MANAGERIAL PERCEPTIONS AND THE PRODUCTION OF FIRE PROTECTION

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Despite compelling impetus to carefully specify the influences on public performance levels, the role of public managers in public production has not been fully characterized or measured. This article argues that an issue central to the study of local government performance is how public managers perceive their decision-making environments. It examines a key aspect of the relationship between public management and government performance by explicitly incorporating public managers in an economic production framework for public services. A portion of the model developed in the article is applied to the case of fire chiefs as the primary managers of the production of fire protection by local fire departments. The Q factor analysis technique is used to typologize fire chiefs' perceptions of their managerial environments.

Keywords: *fire protection; Q methodology; public management; local government*

Dwindling resources and rising demand for public services impose fiscal and operational stress on many local governments. As a result, interest has grown in understanding and measuring government performance. Policy research often responds by modeling and testing the relationship between program inputs and results. Fewer empirical studies of public production focus on the behavior of public managers—the decision-makers who continually make judgments about the level and mix of resources that public organizations obtain, maintain, and deploy. To fully apprehend the causes of variation in the performance of public organizations, the

AUTHOR'S NOTE: The author is grateful to Sally Selden, Lee Friedman, Jens Ludwig, and Greg Pogarsky for their helpful feedback on an earlier draft of this article, to Sally Selden for her technical assistance with Q methodology, to two anonymous reviewers for their thoughtful comments, and to the fire chiefs who participated in this study.

ADMINISTRATION & SOCIETY, Vol. 35 No. 6, January 2004 717-746
DOI: 10.1177/0095399703256777

factors that influence managers' decisions warrant enhanced attention. This article contributes an empirical analysis of public decision makers' perceptions to this effort. Specifically, Q factor analysis is used to typologize managers according to how they feel about contingencies in their internal and external organizational environments.

The empirical context for this article is the fire service in New York State. Fire departments are among the innumerable public agencies grappling with citizen pressure to do more with less. Emergency services are both labor and capital intensive, and a defense against hazards must be maintained continuously, so fire departments represent an important proportion of local government budgets. As fire professionals often say, "Fires aren't put out with water, they're put out with money" (Hoetmer, 1996, p. 15). Moreover, experiential evidence suggests that fire service missions are expanding disproportionately to available budgets (Bruegman, 1993; Hoetmer, 1996). In many communities, recent trends of increasing calls for service are coupled with ever-scarcer volunteer labor. With over 31,000 fire departments in the United States facing such pressures and more than 1.7 million fires annually causing an annual property loss estimated at $11 billion (National Fire Data Center, 2002), fire protection holds enhanced political salience. Nonetheless, as Duncombe (1992) notes, "Despite the importance of fire protection as a local function, little research on the production and costs of fire services has been carried out" (p. 180). This observation remains true a decade later, rendering fire protection overdue for examination.

In addition to their importance as a local function, fire departments and their chiefs present a uniquely useful vehicle for studying questions of public production. Fire departments are ubiquitous but not uniform. Essentially all urban and most populated rural areas are protected by some form of fire service, but fire protection is produced via a wide variety of public, private, and nonprofit organizational configurations that vary dramatically in their structure, staffing, funding, equipment, and activities.[1] Such variation provides an opportunity to compare the relative nature of various managerial decision-making environments. At the same time, local fire service managers confront the same dilemma managers charged with providing any public service face: how to strike a balance between the quality and extent of service they can provide, as dictated both by professional norms and by citizen demands for service, and the financial burden they are legally able and politically willing to impose on service consumers. The resolution of this dilemma hinges on how fire service

managers understand their service delivery environments, which is the object of this study.

The article is organized as follows. First, a few central, established perspectives on the role of managers in public production are reviewed briefly to illuminate the need for intensive, subjective empirical studies. Next, a conceptual framework within which to consider the perceptions of managers is presented. Then, the Q factor analytical technique is described, and an application of Q methodology to the question of how fire chiefs perceive their decision-making environments is presented and discussed. The article concludes with a brief discussion of future research directions.

PUBLIC MANAGERS IN PUBLIC PRODUCTION

Scholars of policy implementation have long studied the process whereby managers are induced to pursue policymakers' goals. Familiar models of bureaucratic behavior have tended to cast public actors in exchange relationships in which the lawmaker, a principal, seeks to ensure that its agent, the public bureaucracy, acts to fulfill the principal's policy intent. This relationship is typically characterized as problematic because the principal lacks knowledge of the agent's abilities, preferences, and behavior, which do not necessarily align with the principal's desires—public bureaucrats are viewed as self-interested with no inherent incentive to satisfy public purposes. Principal-agent models have met with sharp criticism, largely because their predictive power is very sensitive to their assumptions, which are often untenable (Worsham, Eisner, & Ringquist, 1997). In short, the models' utility is diminished when the rich complexity within public agencies is overlooked. Although research based in agency theory does place the abilities and preferences of the agent center stage, these usually receive attention predominantly as obstacles to the principal's ability to achieve its objectives.

Recent implementation literature portrays a more nuanced view of public management. It suggests that the establishment of a common purpose and clear communication of a vision by public managers are important to creating a condition of "goal alignment" that supports implementation; however, they also pose significant problems because they are difficult aims to effect (O'Toole, 1996; O'Toole & Montjoy, 1984; Provan

& Milward, 1995). Although the evolving implementation literature gives credence to the notion that the actions of managers are influential, it does not consider the determinants of those actions from the perspective of the managers themselves. As Goggin (1986) points out, researchers tend to explain the performance of implementation efforts in terms of the nature of the policy itself, the capacity of responsible organizations, and the qualifications of public managers. The managers' view of the implementation environment is strikingly absent from this list of independent variables.

Recently, a promising line of research has developed that takes on the limitations of classic conceptualizations of bureaucracy that ignore, mischaracterize, or oversimplify the preferences and motives of public managers. Following a broadly articulated sense that public service is a higher calling to which managers respond because they are driven by an altruistic desire to serve the public interest, the core of this work is composed of several studies that focus empirically on public service motivation.[2] These systematically examine managers' conceptions of their incentives and preferences (notably, Perry, 1996). Rather than the self-interest assumed by public choice proponents, they find evidence that public mangers are compelled to act for many unselfish reasons (Brewer, Selden, & Facer, 2000).

Along a similar line, some scholars have attempted to identify the specific nature of public managers' beliefs about their administrative roles and responsibilities (e.g., Selden, Brewer, & Brudney, 1999). This work shows that the nature of public bureaucracies is fundamentally driven by the dispositions, perceptions, and worldviews of the people within them. In identifying and measuring the values of public managers, the multidimensional nature of bureaucratic preferences is clarified. These studies also raise the crucial point that purely objective scrutiny of bureaucratic structures and procedures, and the assumptions such examinations must make, forgo the rich understanding that intensive analysis of the subjective characteristics of bureaucratic activity can provide.

Although this work has begun to address some of the fundamental limitations of the public bureaucracy and implementation literatures, it has not focused directly on the issue of how managers actually perceive their decision-making environments, a vital link in understanding the relationship between managerial activity and public production. To understand and be able to predict the actions of public managers, study must focus on why managers act as they do, which, in turn, rests on how they perceive, evaluate, and respond to the pressures in their decision-making environ-

ment. The next section presents a general model that locates public management in a service production framework to support empirical examination of managers' perceptions.

A CONCEPTUAL FRAMEWORK WITH APPLICATION TO THE FIRE SERVICE

The body of production theory in neoclassical economics describes how an enterprise decides what levels and types of goods to generate, and what mix of resources to commit to their production. The way in which inputs are combined to produce outputs is known as the production technology, commonly modeled via a production function, which is the choice of the enterprise. In fire protection, fire departments produce two main service outputs to protect lives and property from loss or damage: fire prevention and fire suppression. As with any good or service, these outputs are produced using labor (firefighters) and capital (stations, trucks, and tools). Although fires are ultimately extinguished through fundamentally similar technologies—what the fire service vernacular calls "putting the wet stuff on the red stuff"—the specific configuration of the fire protection production process varies widely across departments.

Figure 1 shows a model of public production that includes these classical components[3] but also emphasizes that managers fundamentally affect a decision-making unit's productivity because they choose the level, use, and mix of inputs that generate the unit's direct service outputs. Economic models typically depict only the result of these choices, often assuming them to be perfectly efficient solutions, and ignoring the people who make them. The approach employed here accepts an economic production framework but accounts for the role of managers. Moreover, this model presumes that managers make choices about the configuration of resources in response to influences from within and outside of their organizations. Because internal and external organizational environments are notoriously complex, as noted throughout the organization theory literature,[4] coherent analysis must rest on a framework that specifies the key aspects of environments that may exert important influence on decision makers.

Rainey (1997) provides a survey of environmental conditions that, simplified, points to five core dimensions particularly relevant to the perceptions and actions of managers: social, political, fiscal, technological,

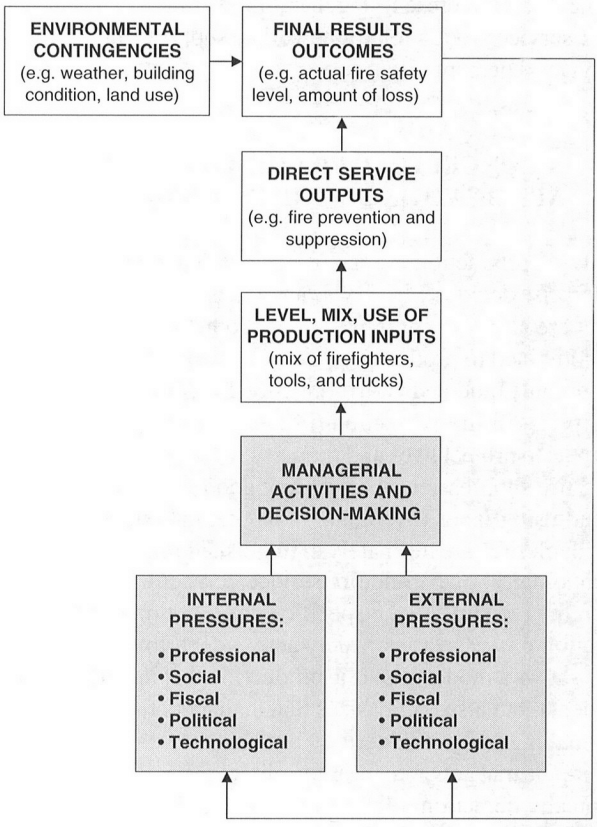

Figure 1: The Role of Management in Public Production: A Fire Service Illustration (The shaded area indicates the focus of this analysis.)

and professional. Arguably, important classes of influences are omitted from this list, such as ecological conditions (characteristics of the physical environment) and legal constraints. These influences are accounted for in the general model (Figure 1) as exogenous influences because they tend to be fairly fixed and stable over long periods of time and generally can be understood in a similar way by all actors in the public production system. The dimensions listed here, on the other hand, are more malleable, subtle, and unpredictable, and each actor in the system—most important, each managerial decision maker—is likely to understand and respond to them in unique ways. Thus, these five dimensions can have a particular impact

External

- **Social:** Pressures generated as a result of the demographic or socio-economic characteristics, values, perceptions, and expectations of the population protected by the fire department.
- **Political:** Pressures generated as a result of the desire for power of, the distribution of power among, and the exercise of power by the public agents within the community the fire department protects, including officials elected by citizens to govern the fire department.
- **Fiscal:** Pressures generated by the resource munificence of the community the fire department protects, including elements such as the tax base, philanthropic funds, and factor markets.
- **Technological:** Pressures generated by knowledge accumulated within the fields of public management and fire science about the effectiveness and productivity of existing and new firefighting techniques and resources.
- **Professional:** Pressures generated by shared values, norms, and expectations within the public sector and the fire service field as communicated by institutions, organizations, and regulatory or governing bodies outside the fire department.

Internal

- **Social:** Pressures generated as a result of the demographic or socio-economic characteristics, and the shared values, perceptions, and expectations of the fire department members.
- **Political:** Pressures generated as a result of the desire for power of, the distribution of power among, and the exercise of power by the people within the fire department.
- **Fiscal:** Pressures generated as a result of the fire department's ability to project, invest, control, and spend its monetary resources efficiently, effectively, and productively.
- **Technological:** Pressures generated by the ability of the fire department to acquire, develop, deploy, and maintain its resources effectively and efficiently.
- **Professional:** Pressures generated by experience, training, and occupational norms about the fire department's service responsibilities held in common or individually by the people within the fire department.

Figure 2: Pressures Exerted on Fire Chiefs

on public production, depending on how the public manager perceives them.

Using this framework, pressures are exerted on fire chiefs that may influence the decisions they make about how to configure the fire protection technologies employed by their departments. Some of these pressures are generated within the department itself (internal pressures), whereas others are generated by the sociopolitical community and institutional field within which the department exists (external pressures). These pressures are defined for the fire service in Figure 2.

Differences along these dimensions are likely to change how fire service managers approach their fire protection missions. As an example, a

department's external political environment may have bearing on the fire service in both overt and indirect ways. At the most basic level, how "friendly" elected officials are to the fire department has bearing on the department's budget and on the degree of operational and decision- making autonomy allowed the department—and therefore on its capacity to meet its mission. Politics also operate more subtly to affect the role of the fire department as a public service provider. Particularly in smaller communities, where the fire department is often at the center of political wrangling and power, the department can be a key nexus of governance demands and public priorities. Similarly, external social factors, such as whether communities value and respect their fire departments, the degree to which people accept responsibility for and participate in their own safety, and even how populations choose to spend their leisure time and money, can have significant impacts on the nature and quality of a community's fire protection.

Likewise, internal pressures are likely to affect the tactics and strategies fire service managers use to accomplish firefighting operations. For example, internal professional factors such as the training, qualifications, and competencies of the workforce directly affect the level of service a department can provide. Other internal social factors, such as the role of tradition, expectations about loyalty, and beliefs about the capabilities of women in firefighting, can affect the morale, motivation, and cohesiveness of the labor force. Ultimately, the extent to which such internal and external pressures actually influence the actions of fire chiefs depends on whether chiefs perceive them and how strongly they feel about them. Thus, a method of analysis that provides systematic access to the subjective perceptions of fire chiefs is required.

A METHOD FOR MEASURING MANAGERS' PERCEPTIONS

This section briefly explains a method by which it is possible to measure how fire chiefs perceive their environments. Q methodology is an analytical technique credited to Stephenson (1935) that facilitates systematic study of human subjectivity, defined as "a person's communication of his or her point of view" (McKeown & Thomas, 1988, p. 12). It is used to identify patterns of perceptions about a topic across individuals and to construct typologies of perspectives based on interpreting these patterns. For a detailed description, a technical explanation of the technique, and a

comprehensive review of its application, see in particular Brown (1980), McKeown & Thomas (1988), and Brown, Durning, and Selden (1998).

Q SAMPLE AND SORTING PROCESS

The application of Q methodology rests fundamentally on the assemblage of communication about a subject, from which is drawn a sample of statements selected to represent the range of opinion. Participants each sort these opinion statements into a forced quasi-normal distribution according to the extent to which they agree or disagree with them. This sorting process produces what is called a "Q-sort," or an individual's set of relative rankings for all statements included in the sample.[5] Thus, in Q methodology, the participants are treated as variables, the statements they sort compose the sample, and the ranks assigned to the sample statements by a participant through the sorting process compose observations on that participant. The mechanics of the sorting process are readily illustrated by an example of the instrument provided to respondents. The directions provided in this study are shown in Figure 3. The form on which respondents recorded their responses is shown in Figure 4.

The objective in this article is to explore how fire chiefs perceive the various internal and external pressures on them in their role as managers of a core local service, and to categorize these perceptions. Thus, for this study, a structured, quasi-naturalistic sample of statements[6] was generated by first compiling a list of comments made by New York fire chiefs about their operational and administrative environments during the course of informal interviews with them and during 17 county fire chiefs meetings. These comments were then categorized according to the framework described in Figure 2. The full list was narrowed to 40 of the most prevalent comments, evenly distributed according to the various pressures, to arrive at 4 for each of the 10 types of pressure. The comments were paraphrased for brevity. The final sample of statements, organized according to the type of pressure they describe, appears in Table 2.

During August through November 1999, 32 fire chiefs from 32 different fire departments in 20 counties in central New York State were asked to sort the randomly ordered statements into a quasi-normal distribution ranging from –3 (most strongly disagree with the statement) to +3 (most strongly agree with the statement).[7] To reduce the chance that the study would omit common perspectives present in the fire service population, fire chiefs with a broad range of experience and from different types of fire departments were included. Of the 32 departments, 13 had fully paid

You have been provided with 40 cards numbered from 1 to 40. Each card has a statement written on it. They are in no particular order. You have also been provided with a record form.

These directions lead you step-by-step through a systematic process for ranking the cards according to how strongly you agree or disagree with the statements on them. Please consider how true you feel each statement is **for you personally in the context of managing your own fire department**.

STEP 1. Begin by reading the cards one at a time. As you read them, place them in 3 piles. Those cards you agree with, place in one pile. Those cards you disagree with place in a second pile. Those cards you feel neutral about or have no opinion about, place in a third pile.

STEP 2. Next, select the three cards from your "disagree" pile with which you *disagree most.* Write the numbers of these cards in the three spaces provided under the –3 (most strongly disagree) column on your record sheet.

STEP 3. From the cards remaining in your "disagree" pile, select the next 5 you most disagree with, and write the numbers of these cards in the –2 (strongly disagree) column on your sheet. If you do not have enough cards in your "disagree" pile to fill the column, select the most disagreeable cards from your "neutral" pile to fill it.

STEP 4. From the cards remaining in your "disagree" pile, select the next 7 you most disagree with and write the numbers of these cards in the –1 (disagree) column on your sheet. Again, if you do not have enough cards, select the most disagreeable cards from your "neutral" pile to fill the column.

STEP 5. If you have leftover cards in your "disagree" pile, place them in your "neutral" pile. At this time, *do not* write in the 0 (neutral) column on your record sheet.

STEP 6. Now, go to your "agree" pile and select the three cards with which you *agree most.* Write the numbers of these cards in the three spaces provided under the +3 (most strongly agree) column on your record sheet.

STEP 7. From the cards remaining in your "agree" pile, select the next 5 you most agree with, and write the numbers of these cards in the +2 (strongly agree) column on your sheet. If you do not have enough cards in your "agree" pile to fill the column, select the most agreeable cards from your "neutral" pile to fill it.

STEP 8. From the cards remaining in your "agree" pile, select the next 7 you most agree with and write the numbers of these cards in the +1 (agree) column on your sheet. Again, if you do not have enough cards to fill the column, select the most agreeable cards from your "neutral" pile to fill it.

STEP 9. If you have leftover cards in your "agree" pile, place them in your "neutral" pile.

STEP 10. Now, write down the numbers of the remaining cards (that is, those in your "neutral" pile) in the 0 (neutral) column on your record sheet. When you are finished, you should have no cards left over and no blank spaces on your answer sheet.

STEP 11. Finally, please answer the questions on the bottom half of the record sheet.

Figure 3: Q-Sort Directions to Participants

staffs, 12 had all-volunteer staffs, and 7 were staffed by a combination of paid and volunteer personnel. Of the chiefs themselves, 18 were paid and 14 were volunteers. All fire chiefs who participated in the study were White males (as are almost all fire chiefs in New York State). The age of the respondents ranged from 31 to 62 years. They had between 7 and 40 years of experience in the fire service, and between 3 months and 22 years of service as a fire chief. Nineteen chiefs reported attending at least 2 years of college. Two chiefs held associate's degrees, 5 had earned bachelor's degrees, and 3 had master's degrees.

-3 MOST STRONGLY DISAGREE (3 CARDS)	-2 STRONGLY DISAGREE (5 CARDS)	-1 DISAGREE (7 CARDS)	0 NEUTRAL (10 CARDS)	+1 AGREE (7 CARDS)	+2 STRONGLY AGREE (5 CARDS)	+3 MOST STRONGLY AGREE (3 CARDS)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	
	_____	_____	_____	_____	_____	
		_____	_____	_____		
		_____	_____	_____		
			_____			
			_____			
			_____			

1. Please note the three statements you most ***disagreed*** with (those in the –3 column). Briefly explain why you disagreed with these statements so strongly.

2. Please note the three statements you most ***agreed*** with (those in the +3 column). Briefly explain why you agreed with these statements so strongly.

PLEASE PROVIDE THE FOLLOWING INFORMATION:
[This information is for sample analysis purposes only –to protect confidentiality, your responses will be identified only by a numerical code, and this record form will be destroyed.]

Name:_____ Age: _____

Fire department: _____ Number of years in the fire service:_____

Number of years as a fire chief (including deputy or assistant) with this department: ____

Number of your family members that have ever been involved in the fire service: _____

Do you live in the jurisdiction your department protects? _____ If so, how long?_____

Profession or current job title:_____

Years of college attended, if any:___ Major course of study/degree earned:_____

Figure 4: Q-Sort Record Form

Q FACTOR ANALYSIS AND INTERPRETATION

The ways participants rank the statements (captured in the individual sorts) are compared using common factor analytic techniques to arrive at factors that represent groups of people who sorted the statements similarly. Thus, Q methodology effectively reveals different perspectives that exist; the people whose sorts load significantly on a given factor share

TABLE 1
Factor Loadings

Chief	*Factor 1*	*Factor 2*	*Factor 3*	*Factor 4*
1	.62*	.11*	.03*	.10*
2	.03*	.13*	.77*	.21*
3	.55*	.00*	.51*	–.03*
4	.37*	.20*	–.05*	.22*
5	.74*	–.12*	–.10*	–.25*
6	.63*	–.12*	.09*	.15*
7	.58*	.05*	.02*	–.03*
8	.76*	–.06*	.24*	.03*
9	.31*	–.02*	.38*	.66*
10	.67*	.07*	.03*	–.15*
11	–.06*	.49*	.09*	.61*
12	.25*	.08*	.69*	.34*
13	.15*	.26*	.11*	.07*
14	.27*	–.21*	.01*	.82*
15	.80*	.07*	.07*	.11*
16	.11*	.80*	.16*	–.16*
17	.75*	–.09*	.01*	.25*
18	.62*	.26*	–.14*	.15*
19	.48*	.12*	.17*	–.14*
20	–.02*	.87*	.07*	.04*
21	.15*	.15*	.08*	.77*
22	–.09*	.37*	.10*	.41*
23	–.07*	–.06*	.77*	–.02*
24	–.11*	.66*	–.19*	–.09*
25	–.06*	.68*	–.12*	.22*
26	.50*	.52*	.02*	–.08*
27	.06*	.05*	.04*	.23*
28	.10*	.37*	.24*	.13*
29	.24*	.03*	.38*	–.12*
30	–.19*	.07*	.20*	.64*
31	.06*	.79*	.17*	.08*
32	–.22*	.56*	–.08*	.40*

*$p \leq .01$.

similar views on the subject under study. Interpretation of the factors is based on the construction of a factor array, or "model Q-sort," for each factor. This is accomplished by merging the sorts that loaded significantly on that factor, weighted according to their loadings, to achieve average scores for each statement, by factor. These model Q-sorts permit the statements that uniquely define each factor—and thus each group of people—to be

(text continues on p. 732)

TABLE 2
Q-Sort Values by Statement and Factor (Organized by Dimension)

	Group 1	*Group 2*	*Group 3*	*Group 4*
External				
Social				
1. Citizens have a good understanding of what my department does.	–2	–1	1	–3
2. Our community is loyal to its fire department—that is, our citizens like and support the fire department.	1	0	2	–1
3. Local television stations and newspapers tend to report too negative a view of my department.	–2	–2	–1	–1
4. Citizens expect too much of my fire department.	–1	–2	–3	0
Political				
5. Local public officials and/or the fire commissioners impede my ability to run my department efficiently and effectively.	–3	2	–1	0
6. Local public officials and/or the fire commissioners trust me to make good managerial decisions and they give me adequate discretion.	1	–1	0	0
7. As fire chief, I feel directly accountable for my department's performance.	3	3	2	3
8. Public officials in the community like and support my fire department.	2	–2	–1	–2
Fiscal				
9. My department is more vulnerable to budget cuts than other local public agencies and service providers.	–3	3	–2	–1
10. My department gets good financial support from the community through charitable donations and support of fund raising efforts.	0	–3	1	–2
11. Elected public officials in my jurisdiction are very reluctant to raise taxes to pay for fire protection equipment and services.	–1	3	0	2
12. The local public officials in my community understand and support my department's resource needs.	0	–3	–1	–2

(continued)

TABLE 2 (continued)

	Group 1	*Group 2*	*Group 3*	*Group 4*
Technological				
13. I devote a lot of effort to keeping up with new ideas and trends in the fire service by reading journals and attending meetings, conferences, and shows.	1	0	3	1
14. There is a shortage of capable people interested in becoming firefighters in the local community.	3	–2	0	3
15. It is important for my department to adopt state-of-the-art "cutting edge" firefighting technologies.	–1	–1	–1	1
16. My department depends a lot on mutual aid from other fire departments to ensure there are adequate resources available to handle the calls we get.	–1	–3	2	2
Professional				
17. It is important for my department to foster and maintain good working relationships with other public agencies in my community.	1	1	0	2
18. State and county fire chiefs meetings are important and I make it a priority to attend them.	–1	1	2	0
19. It is important for my department to foster and maintain good working relationships with surrounding fire departments.	2	0	1	2
20. I think it is important and useful to complete New York Fire Reporting System reports for the incidents we respond to.	0	1	3	0
Internal				
Social				
21. Our fire department would benefit from having more women and minorities.	–1	0	0	0
22. There is a lot of conflict among the members of my fire department.	–2	–1	–2	1
23. Tradition gets in the way of progress in my fire department.	–3	–1	1	0
24. The members of my fire department are loyal to their officers and chiefs.	0	1	–1	–3

Political				
25. The members of my fire department have an important influence over administrative decisions.	0	0	2	0
26. The members of my fire department have an important influence over operational decisions.	0	0	1	1
27. The members of my fire department are resistant to changes in how we operate.	–2	–2	0	1
28. The members of my fire department are open to new ideas.	1	0	–2	–1
Fiscal				
29. As chief, I have a lot of discretion over how money in my department is spent.	3	1	–1	0
30. Concrete data about how my fire department performs is important to how I make budgetary decisions.	0	0	0	1
31. I have a good idea how much it costs for my department to perform each of the services it is called to provide.	0	0	0	0
32. Planning to acquire and maintain the resources necessary to meet future service delivery needs is one of my most important responsibilities as chief.	2	2	1	1
Technological				
33. I know what I need to know about management to run my department effectively.	–1	0	–3	–2
34. My fire department has the right type and amount of apparatus and equipment to fulfill its functions.	2	–1	–3	–2
35. As fire chief, I am too busy solving immediate, day-to-day problems to be able to devote sufficient time to strategic planning.	–2	–1	–2	2
36. My fire department makes good use of the knowledge, skills, and abilities its members have to offer	0	1	1	–1
Professional				
37. High quality service to our community is a priority for everyone in my fire department.	1	1	0	–1
38. The company officers in my department are experienced and competent leaders.	1	2	–2	–3
39. A strong, clear chain of command—both on and off the fire ground—is essential to having a well-run fire department.	2	2	3	3
40. The firefighters in my department are well trained and educated to perform their emergency response duties.	0	2	0	–1

identified. Once the factor arrays are constructed, it remains to interpret them. Brown et al. (1998) suggest a three-step approach: First, identify those statements with which each group strongly agreed or disagreed. Next, describe the common theme presented by the array. Finally, compare the groups.

Because the Q approach is intensive—Q studies typically involve small numbers of respondents—it provides detailed information about how respondents feel about a particular topic. In this sense, the Q technique promotes "situational representativeness" by causing each respondent to address and model the broad array of possible states that arise with respect to the topic under investigation (Brown et al., 1998, p. 623). People who sort the sample similarly (and therefore load together) form groups that can be compared using the factor arrays to discover areas of consensus and dissension about the subject in question. Because the participants are not randomly sampled, Q method does not provide insight into how these known "subjectivities" are distributed across a population. Other worldviews may exist that might be revealed if different people were chosen (Selden et. al., 1999). It is possible, however, to look for patterns of other attributes across groups, such as variations in demographic characteristics, to lend insight into what might contribute to a person's proclivity to adhere to a certain perspective.

In this study, the Q-sorts of the respondents were correlated to create a 32×32 matrix of correlations between the sorters. This matrix was factor analyzed using the principal components method. Eight factors with eigenvalues greater than unity were rotated using varimax. Four factors emerged for which the loadings of at least four chiefs' sorts were significant at $p \leq .01$, and for which the correlations between the factors were $\leq .36$.[8] Thus, these factors each represent a particular perspective on internal and external pressures held by a group of chiefs. All chiefs who load significantly on a factor have a similar view of these pressures. The factor loading for each chief represents the correlation of his sort with that factor. The loadings of each chief on each factor are shown in Table 1. Further, as explained above, factors are interpreted according to a factor array. The arrays for each of the four factors (or groups of chiefs) that emerged in this study are presented in Table 2. In other words, Table 2 shows how those chiefs that loaded on each factor sorted each statement as a weighted average (i.e., in which column of the distribution shown in Figure 4 each group of chiefs would have placed each statement).

FINDINGS AND DISCUSSION

In this section, the views different groups of fire chiefs have of the pressures they face in the context of managing their departments are classified and described based on the factor arrays. Overall, the findings show that chiefs in all groups perceive powerfully pressures from all 10 categories defined in Figure 2. That is, chiefs ranked statements that describe social, political, fiscal, technological, and professional pressures both within and outside of their departments at the extreme ends of the distribution from *most strongly disagree* to *most strongly agree*. The four groups of chiefs that emerged from the Q factor analysis do, however, vary in terms of which pressures were most important (i.e., in terms of the strength of their agreement or disagreement with each statement). Throughout the discussion that follows, the numbers of the relevant statements are included in parentheses. Refer to Table 2 to see the extent to which each group of chiefs agreed or disagreed with the cited statements on average, and relative to other chiefs.

Once again, the factors were interpreted following the suggested approach whereby those statements with which each group strongly agreed or disagreed (i.e., ranked as ±3 or ±2) are first identified, and then the common theme presented by each array is described. So, for a given group, those statements with rank ±2 or ±3 were first examined, and then it was determined whether the rank assigned to a particular statement suggested a positive (supportive) or negative (adverse) environmental pressure.

For example, looking at column 1 of Table 2, Group 1 ranked the following statements relevant to internal pressures strongly: 22, 23, 27, 29, 32, 34, 35, and 39. A logical interpretation is that strong disagreement with Statement 22 ("There is a lot of conflict among the members of my fire department.") constitutes a positive condition—in other words, that there is *not* a lot of conflict contributes to an easier management environment for this group. Each statement ranked ±2 or ±3 was examined and interpreted in this way to form an overall sense of what the important dimensions of the internal and external environments were like for each group. They were not, of course, perfectly consistent; for example, Group 1 faces a generally supportive external environment but does face a shortage of labor (as indicated by strong agreement with Statement 13).

Following this approach, the findings and interpretation for each group are as follows:

GROUP 1

The chiefs in the Factor 1 group perceive their management environment to be supportive. Outside their departments, the public officials in the community appear to these chiefs to like and support their fire departments (8), and seem willing to pay for them (9). Local public officials trust these chiefs to deploy their resources appropriately, affording them administrative discretion (5). The exception to the supportive atmosphere enjoyed by these chiefs is the sense that there are few capable people available to staff the fire service (14). Some of the comments made by chiefs in this group are illustrative of the positive external conditions they perceive. Many noted that they felt fortunate to have positive ties with the public officials in their municipalities, recognizing that their colleagues in other communities did not enjoy such supportive relationships. A few pointed out that having volunteer members of the fire department serve on town boards certainly helped this relationship. Another chief mentioned that having a well-run town facilitated having a well-run fire department, because priorities were clear and were supported by financial policies.

Likewise, the chiefs in this group also feel that the conditions inside their departments are benign. The departments have adequate capital resources to accomplish their missions (34). They report that the members of their departments get along (22) and are progressive and open to operational changes (27, 23). High morale in these departments seems to depend on a commonly held and intrinsic sense of purpose. One chief remarked that his firefighters are "fanatics at looking after the community. It's just there, you don't have to instill it." Along these lines, another chief implied that responsiveness to change revolves around the interaction between why the chief makes the decisions he does and the extent to which the chief's rationale appeals to the firefighters' pragmatism. As he said, "Common sense dictates need, and firefighters understand that and respond to it. They accept change that is necessary, reasonable, or not far off from current practice." This positive environment appears to permit chiefs the freedom to concentrate on setting organizational goals and planning, rather than worrying about day-to-day crises (35).

Chiefs in Group 1 also seem to place strong emphasis on effective leadership and management and to take these responsibilities seriously (39). One chief explained that fire chiefs must be responsive to the ideas and concerns of their members (especially in the case of volunteers) but must also set clear guidelines, describing the volunteer fire service as "a democracy run by a Gestapo." Another articulated the views of many when he said,

> The department looks to me for leadership. The Fire Commission looks to me for the smooth operation of the department. The town looks to me as the emergency management coordinator. . . . Let's face it, when the department does well, we all do well. When the department fails, it's "*Where is the chief?!*"

This group also makes planning a priority (32) and works to foster good relationships with other fire departments (19). In these departments, the chiefs are vested with a great deal of discretion over how money is spent (29). For these chiefs, the positive environment in which they work coupled with the authority and latitude they are afforded suggests that the pressures on them in decision making are relatively tame.

GROUP 2

Chiefs that loaded on Factor 2 perceive a supportive internal environment. They describe a professional atmosphere in their departments, with experienced and competent leadership (38) and well-trained and educated firefighters (40). One chief asserted that "many of the officers in this department could be chief." Another described his department as "a cohesive unit with much greater strength and ability than the sum of the individuals." In addition, these chiefs enjoy a workforce that is open to operational changes (27), and, in their external environments, they face no shortage of capable personnel (16, 14) and can be selective about whom they hire—one chief reported that "there are hundreds of capable people taking entrance exams." Another noted that many candidates already have fire and advanced emergency medical training and certifications in hand when they join the department.

On the other hand, Group 2 chiefs face harsh political and fiscal pressures from outside their departments. Chiefs in this group feel that local public officials do not understand what their departments do (12) and do not support them financially (10, 11). In fact, they are adamant that public officials do not like their departments or trust the chiefs to run them effectively (5, 8). Many chiefs expressed extreme frustration at their departments' treatment by local officials. At best, these chiefs feel their departments are "taken for granted." At worst, they view themselves as "budgetary sacrificial lambs," asserting that their departments are more vulnerable to budget cuts than are other agencies (9). As one chief exclaimed, "The fire department in the 1990s is the budgetary bastard child in most cities. We are the insurance policy no one wants to pay for, so they up the deductible by downsizing the department." Other chiefs

expressed similar frustrations, often reporting that local mayors view the fire department as overstaffed and overpaid and are therefore "constantly looking for ways to reduce manpower."

As an additional frustration, the lack of financial support from the local officials may impede acquisition of appropriate levels and types of equipment (mild disagreement with 34). For example, one chief explained,

> Due to a lack of ongoing investments, my department operates with apparatus which uses the technology of the 1940s and 1950s. It is difficult to obtain basic budget money to purchase newer types of tools and equipment which have developed in the last 10 years.

This is exacerbated by the complex technology required to provide effective fire protection. As one chief explained, "Elected officials generally have very little knowledge of the complexity of operations (both emergency and staff) performed by this department. . . . Very few officials will devote the necessary time to acquire the knowledge needed to make informed decisions regarding this department."

Despite the fact that local public officials do not seem to trust these chiefs to make good managerial decisions—and even impede these chiefs as they work to run their departments (several chiefs complained about micromanagement)—these chiefs exhibit a propensity for strong management. They feel directly accountable for their departments' performance (7) and report that they work hard to run their departments effectively and efficiently. In this they rely on a strong chain of command (39) because, as one chief said, "A break in the chain creates animosity and distrust." In addition, these chiefs emphasize strategic planning (32). The contentiousness of the political environment in which Group 2 chiefs operate may heighten the demands they face over those confronted by Group 1. At the same time, these pressures appear to be tempered by the competence and commitment of their operational staffs and workforces, governed by a clear chain of command.

GROUP 3

The chiefs in Group 3 face relatively benign external conditions. Citizens in their communities are loyal to their fire departments and don't have unreasonable expectations of them (2, 4). These chiefs also report that their departments are not more vulnerable to budget cuts than are other public agencies (9). Group 3 chiefs are, on the other hand,

constrained by their internal environments. The officers in these departments are reported to be inexperienced and incompetent (38). The department members are a cohesive group (22), but they resist new ideas (28). One chief explained,

> Old-timers get *so* stagnant—they don't want to train because they've "been there, done that" a million times. It's also hard to convince the old-timers that it's an important investment to purchase new equipment—they don't see the need to improve operations and safety.

This is problematic because, although these chiefs value a strong chain of command, the department members have an important influence on administrative decisions (25). For Group 3, it appears that the strain of overcoming the constraints on change and progress within their organizations is heightened by the democratic nature of their departments.

These chiefs also claim that they do not know what they need to know about management to run their departments effectively (33). As one volunteer chief said, "There's no chiefs' school you go to when you get elected—you just have to learn it as you go." He also pointed out that "Set rules are nice but impractical. You have to be flexible . . . we're a little disorganized, but *everyone* participates. Other departments are almost too organized, too rule-bound, and have lost sight of their purpose: to solve problems however you can." This may explain why this group of chiefs feels less strongly about accountability for department performance than do the other three groups (7). Many of these chiefs also turn elsewhere for guidance, placing a great deal of emphasis on reading journals and attending state and county chiefs meetings and professional conferences (13, 19)—as one said, "Hey, maybe someone's got an idea."

GROUP 4

Group 4 chiefs experience nearly the opposite conditions that Group 1 feels it faces. In the case of Group 4 chiefs, both the external and internal management environments are harsh and hostile. These chiefs believe that the citizens they protect do not understand their fire departments (1), and this is borne out by the lack of charitable donations (10). Likewise, local elected officials do not like or support these departments (8), do not understand these departments' resource needs (12), and will not raise taxes to pay for them (11). One chief asserted, "Citizens and public officials have no idea what it takes to run a fire department. They only think we're

important when an incident happens." Possibly as a result, these departments lack the equipment they need to do their jobs (34) and often depend on mutual aid to handle emergency calls (16).

Internally, chiefs in Group 4 contend with a workforce of line officers they perceive to be inexperienced and incompetent (38). In fact, one chief said, "Only a few members really want to provide high quality service to their community—most just do it to get out of the house or when it is convenient to them." Moreover, firefighters are not loyal to their officers (24). Management is troublesome for the chiefs in Group 4, who perceive themselves to be very ill-equipped to correct the problems that plague them. One said he knew "barely enough to keep the boat on course." They believe a strong chain of command is essential to having a well-run fire department (39), but they and their officers lack the management skills necessary to uphold this philosophy (33, 38). One chief lamented, "I know the answers, but I can't make them happen." As another explained, "We . . . ignore that many need training in being a leader/manager." Chiefs also feel that they are much too busy solving day-to-day problems to devote time to strategic planning (35). In short, the negative management environment and the influence of incompetent, antipathetic members on department decisions conspire to exert very high pressure on the chiefs in Group 4.

TYPOLOGIES OF CHIEFS

To complete the analysis, these groups are compared. When the strength of the perceptions of the chiefs in each group and the statements that significantly distinguish each group from the others are examined as just described, it becomes apparent that the chiefs viewed the conditions within their organization to be either mild (supportive, harmonious, or easy to contend with) or harsh (unsupportive, discordant, or difficult to contend with) in general. Similarly, they saw the environment external to their department to be either mild or harsh. In addition, the chiefs described their perceptions of their priorities and propensities as managers, which allows them to be characterized according to general managerial style. Furthermore, it is presumed that the confluence of environmental conditions and managerial approaches is likely to generate an overall level of pressure to which managers are presumed to respond when they make decisions. Based on variation along these dimensions, the perceptions of the four groups of chiefs can be characterized as follows:

1. Low pressure: A mild environment both within and outside of the department, and very centralized management.
2. Moderate pressure: A mild internal organizational environment, harsh external conditions, and centralized management.
3. High pressure: A harsh internal organizational environment, mild external conditions, and very participatory management.
4. Very high pressure: A harsh environment both within and outside of the department, and participatory management.

Table 3 depicts this summary classification scheme for the four groups of chiefs.

AREAS OF CONSENSUS

Among the four groups of chiefs, there are some statements about which there is general agreement. Most significant, almost all chiefs reported feeling directly accountable for their departments' performance —in fact, none of the 32 chiefs who participated disagreed with Statement 7, and three of the four factor arrays rank this statement +3 (see Table 2). Despite these strong feelings, though, chiefs demonstrate ambivalence over the importance of concrete data about department performance to budgetary decision making. This is demonstrated by the ranking of Statement 30 as "neutral or disagree" by 23 of the chiefs, and as "neutral" in three of the four factor arrays. Similarly, Statement 31's rank of 0 by all four groups indicates that most chiefs lack confidence that they know how much it costs their departments to provide services. Chiefs also universally agree that one of their most important responsibilities is planning to acquire and maintain the resources necessary to meet future service delivery needs. As one chief said, "I can't be too busy to plan." In this case, only 1 of the 32 chiefs disagreed with this statement. So, chiefs not only feel responsible for how their department performs but also think that resource management is one of their key duties.

Consensus on these statements, coupled with the level of agreement, suggests that chiefs are likely to be very responsive to pressures exerted on them by their environments. That is, if chiefs did not feel accountable for their departments' performance, they would be less likely to pay attention to or care about the demands of their organization and community. Moreover, chiefs do not appear to rely much on performance data, implying that they use other sources of feedback performance, such as pressure exerted by citizens, public officials, and department members. The broad agreement with Statements 32 and 7, despite the type of environment

TABLE 3
Group Characteristics

Group	*External Environment*	*Internal Environment*	*Managerial Style*	*Intensity of Pressure*
1	Mild	Mild	Very centralized	⇒ Low
2	Harsh	Mild	Centralized	⇒ Moderate
3	Mild	Harsh	Very participatory	⇒ High
4	Harsh	Harsh	Participatory	⇒ Very high

TABLE 4
Group Demography

Characteristic	*All Chiefs*	*Group 1*	*Group 2*	*Group 3*	*Group 4*
Number of paid chiefs	18	2	8	2	4
Number of volunteer chiefs	14	10	0	2	2
Number of fully paid departments	13	2	7	1	2
Number of all-volunteer departments	12	9	0	2	2
Number of combination departments	7	2	1	1	2
Mean age	47	45	52	52	45
Mean years of fire service experience	23.9	20.6	26.9	23.3	22.7
Mean number of years as a chief	8.3	7.8	9.7	8.1	8
Mean years of college attended	2.8	3.3	2.7	1.6	1.3

(constrained or supportive) faced by the chiefs, lends credence to the conceptual framework proposed in Figure 1. In other words, there is support for the notion that chiefs view themselves as responsible for resource management in their departments, and that in making decisions about resources they are conscious of and are thus likely to respond to influences in their environments.

DESCRIPTIVE CHARACTERISTICS OF THE GROUPS

Although Q methodology does not permit conclusions about the distribution of these four perspectives across the population of fire chiefs, some

characteristics of these groups are worth noting because they may lend some insight into why chiefs perceive their circumstances as they do. Some characteristics that may be related to the views held by chiefs are shown in Table 4. The most striking of these is the distribution of the paid and volunteer chiefs in the set of respondents across the groups that emerged. Chiefs in Group 1 are almost all volunteers, whereas those in Group 2 are exclusively paid. In addition, the chiefs in Group 2 are the oldest and have more years of service, both in their fire departments and as fire chiefs.

Paid chiefs are likely to be required to have high experience and qualification levels to be appointed or hired, whereas volunteer chiefs in New York State are usually elected by and from their departments' general membership. We would thus expect paid chiefs to have more confidence in their own qualifications as managers, whereas volunteer chiefs, who may not hold management jobs outside of the fire service, may feel inadequately prepared for the demands of executive fire service management. Consistent with these expectations, only chiefs in Group 2 did not report disagreeing with Statement 4: that they knew what they needed to know to run their departments effectively.

In addition, paid chiefs have workforces that are partly or entirely composed of paid firefighters who are hired into careers generally characterized by clear job descriptions, work expectations, and professional standards. Paid departments also rarely suffer from a shortage of high-quality potential employees in the labor pool. It is not uncommon for paid departments to receive hundreds of applications for a single opening. Conversely, all-volunteer workforces tend to be more uneven in terms of both quality and availability, with widely varying professional standards and expectations, other career and noncareer priorities and obligations, and fire service training and education levels.

Moreover, the firefighting occupation—whether fulfilled by paid or by volunteer personnel—is very demanding in terms of time devoted to actually responding to calls, time spent in training, physical strength and skill, and compliance with government regulations. These are more difficult demands for volunteers to meet in their "spare" time than for career firefighters to meet while "on the job." In addition, one chief's comment offers another explanation for the personnel shortages experienced by some volunteer departments: "Citizens don't know we need help because we work so well. . . . The fire service is like a scratch on the furniture to most people—after a while, you don't know it's there, so people don't think to come help." Knowing these aspects of paid versus volunteer

departments, we would expect that paid departments might tend to have very supportive internal environments compared to departments with volunteers, in which there is more apt to be turmoil, conflict, or ambiguity. The findings of this study are consistent with this supposition: 9 of the 12 chiefs from fully paid departments loaded on Factors 1 or 2, which contain chiefs who describe a positive internal environment.

Whereas paid chiefs may tend to have the advantages of more professional personal management capacity and a generally more professional workforce, they also tend to manage departments that are agencies within larger municipal governments. That is, their agencies often must compete with other departments and public service providers in the budget process to garner some portion of the local government's revenue pie. Volunteer fire departments may serve one or more localities under contract, in which case they, too, face competition for funds, though only as frequently as these contracts are renewed, which may be as seldom as every 20 years. In other cases, however, volunteer departments are governed by a board of fire commissioners that has the power to levy property taxes, so they may not face as competitive a funding environment. As we might expect from these circumstances, most of the paid chiefs in this study fell into groups that perceived the external environment to be fiscally unfriendly toward the fire service, whereas all but two of the chiefs from all-volunteer departments were in groups that reported a relatively unthreatening external context.

CONCLUSION

This discussion has presented the theoretical underpinnings, method, and findings of a study that sought to explore and typologize the various ways in which fire chiefs perceive the context in which they make decisions about resource acquisition, use, maintenance, and deployment. The study finds four distinct views that exist among chiefs, across which the managerial environments seem to range from benign to harsh, both within and external to fire departments. Chiefs also appear to adopt distinct managerial styles. The reigning circumstances surrounding management and the chiefs' approach to management coalesce to generate a particular atmosphere of pressure that can influence the decisions chiefs make. This study additionally reveals that there exist areas of consensus among fire chiefs, regardless of their circumstances, that may serve as baseline determinants of their activities.

This study has been primarily exploratory, seeking to specify a theoretical foundation for examination of government performance that explicitly accounts for the attributes of the people who make crucial production decisions, to demonstrate a method for empirical evaluation of managers' attitudes, and to reveal some of the perceptions that operate in the fire service. The results for fire chiefs show that these public managers have strong and diverse opinions about the environments in which they work. There is evidence that these public managers are not purely self-interested but are deeply concerned about their departments' ability to fulfill their missions and are acutely aware of the multiple and conflicting interests around them that may obstruct or enable these goals.

This work strives to "unpack" managerial behavior and is predicated on the notion that the process of managerial decision making has an objective component, composed of actual environmental characteristics, and a subjective component, driven by each manager's personal perceptions of these forces. The work assumes a theoretical framework in which managers' perceptions, coupled with their values and motivations and subject to budget constraints, drive their decisions and actions. Furthermore, the presumption is that chiefs who hold similar perceptions of their environments will be pushed toward similar decisions or actions. This study demonstrates that managers can, in fact, be grouped according to similar perceptions, an exercise that is revelatory about commonly occurring objective conditions and the subjective acquisition of their effect.

From the investigation presented here thus arises a core question that serves as a primary target for future research: How do managers' perceptions of the environment within and outside of their agencies affect the decisions they make? Further, does the type of environment a fire chief faces therefore change the level and quality of protection a community receives from its fire department? To answer these questions requires empirical tests of the general model presented in Figure 1, incorporating the type of analysis presented here to carefully categorize the managerial decision-making process. For the fire service, in which data on resource levels, production outputs, and performance outcomes are generally available, this is a viable and compelling agenda.

NOTES

1. The majority of the country's population is protected by public departments staffed by paid, unionized civil servants and funded by the municipality's general fund. The majority of

the country's land area is protected by volunteer departments, which provide essentially the same services as municipal departments, but the relationship between the department and the community varies dramatically. Many are independent nonprofit corporations, governed by boards of directors and funded by some combination of donations, fees, and taxes through contract with a local government. Others are special districts governed by elected fire commissioners who have taxing authority.

2. Public service motivation is defined by Perry and Wise (1990) as "an individual's predisposition to respond to motives grounded primarily or uniquely in public institutions."

3. The voting and mobility literature explains that the quantities and quality of services a government provides is driven by citizens' preferences as expressed through their consumption choices. This model therefore depicts a simultaneous system. The model also distinguishes between direct service outputs and policy outcomes following Bradford, Malt, and Oates (1969) because the outcomes of governmental activity that citizens care about are probably different from the services agencies actually produce. Public production is thus seen as a two-stage process. In the first stage, resource inputs are translated through a production function into goods and services. In the second stage, policy outcomes are generated as a function of direct service outputs and the nature of the environment in which they are consumed. For specification of the simultaneous cost system that accounts for two-stage production, and an empirical application of this model to the fire service, see Duncombe (1991, 1992) and Duncombe and Yinger (1993).

4. See especially Thompson (1967), who synthesized several early studies of organizational environments into an analytical framework; Powell and DiMaggio (1991), who explain the concept of institutional fields as an influential context for organizational behavior; and Schein (1992), who describes the dimensions of organizational culture.

5. McKeown and Thomas (1988) explain that the rationale for using the forced quasi-normal structure is to facilitate systematic consideration of the statements in the sample. Respondents retain freedom to locate a statement anywhere in the distribution, and anywhere relative to the other statements, permitting billions of combinations (Brown, Durning, & Selden, 1998). The distribution thus does not have meaning as a conventional attitude index but as a picture of the relative relationships of the statements for an individual, which might not be revealed if simple scales were used. It has been demonstrated that the shape of the distribution is statistically and substantively inconsequential (Brown, 1971, 1980; Cottle & McKeown, 1980).

6. Although Brown (1980) points out that "the selection of statements . . . for inclusion in a Q sample is of utmost importance but remains more an art than a science" (p. 186), there are established conventions for generating the sample. Following Brown's (1980) recommendation, this study rests on a naturalistic sample (taken from chiefs' communications) to maximize the likelihood that the sample captures possible opinions to which the chiefs can easily attach meaning. It is also structured according to a theoretical framework to promote systematic coverage of the topic of interest. For a detailed explanation of Q sample construction, see Brown (1980, pp. 186-191).

7. For the statements with which the chiefs agreed and disagreed most strongly, they were asked to explain why they felt as they did. In addition, chiefs were asked to provide some basic information about their age, professional experience, and education.

8. The standard for considering two factors distinct is that the correlation between them be less than .05.

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