officials from proposing separately identifiable levies that are needed for projects with high initial cost, and fiscal limitation legislation often adds specific obstacles. For example, in California, while Proposition 13 did not explicitly forbid passage of bond issues or special-purpose taxes, it did make such passage so difficult as to be impractical in nearly all cases. More generally, the current political climate emphasizes "back to basics," and innovations rarely fall in that category.

In our study of Proposition 13 (Walker et al., 1980), the presiding judge of the Oakland Municipal Court described an experience he felt indicated that even cost-saving projects would not be adopted if the initial cost was high. He had submitted a proposal for a computerized jury selection system with demonstrated significant cost savings. The Board of Supervisors had rejected the proposal and the judge claimed that they would prefer to modify the existing bad system than spend more initially for a new system. In a slightly different context, Levine (1979, p. 181) described the resistance to high front-end costs as

the "Productivity Paradox":

When dealing with productivity, it takes money to save money. Productivity improvement requires up front costs incurred by training and equipment expenses. Under conditions of austerity, it is very difficult to find and justify funds to invest in productivity improvement, especially if these funds can only be made available by laying off employees or failing to fill vacancies.

It appears, then, that innovations with high initial cost are unlikely to succeed, and only if they have low initial cost will the size of their continuing costs become relevant in the decision to implement. Generally, local officials can view the continuing cost of an innovation in the broader perspective of its overall implications for the operations of the agency. Innovations whose cost is more than compensated by cost savings elsewhere should continue to have a high chance of success, as should those that generate more revenue than they cost. Innovations that have low continuing cost and yield substantial improvements in efficiency will also be likely to gain sufficient support for implementation. In the sections that follow, we discuss several examples of innovations having these characteristics.

5.2 REVENUE GENERATION

Some innovations promise to generate revenue. To the extent that they actually perform as promised, they appear likely to gain acceptance under conditions of fiscal constraint. Among such innovations are certain computer software packages. In addition, imaginative legal or institutional restructuring that allows for collection of new fees (e.g., for road repairs, police services, or sewer connections) fall in this category.

Colton (1978) discusses several computer systems for handling traffic citations. One, installed in Tulsa, Oklahoma, merely performed routine clerical tasks, e.g., notifying motorists by mail of their fines and sending reminders to those who had not paid. In the first year of operation it increased traffic income by \$260,000 (only \$32,000 of which came from backlogged citations) and reduced personnel costs by \$20,000. The savings clearly outweighed the system's operating cost, \$22,000 per year. Other traffic citation systems also allowed police officers in the field to interrogate the file concerning cars they stopped.

The attraction of revenue-generating innovations can be so strong that other priorities of the government become distorted. In 1974, Joseph McNamara, then chief of the Kansas City Police Department, reported that police officers provided with a new computerized capability were making too many field stops and arrests for unpaid parking tickets. Police manpower was being drained from important law enforcement activities to revenue-producing ones (Colton, 1978, p. 62).

Outside the civil and criminal justice systems, opportunities for innovations involving increased revenue collection include billing for permits and annual license fees, reassessment of real property, more vigorous efforts to cut the delinquent tax roll, rapid auctioning of properties with delinquent taxes, and investment of funds held by the government and not immediately used. Mayor Thomas Cook of East Orange, New Jersey, reported that in one year the proceeds from investment of idle funds was increased from \$10,000 to \$140,000 by installing appropriate financial control systems (personal communication, 1981).

5.3 EFFECTIVE BUDGETING TOOLS

The most widely followed approach to bureaucratic budgetary decisionmaking during periods of fiscal expansion was incrementalism (Crecine, 1970). Only changes from the status quo, generally increases in programs, had to be considered in the budgeting process. Techniques for clarifying and rationalizing budgetary decisionmaking (which over the years have had various acronymic labels such as PPBS, MBO, and ZBB) attained scattered or temporary successes but were also met with widespread apathy. Their principles were sensible, and very clearly described in many textbooks, but implementing them entailed too much shock to bureaucratic routines.

When budgets decrease (in real terms), however, the traditional budgeting methods of local governments fail to provide even rudimentary answers to the questions of most interest: How much will be saved by a specified budget cut? Who will be affected? What will the consequences be? Many governments then experience a need to change their budgeting practices, and since more effective budgeting tools are not difficult to find (see the review article by Pfiffner, 1980), such tools appear to be good candidates for adoption and implementation in the coming years.

5.4 RESOURCE ALLOCATION PACKAGES

We are familiar with the implementation histories of a large number of computer programs that are used to allocate fire department resources, police patrol officers, or criminal justice system personnel more generally (Rand Fire Project, 1979; Chaiken, 1978; Chaiken, 1980; Chaiken et al., 1976). Since the time that these allocation packages

were first developed (generally in the period 1965-1975), an interesting shift has occurred in their intended and actual applications, reflecting the increasing tightness of local government budgets. The example of their flexibility of application as circumstances changed, and their demonstrated ability to provide guidance to agencies with reduced budgets, suggest that this type of innovative resource allocation tool may well continue to be adopted and implemented in periods of fiscal constraint.

The earliest versions of fire and police resource allocation programs were designed in such a way that agency administrators set performance goals, and the computer program responded with the resources that would be needed to meet the goals. For example, the first police patrol allocation program (Crowther, 1964) was used in the St. Louis Police Department as follows: The department established as policy that not more than 15 percent of calls for service should be delayed due to unavailability of any car to handle the call. Analogously, an early fire station location model (Santone and Berlin, 1969) permitted the fire department to specify the farthest distance or travel time that a fire station could be from any location; the model then provided the minimum number of fire stations needed to meet the standard, and where they should be located.

Implicit in such resource allocation methods is the idea that a department would be able to obtain however many patrol cars or fire stations it needed to meet generally acceptable performance standards. They could be, and were, used to bring about increases in resources, as in St. Louis (Hebert, 1978).

The following years saw variations in the applications of the models, and eventual replacement of the computer programs with second and third generation models that reflected changing concerns in user agencies. The goal of "desirable performances levels" was abandoned, and allocation studies began to focus on efficient allocation of existing resources. For example, in a study for the Yonkers Fire Department (Hausner et al., 1974), the stated objective was to improve the department's effectiveness by better deployment of its existing fire companies. Around the same time, a newly designed Patrol Car Allocation Model (Chaiken and Dormont, 1975) incorporated a feature permitting the user to reallocate the existing number of patrol hours to optimize a user-specified performance measure.

Shortly thereafter, a concern with cost savings emerged. In a study of the Denver Fire Department (Hendrick and Plane, 1975), the budget director specifically asked whether the existing level of coverage could be obtained with fewer fire stations. In other words, he did not specify a performance goal other than the status quo, and he was interested in efficiency improvements and cost savings. Not surprisingly, the result of the study was a net reduction of three fire companies.

In recent years, however, the predominant mode of applying these computer models has been to adapt to an externally imposed budget reduction. The latest user agencies are usually not attempting to maintain the status quo; they know that performance will necessarily deteriorate. Instead they are trying to find the least injurious way to absorb the budget cuts. And they want to have scientific-looking documentation (i.e., computer printouts) showing that they did the best they could under the circumstances. Examples of such applications of

fire deployment models have been documented in New York City (Rand Fire Project, 1979) and Yonkers, New York (Walker, 1978). The authors of this paper provide copies of the computer programs and instruction manuals for many of these models to potential users on request, and we have not noticed any decrease in interest in them as fiscal constraints become tighter. On the contrary, new users come to our attention continually, and the level of attention being paid to their output in previous user agencies appears to have escalated from planning and budgetary officers to top management.

These resource allocation packages appear to have the characteristics of innovations that may continue to be adopted and implemented under conditions of fiscal constraint. They are not expensive to implement, they address directly the problems posed by fiscal constraint, they have proved workable and helpful in a fairly large number of agencies previously, and they help protect agency administrators from charges of political favoritism or retaliation when resource reductions are made.

5.5 INNOVATIONS THAT CONFER RELATIVE ADVANTAGE ON AN AGENCY

Even when all agencies in a jurisdiction are forced to reduce their budgets, some will fare relatively better than others. Aside from matters of political power and strength of constituencies, there may be circumstances in which quantitative information about performance levels and resource requirements play a role in determining relative budget allocations.

An experience of the Seattle Police Department illustrates how an agency that can present charts and graphs meaningfully supporting its budget request may fare better than agencies whose demands are

undocumented (Chiu, 1979). Seattle's Office of Management and Budget proposed a reduction in the size of the patrol force. An application of the Patrol Car Allocation Model showed that performance levels would deteriorate substantially at only slightly lower force levels. The quantitative information served successfully to stave off the intended budget reduction for the police department.

Other types of innovations that are likely to meet acceptance because they convey advantage to an agency in budget battles include systems for providing meaningful management information about productivity, workloads, and priorities (Horton and Brecher, 1979).

6. CONCLUSIONS

6.1 DOWNWARD SPIRAL OF INNOVATION

On the whole, our review of the literature suggests that fiscal contraction will cause the innovative process in the public sector to fall on hard times. Most of the environmental and organizational factors deemed conducive to innovation will be less present under fiscal constraints than they had been during periods of expansion. The only major force in favor of innovation will be a growing gap between the actual performance levels of public agencies and the levels that both agency administrators and members of the public would like to see. A climate of "something must be done" generally leads to some kind of innovation, whether good or bad. Hence, the innovations that will thrive are likely to be those that help manage the contraction process rationally.

The influences threatening other types of innovations are not only formidable but self-reinforcing. The downward spiral now under way will be very difficult to reverse and has serious long-term implications. We have noted that large metropolitan areas have traditionally been the first to develop and adopt new methods and technologies, and yet the nation's large cities were the first to experience budget reductions. As the process of innovation slows down in large cities, the source of tested and proved innovations for smaller jurisdictions will gradually decline. Any local government official who is generally inclined toward innovation will be surrounded by other officials who are less interested in innovation and have few ideas as to what could be tried.

Meanwhile, creative personnel who could have produced ideas for the next generation of public service innovations are likely to find government employment unrewarding and less well paid than other jobs. If so, they will leave public service jobs or not enter them. The remaining personnel will have more demanding, less interesting, and perhaps more tedious and routine jobs, no longer surrounded by stimulating colleagues and coworkers who would encourage them toward innovation. Moreover, they will find their information networks interdicted. With reduced or nonexistent budgets for travel to professional conferences, meeting with or telephoning colleagues in other jurisdictions who have similar responsibilities and problems, library bibliographic searches, or reading journals and other information sources, the remaining government personnel will be cut off even from innovative ideas that already exist.

Foreseeing circumstances under which such a downward spiral might be reversed is very difficult at the start of the spiral. It appears that after a few years the practice of innovation may have eroded in public agencies and the processes for change will be unfamiliar. Perhaps a political reversal and infusion of new talent will signal the end of the current pattern.

6.2 OPPORTUNITIES FOR INNOVATIVE LEADERSHIP

To public administrators whose personal management style is innovative, the picture we have painted need not be discouraging. We have merely described the most likely or typical responses, not the inevitable. Many opportunities for major change have been described in our examples. Most administrators can recall changes that they previously considered

favorably because of their potential for revenue production, cost reduction, or efficiency improvement. If they were never implemented due to resistance from labor organizations, political interest groups, or powerful individuals inside or outside government, the climate of fiscal constraint may favor them.

Additionally, some agencies have such strong requirements for increased funding that the public will respond favorably if fully convinced. Administrators can bring to bear innovative management tools that demonstrate the strapped circumstances of existing resources, the existing or projected size of performance gaps, and the specific improvements that can be achieved with greater resources. Even within a general climate of fiscal constraint, tax overrides, fees, and bond issues have been passed for items the voters perceive as needed.

The attitude of top management will be the key factor determining whether an agency's reward structure shifts from bureaucratic self-interest to production efficiency. Major changes are required before employees feel their best route to success is "empire shrinking." No doubt imaginative new personnel practices will be developed by innovative leaders.

None of the factors discussed in the literature or this chapter has been shown to be so strongly correlated with implementation success that its absence forbids innovation. Some administrators can and should be innovative in the face of all the obstacles we have described. The do-nothing recipe for political survival (Section 2.2) is not a recipe for political prominence.

REFERENCES

- Berman, Paul, and Milbrey W. McLaughlin, *The Management of Decline: Problems, Opportunities, and Research Questions*, The Rand Corporation, Santa Monica, CA, P-5984, August 1977.
- Bolten, Joseph, *The Budgetary Process in Culver City, California*, unpublished paper, Rand Graduate Institute, Santa Monica, CA, July 1975.
- Bowman, Ann O., "The Impact of the Operationalization of 'Innovation'," *Urban Affairs Quarterly*, Vol. 16, No. 2, December 1980, pp. 235-244.
- Burns, Tom, and G. Stalker, *The Management of Innovation*, Tavistock Publications, London, 1961.
- Chaiken, Jan M., *Two Patrol Car Deployment Models: History of Use 1975-1979*, The Rand Corporation, Santa Monica, CA, P-6458, March 1980.
- Chaiken, Jan M., "Transfer of Emergency Service Deployment Models to Operating Agencies," *Management Science*, Vol. 24, No. 7, March 1978, pp. 719-731.
- Chaiken, Jan, with William Bruns, *Improving Station Locations and Dispatching Practices in Fire Departments*, U.S. Government Printing Office, Washington, DC, May 1979.
- Chaiken, Jan M., and Peter Dormont, *Patrol Car Allocation Model: Executive Summary*, The Rand Corporation, Santa Monica, CA, R-1786/1-HUD/DOJ, September 1975.
- Chaiken, Jan M., Warren E. Walker, Anthony F. Jiga, and Sandra S. Folin, *The Impact of Fiscal Limitation on California's Criminal Justice System*, The Rand Corporation, Santa Monica, CA, R-2675-NIJ/RC, May 1981.
- Chaiken, Jan, et al., *Criminal Justice Models: An Overview*, National Institute of Justice, Washington, DC, April 1976.
- Chiu, John S.Y., "Police Patrol Budgeting by Statistical Forecasting and Computer Simulation," *Journal of Contemporary Business*, Vol. 8, August 1979, pp. 35-47.
- Coleman, J., E. Katz, and H. Menzel, *Medical Innovation: A Diffusion Study*, Bobbs-Merrill, New York, 1966.
- Colton, Kent W., "Routine Computer Technology: Implementation and Impact," Chapter 3 in Kent W. Colton (ed.), *Police Computer Technology*, Lexington Books, Lexington, MA, 1978.

Crecine, John P. (ed.), *Financing the Metropolis*, Sage Publications, Beverly Hills, CA, 1970.

Crowther, R. F., *The Use of a Computer System for Police Manpower Allocation in St. Louis, Missouri*, Indiana University, Department of Police Administration, 1964.

Cyert, Richard, "The Management of Universities of Constant or Decreasing Size," *Public Administration Review*, Vol. 38, No. 4, July/August 1978, pp. 344-349.

Cyert, Richard, and James March, *A Behavioral Theory of the Firm*, Prentice-Hall, Inc., Englewood Cliffs, NJ, 1963.

Elmore, Richard, and Milbrey McLaughlin, *Reform and Retrenchment: The Politics of California School Finance Reform*, The Rand Corporation, Santa Monica, CA, N-1679-NIE, March 1981.

Feller, Irwin, "Managerial Response to Technological Innovation in Public Sector Organizations," *Management Science*, Vol. 26, No. 10, October 1980, pp. 1021-1030.

General Accounting Office, *State and Local Government Productivity Improvement: What Is the Federal Role?*, Report to the Congress of the United States, December 6, 1978.

Glaser, Edward, *Putting Knowledge to Use: A Distillation of the Literature Regarding Knowledge Transfer and Change*, Human Interaction Research Institute, Los Angeles, 1976.

Greenberg, Ilene, and Robert Wasserman, *Managing Criminal Investigations*, National Institute of Justice, Washington, DC, August 1979.

Hage, Jerald, and Michael Aiken, "Program Change and Organization Properties: A Comparative Analysis," *The American Journal of Sociology*, Vol. 72, No. 5, March 1967, pp. 503-519.

Hausner, Jack, Warren Walker, and Arthur Swersey, *An Analysis of the Deployment of Fire-Fighting Resources in Yonkers, New York*, The Rand Corporation, R-1566/2-HUD/CY, October 1974.

Hayes, Frederick O'R., "Innovation in State and Local Governments," in Frederick O'R. Hayes and John Rasmussen (eds.), *Centers for Innovation in the Cities and States*, San Francisco Press, 1972.

Hebert, Scott, "The Use of a Computer-Assisted Patrol Deployment Model in the St. Louis Metropolitan Police Department," in Kent W. Colton (ed.), *Police Computer Technology*, Lexington Books, Lexington, MA, 1978.

- Hendrick, Thomas E., Donald R. Plane, et al., *An Analysis of the Deployment of Fire-Fighting Resources in Denver, Colorado*, The Rand Corporation, R-1566/3-HUD, May 1975.
- Horton, Raymond D., and Charles Brecher (eds.), *Setting Municipal Priorities 1980*, Allanheld, Osmun, and Co., Montclair, NJ, 1979.
- Lambright, W., A. Teich, and J. Carroll, *Adoption and Utilization of Urban Technology: A Decision-Making Study*, Syracuse Research Corporation, Syracuse, NY, 1977.
- Levine, Charles H., "More on Cutback Management: Hard Questions for Hard Times," *Public Administration Review*, Vol. 39, No. 2, March/April 1979, pp. 179-183.
- Levine, Charles H., "Organizational Decline and Cutback Management," *Public Administration Review*, Vol. 38, No. 4, July/August 1978, pp. 316-325.
- McKean, R., "Property Rights Within Government, and Devices to Increase Governmental Efficiency," *Southern Journal of Economics*, Vol. 39, 1972, pp. 177-180.
- Mohr, Lawrence, "Determinants of Innovation in Organizations," *The American Political Science Review*, Vol. LXIII, No. 1, March 1969, pp. 111-126.
- Pascal, Anthony H., et al., *Fiscal Containment of Local and State Government*, The Rand Corporation, Santa Monica, CA, R-2494-FF/RC, September 1979.
- Pfiffner, James P., "Budgeting and the 'People's Reform'," *Public Administration Review*, Vol. 40, No. 2, March/April 1980, pp. 194-200.
- Public Affairs Counseling (a Division of Real Estate Research Corporation), *Factors Involved in the Transfer of Innovations: A Summary and Organization of the Literature*, Office of Policy Development and Research, U.S. Department of Housing and Urban Development, Washington, DC, January 1976.
- Rader, Alan, and Dorothy Lang, "Proposition 13 and the Poor: The New Alchemy in the Golden State," *Clearinghouse Review*, February 1979, pp. 681-693.
- Rand Fire Project (Warren Walker, Jan Chaiken, and Edward Ignall, eds.), *Fire Department Deployment Analysis*, Elsevier-North Holland, New York, 1979.
- Riker, William, *The Theory of Political Coalitions*, Yale University Press, New Haven, CT, 1962.

- Rogers, Everett, and F. Shoemaker, *Communication of Innovations*, second edition, Free Press, New York, 1971.
- Rosner, Martin M., "Economic Determinants of Organizational Innovation," *Administrative Science Quarterly*, Vol. 12, March 1968, pp. 614-625.
- Rothman, Jack, *Planning and Organizing for Social Change: Action Principles from Social Science Research*, Columbia University Press, New York, 1974.
- Santone, L. C., and G. N. Berlin, *A Computer Model for the Evaluation of Fire Station Location*, Report 10093, National Bureau of Standards, Washington, DC, 1969.
- Smothers, Ronald, "Sanitation Talks Stressing Gains in Job Efficiency," *The New York Times*, November 10, 1980, p. B1.
- Thompson, Victor, "Bureaucracy and Innovation," *Administrative Science Quarterly*, Vol. 10, No. 1, June 1965, pp. 1-20.
- Utterback, James, "The Process of Technological Innovation Within the Firm," *Academy of Management Journal*, Vol. 14, No. 1, March 1971, pp. 75-88.
- Walker, Warren, *Changing Fire Company Locations: Five Implementation Case Studies*, U.S. Government Printing Office, Washington, DC, 1978.
- Walker, Warren E., Jan M. Chaiken, Anthony P. Jiga, and Sandra S. Polin, *The Impact of Proposition 13 on Local Criminal Justice Agencies: Emerging Patterns*, The Rand Corporation, Santa Monica, CA, N-1521-DOJ, June 1980.
- Wilson, James Q., "Innovation in Organization: Notes Toward A Theory," in James D. Thompson (ed.), *Approaches to Organizational Design*, University of Pittsburgh Press, Pittsburgh, PA, 1966, pp. 193-218.
- Yin, Robert, "Production Efficiency Versus Bureaucratic Self-Interest: Two Innovative Processes," *Policy Sciences*, Vol. 8, 1977, pp. 381-399.
- Yin, Robert K., et al., *A Review of Case Studies of Technological Innovations in State and Local Services*, The Rand Corporation, Santa Monica, CA, R-1870-NSF, February 1976.
- Zaltman, Gerald, Robert Duncan, and Jonny Holbek, *Innovation and Organizations*, John Wiley and Sons, Inc., New York, 1973.