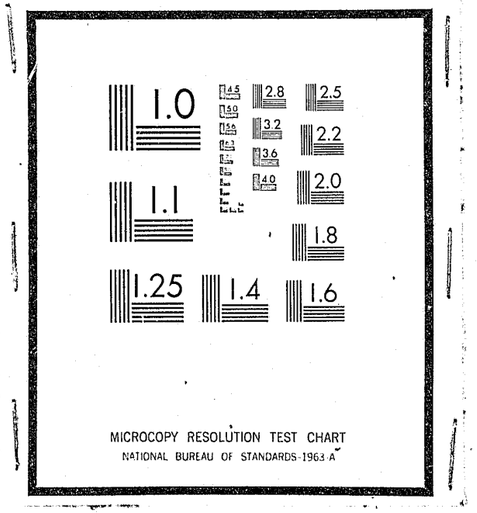

WORKSHOP IN POLITICAL THEORY & POLICY ANALYSIS

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MAPPING POLICE SERVICES

by

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MAPPING POLICE SERVICES*

Despite frequent calls for political or administrative reorganization to eliminate duplication of policing in metropolitan areas, there has been no systematic attempt to determine the extent of service duplication. In fact, in the voluminous literature which has appeared on the police in America's urban areas, there is little attempt to describe any of the everyday interorganizational arrangements for policing. This paper presents a method for mapping police services in metropolitan areas: a way to determine who is providing which service to whom and to calculate the extent of duplication, alternation, dominance and other aspects of service delivery for metropolitan areas. The methods presented here have been used in the preparation of a report on Patterns of Metropolitan Policing (Ostrom, Parks, and Whitaker, forthcoming). The problem of mapping public services is not unique to policing, however, and the techniques presented here should be applicable to other public services.

The conceptual model of public service organization which many of us twentieth century Americans implicitly utilize is quite simple. Many of us expect that an entire community be organized into a single government to provide all the public services that community requires. Further, we expect that the agencies which produce these services belong to that same government. The agencies are seen as bureaus of the government and as responsible to it through a hierarchical command structure headed by a chief executive. This model is both empirical and normative. That is, it shapes expectations about what the social world looks like and it predisposes us to think that the world should look that way. The empirical use of the model leads to descriptions of the world in its terms. The categories it establishes -

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a single community, a single government, dependent bureaus within the government - are the categories used by scholars to describe the organization of public services which they encounter. The normative use of the model leads to an assumption that public services should be organized according to this structure. Deviations from that pattern of organization are seen as unproductive or wasteful, ipso facto.

Notwithstanding the widespread acceptance by political scientists of the unitary model of arrangements for public services, public service delivery in the United States is frequently not organized according to that pattern. This is particularly the case in metropolitan areas. American traditions of governments as creations of the people, of local initiative and home rule, and of a federal system of overlapping governments and multiple citizenship have found full expression in the organization of most U.S. metropolitan areas. The common pattern is not one government, but many. Moreover, each citizen is characteristically a citizen of many governments, rather than a single government. Complicating the situation even further is the variety of techniques by which public service production has been organized. In addition to government bureaus, there are private firms and voluntary associations producing urban public services. Moreover, these agencies may have arrangements with several governments, not only a single government. The unitary model simply fails to provide the diversity of categories necessary to comprehend the complexity frequently encountered in the United States' urban areas. The failure of the unitary model to deal with political organization in the United States is a major component of the Intellectual Crisis in American Public Administration (V. Ostrom, 1973).

Most proposals for metropolitan reform include consolidation as a major recommendation. Examination of these indicates a desire to bring political organization into accord with the unitary model. This desire for psychic order - for having a world which corresponds to intellectual constructs used to view it - appears to be a primary motivation for consolidation recommendations. There is little evidence that a unitary public service delivery system provides better human services. Any metropolitan area's alternatives to unitary organization of public service are not, however, simply the present arrangements in that area. Rather, the potential combinations and permutations of governments and agencies would seem limitless. Should

a metropolis, for example, be organized into five governments all of which arrange with one police department to produce services for the entire area? Or would service be better if a single government provided service for the entire urban area, but did so through five separate agencies - each specializing in some set of police services? Frankly, right now we just don't know. With the great number of potential alternatives (many of them at least as politically viable as the unitary model) it is no wonder many reformers have chosen to recommend consolidation.

What is needed is a way to assess the relative merits of the various organizational alternatives. Simplicity of organization is not necessarily to be preferred over complexity, even though it may be easier to understand. Nor is complexity to be necessarily preferred over simplicity just because it is more arcane. Unitary organization may well provide better public service than some of the complexes which exist in some metropolitan areas. At the same time, some complex arrangements may prove better than the unitary model. The preferred complexity of organization may differ markedly between various sorts of public service. The great variety of public service delivery systems which exist in American metropolitan areas provide the opportunity to compare the performance of alternative organizational arrangements. Analysis of these systems can suggest, furthermore, the processes which lead to better service delivery. It is an understanding of these processes which will enable us to recommend how best to restructure arrangements for delivering urban public services.

Efforts to determine the relative effectiveness of different public service delivery systems require a set of categories which permit measurement (description) of the existing systems. This paper presents a conceptual model for that purpose. The immediate concern is with delivery of police services in metropolitan areas. The logic of this model is more general, however. The conceptual structure proposed should be applicable in any case where numerous governments and agencies are involved in delivering a service to a fragmented public.

An initial task is to delimit the public services being examined. Public resources support a wide range of activities. A study can include as many of these as desired, but each activity may well involve a unique delivery system. In our study of police service delivery in 80 metropolitan areas,

Elinor Ostrom, Roger B. Parks and I found it necessary to limit our attention to nine "services." We have subsequently learned that in some metropolitan areas, each of these services is delivered through a distinct system. In some areas, however, there are fewer distinct systems. For example, patrol is frequently provided by governments or produced by agencies which differ from those delivering traffic control or criminal investigation services. In some metropolitan areas, in fact, we have found burglary investigation systems which differ from homicide investigation systems. Traffic patrol also sometimes involves different governments and agencies than does traffic accident investigation. The usual pattern is one of separate basic training, detention, radio communication, and crime lab service systems. By differentiating between these various police services, we are able to analyze service delivery systems in terms of the differences in production technologies and consumer requirements which each service entails.

Rather than reducing the generalizability of the analysis, the disaggregation of services and their subsequent classification make possible even broader generalization. We distinguish, for example, between direct and auxiliary services. The former - including patrol, criminal investigation, and traffic control - have immediate public consequences. Auxiliary services such as radio communications, detention, laboratory analysis, and police training are important to the police agencies which provide direct services, but usually do not have direct impact on the public. Many other public services involve both direct and auxiliary service activities. A public service delivery system which is well suited to some direct services may be poorly suited to provide others or to provide auxiliary services. The unitary model would suggest that the trade-offs be calculated and an appropriate compromise system developed. The approach we propose allows for the concurrent operation of each of the more desirable systems. That concurrent systems are feasible is attested to by their current generality. What is needed is the ability to improve our understanding of how these systems operate so that we can make more informed choices about how to restructure them.

The Service Structure Model

Public service delivery systems, as we conceptualize them, consist of the interaction of three components: governments, agencies, and people. Governments provide for public services. That is, decisions about which services to provide, how to finance their provision, and how to arrange for their production

are all reached through processes of government. It is important to note that governments in urban America often include special district and college governing authorities as well as counties, cities, and townships. Agencies produce public services. Service activities are organized and performed by the identifiable organizations we call agencies. While many agencies produce services for their "own" government, frequent deviations from this pattern also occur. Contracts and categorical grants are two common methods by which governments arrange for service production by agencies which are not their own. In order to be able to capture such arrangements, we distinguish agencies from governments.

People receive public services. Agency activities benefit or harm people. Assessment of public service performance must take into account these effects on people. Conversely, the attitudes and behaviors of an agency's serviced population may play an important part in determining agency service operations. For human services such as education, health care and police, the service is actually produced through agent-client interaction. Furthermore, the attitudes and behavior of a government's constituency may affect the decisions it makes about police service provision. Assessment of governments' responsiveness also requires examination of that relationship. Constituencies and serviced populations do not always include exactly the same set of people. Our conceptual framework permits us to acknowledge this and to establish the differences between these groups of people. A single individual may also belong simultaneously to several constituencies and serviced populations. Our framework takes account of this.

Before proceeding further, we should note that several levels of analysis may be employed to explain public service delivery. All of the activities of providing, producing, and receiving public services are carried on by individual human beings, and in one sense, it is necessary to analyze individual behavior to explain those activities. Regularities of human interactions are more readily discerned than explained, however. Human collectivities are identifiable because of certain regularities of individual behavior. Governments and constituencies, agencies and serviced populations, are recognizable entities. Much social science research has been devoted to isolating and recording regularities which are exhibited by groups such as these. Both the individual and the group levels of analysis can be informative and we intend to continue using both. We are proposing yet a third level of analysis, however. To deal adequately with most urban public service delivery

systems, one must include the interaction between the various component groups we have identified. At this service structure level of analysis we are concerned with relations between groups. Look at the same problem from a slightly different perspective: return to the individual person as the analytic unit. What do you need to know about his/her organizational context to know who is delivering public services to him/her? You would, I assert, need to know: 1) which governments are organized to provide the service to your subject; 2) which agencies are engaged in producing services for your subject; 3) how your subject differs from other people who share the same governments and agencies. This information comes from a 'group' level of abstraction. You would also want to know about the types of interaction between agencies and the people served, between constituencies and governments, and between the relevant governments and agencies. This is the service structure level of generalization.

The Concept of a "Consuming Unit"

Each of the three components of a public service delivery system interacts with the other two. People relate to governments, governments to agencies, and agencies to people. Thus, it would be possible to describe a system beginning with any of its components. Let us begin with the people - with serviced populations and constituencies. In the Police Services Study we have taken the population of each of 80 Standard Metropolitan Statistical Areas as the people for whom we wish to examine police service provision and production. In doing this, we include only part of some constituencies and serviced populations. State and federal governments, in fact, have most of their constituents outside any one SMSA. Thus, considerations of constituency/government interactions include non-residents of the metropolitan areas. The distinction between constituencies and serviced populations is an important one, and one that is too often overlooked through reliance on the unitary model. The people who form one government's constituency may be divided into several serviced populations or, conversely, people in several distinct constituencies may all receive a service from a single agency.

We want to know how the population of an entire SMSA is divided into constituencies and serviced populations. We therefore divide SMSA populations into consuming units. A consuming unit is a group of SMSA residents who receive a public service from a different producing agency than any other group

in the SMSA, or who are constituents of a different government providing the service than any other group in the SMSA. Consuming units are the subsets of an SMSA population that are created by the intersection of all relevant constituencies in the SMSA with all relevant serviced populations in the SMSA. If the population served by a single agency is organized into several constituencies, it is divided into as many consuming units as there are distinct constituencies within it. If the constituency of a single government is divided into several distinct groups served by different agencies, it is divided into as many consuming units as there are serviced populations within it. The consuming unit category permits identification of each unique combination of constituency and serviced population within a metropolitan area. Every resident of an SMSA is thus assignable to one and only one consuming unit. Once the people of a metropolitan area are grouped in this way, the relationships between agencies and people, and people and governments, can be arrayed for the entire area.

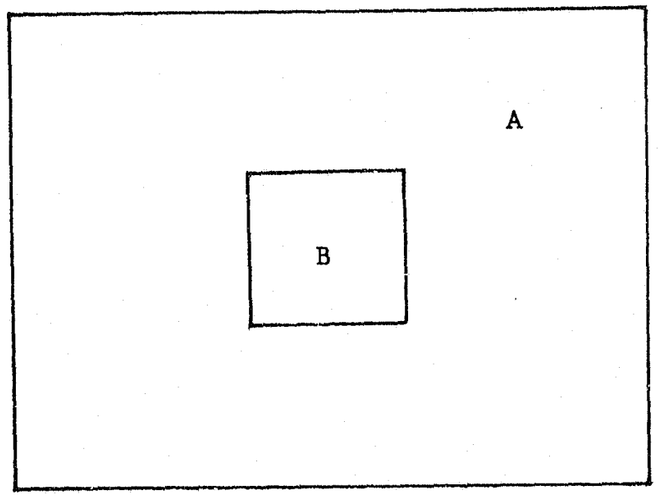
Examples of Consuming Units

Some examples may help clarify the identification of consuming units. Figure I shows a SMSA with two governments which provide for general police patrol: a city and a county. Constituents of the city are also constituents of the county. In many cases these two governments might each have its own police department with the city police serving only within the city and the county police (sheriff) patrolling only outside the city (A B). Even in this simple case, there is a difference between constituencies and service populations. For the city they are identical, but the county government's constituency includes all residents of the SMSA, while the county police patrol for only those residents who live outside the city's service area. Two consuming units are identified.

The example in Figure II is somewhat more complicated. It illustrates the situation in a state such as Alabama where municipal police departments are required to provide patrol services in an extraterritorial jurisdiction beyond the city's corporate limits. In this case, the city police serve a population which is greater than the city's constituency, while the county sheriff patrols only for those residents outside the city service area. Neither constituency is identical to a service area. Although there are only two constituencies and two serviced populations, three consuming units result from these service delivery arrangements.

Figure I

General Police Patrol - SMSA I



Constituencies:

A - County A

B - City B

Serviced Populations:

B - the city

$\overline{B}$ - the unincorporated part of the county

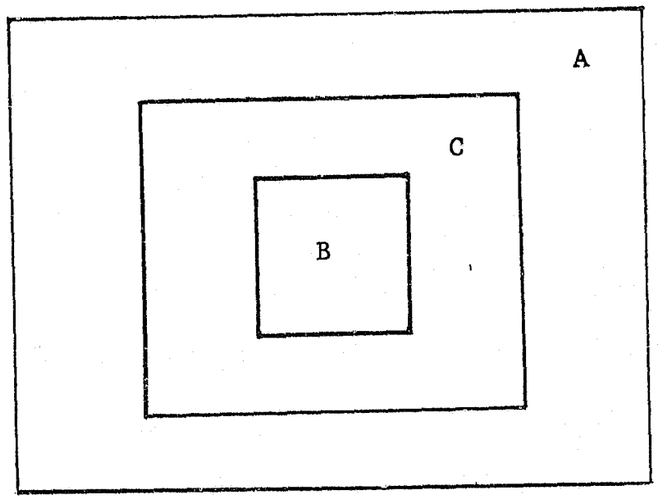
Consuming Units:

B - the city

$\overline{B}$ - the unincorporated part of the county

Figure II

General Police Patrol - SMSA II



Constituencies:

A - County A

B - City B

Serviced Populations:

C - the city and its extraterritorial jurisdiction

$\overline{C}$ - the county outside the city service area

Consuming Units:

B - the city

$\overline{A \cup B}$ - the city's extraterritorial jurisdiction

$\overline{C}$ - the county outside the city service area

A third example is shown in Figure III. Here the SMSA is organized into three governments which provide for patrol services: a county and two cities. Only two agencies produce police patrol service, however. City Z provides patrol through its own police department, but City Y contracts for patrol with the county police who also produce patrol for residents in the unincorporated portions of the county.* The three constituencies and two serviced populations in this example result in the division of the SMSA into three consuming units.

Service Production Charts

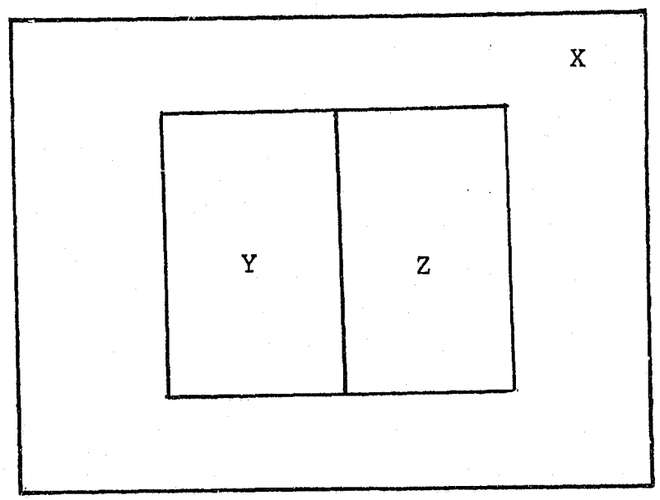
Consuming units constitute mutually exclusive and exhaustive subsets of the population. Neither constituencies nor serviced populations need be mutually exclusive. Together, however, they create a set of subsets which do have these properties and are thus quite useful in constructing a model of a public service delivery system. The consuming units can be arrayed as the columns in a matrix. By arraying all agencies producing the service as the matrix rows, we construct a service production chart. Entries in the matrix cells can characterize the service flow between each agency and each separate constituency within its serviced population. A similar matrix can be constructed for governments and consuming units. This matrix displays the relations which exist between governments and the segments of their constituencies which receive services from various producing agencies. A third matrix can be constructed with governments and producing agencies as the rows and columns. This permits us to record the linkages between governments as service providers and agencies as service producers.

An examination of matrices for our example SMSA's will illustrate how measures of industry (service delivery system) structure can be derived. Figure IV presents service production charts for two of the SMSA's we have just discussed. The number of rows equals the number of agencies producing the

*Contracting, like extraterritorial jurisdictions, is more common in some states than in others. County police may produce patrol services under contract to municipalities as in this example, or the county government may contract for patrol services from a municipality. The latter arrangement exists between Fulton County and Atlanta, Georgia, for example.

Figure III

General Police Patrol - SMSA III



Constituencies:

X - County X

Y - City Y

Z - City Z

Serviced Populations:

Z - City Z

$\overline{Z}$ - City Y and the unincorporated parts of the county

Consuming Units:

Y - City Y

Z - City Z

$\overline{Y \cup Z}$ - the unincorporated part of County X

Figure IV

Service Production Charts
General Police Patrol

SMSA II

	B (City B)	$\overline{A \cup B}$ (City B's extra-territorial jurisdiction)	$\overline{C}$ (County A outside of City B's service area)
City B Police Dept.	R	R	
County A Sheriff's Dept.			R

SMSA III

	Y (City Y)	Z (City Z)	$\overline{Y \cup Z}$ (Unincorporated part of County X)
City Z Police Dept.		R	
County X Sheriff's Dept.	R		R

service. We refer to this as producer multiplicity. Entries in the cells for Figure IV indicate Regular service production. By regular production we mean that the producer makes the service available to individuals within the consumption unit on a routine basis without alternation or coordination with any other producing agency. By checking across each row of the matrix we can determine how fragmented each agency's serviced population is. That is, how many consuming units it is divided into. We can also sum across rows the population of each consuming unit served regularly by the agency. This will give us the total regularly serviced population for each of the producers. Checking down columns for R's we find no duplication. If the sheriff in SMSA II provided regular patrol to every resident of the county, we would need to enter R's in cells 2,1 and 2,2. In that case, both City B and the city's extraterritorial jurisdiction would be served by two regular producers. Duplication would exist in two of the SMSA's three consuming units. We could also produce a measure of duplication relative to population, by summing the populations of the consuming units receiving duplicate service and dividing by the total SMSA population. Alternation results in cases where an agency serves a restricted clientele or geographic area or produces services only during a restricted period of time and another agency complements that service.* If the county sheriff in SMSA II patrolled in City B and the city's extraterritorial jurisdiction during the night shift, for example, we would consider the sheriff's department an alternate producer for those consuming units. We would enter A's in cells 2,1 and 2,2. In this case, there would be alternation in two of the three consuming units. A relative measure of alternation could be obtained by summing the populations of the consuming units which have alternative producers and dividing by the total SMSA population.

Coordinated production occurs when two or more regular producers interact in producing the same service for a consuming unit. The sheriff and the city in SMSA II might cooperate in patrolling the city's extraterritorial jurisdiction. Each might provide patrol cars and officers and a common dispatcher might make assignments of calls to them all. In such a case there would be no R entered in column 2 of the matrix. Instead

*The various cell entries discussed here are presented in greater detail in E. Ostrom, Parks, and Whitaker, 1974, and forthcoming.

we would enter C's in both cells of the column. A check of the columns would then reveal no alternation or duplication, but rather that one of the three consuming units received coordinated patrol service. Our relative measure of coordination is the sum of the populations of the consuming units receiving coordinated service divided by the total population of the SMSA.

The dominant producer in the SMSA can be identified as the agency serving the greatest population. Our relative measure of dominance is the population served by the dominant producer divided by the total SMSA population. To establish dominance, we combine with the regularly served population and populations served in alternate or coordinate ways.

Production of Auxiliary Services

For auxiliary services the consuming units are direct service police agencies rather than groups of area residents. Training, radio communications, chemical analysis and pretrial detention are all services which assist police in the performance of direct service activities. The important production relationships are those between the agencies which conduct training, communications, laboratory analyses or detention and the agencies which use those auxiliary services. As with direct services, multiplicity refers to the number of organized service producers, fragmentation to the number of organized service consumers (in this case direct service police agencies), and duplication, coordination, alternation, and dominance describe inter-agency aspects of service production.

Another important measure for auxiliary services is independence - the extent to which agencies using the auxiliary service produce that service for themselves. We measure independence of production of an auxiliary service in an SMSA as the proportion of direct service agencies which produce the service for themselves. A municipal police department is independent in terms of basic police training if it conducts its own training program. It is independent in chemical analysis if it operates its own crime laboratory for analyzing chemical evidence. Direct service agencies may have independent production of any one auxiliary service and rely on other producers for any other auxiliary services they require. Or a direct service agency may produce none or all of its own auxiliary services. Within each metropolitan area there are likely to be direct service agencies with varying kinds of independence of production of auxiliary services.

Service Production Measures for 80 SMSAs

The five direct police services we have studied display quite different patterns of service production. Table I presents median service production structure scores for the 80 SMSAs and bears out that conclusion. The median number of agencies patrolling in these metropolitan areas is over half again as large as the number of agencies investigating homicides. Homicide investigation is also the service which is most frequently produced by two or more agencies through coordinated activities. Alternation of service is most common for traffic patrol. In fact, in the median SMSA over three-quarters of the population lives in an area with alternate traffic patrol. Most of this alternation involves division of traffic patrol among agencies according to type of highway, street or road to be patrolled. Some of the alternation also involves alternate arrangements for traffic patrol in high traffic, non-residential areas such as airports, parks, and other public facilities. The alternation of general patrol is also primarily of this latter type although there is also some alternation of patrol by time of day and by clientele - some military patrols alternate service with municipal police in areas adjacent to military bases. Dominance is greatest for agencies investigating homicides, but even for that service the median dominant agency in the 80 SMSAs served only one third of the SMSA population.

These findings suggest that although direct police service delivery is fragmented among numerous service areas in most metropolitan areas, there is little duplication of service. Where two or more agencies serve the same service area they generally either alternate or coordinate service, depending upon the particular service. Moreover, not all agencies produce the same service. In fact, there are 'specialist' producers for each of the five direct services: agencies which produce that one service and none of the other four, although it is more common for an agency to produce three or four of the direct services.

Auxiliary police services also differ, one from the other, in the organization of their production. As Table II shows, the median number of auxiliary service producers varies from two producers per SMSA for chemical analysis and detention to nine producers per SMSA for radio communications. Note that each of these medians is well below the median number of agencies using these services. There is little coordination,

Table I

COMPARISON OF PRODUCTION OF FIVE DIRECT POLICE SERVICES

(Medians for 80 SMSAs)

Measure	Service: Patrol	Traffic Patrol	Accident Investigation	Burglary Investigation	Homicide Investigation
Multiplicity (number of agencies producing the service)	13	13	11	10	8
Fragmentation (number of service areas)	12	12	11	10	8
Coordination (proportion of population receiving coordinated service)	.00	.00	.00	.01	.07
Alternation (proportion of population receiving alternate service)	.36	.76	.62	.00	.00
Duplication (proportion of population receiving duplicate service)	.00	.00	.00	.00	.00
Dominance (proportion of population served by agency serving largest number of people)	.14	.17	.20	.17	.33

Table II

COMPARISON OF PRODUCTION OF FOUR AUXILIARY POLICE SERVICES

(Medians for 80 SMSAs)

Measure	Service: Basic Police Training	Radio Communications	Chemical Analysis	Pre-trial Adult Detention
Multiplicity (number of agencies producing the service)	4	9	2	2
Fragmentation (number of agencies using the service)	13	13	12	14
Coordination (proportion of agencies receiving coordinated service)	.00	.00	.00	.00
Alternation (proportion of agencies receiving alternate service)	.00	.05	.00	.00
Duplication (proportion of agencies receiving duplicate service)	.00	.00	.00	.00
Dominance (proportion of agencies served by agency serving largest number of agencies)	.70	.25	.96	.88
Independence (proportion of user agencies producing own service)	.20	.83	.08	.10

alternation, or duplication in the production of these services. Most direct service police agencies in most SMSAs regularly receive these services from only one producer. Except for radio communications, that producer is generallly another agency. Four of every five agencies produce their own radio communications in the median SMSA, but only one in five direct service police agencies produce their own basic police training. Independent production of chemical analysis and pre-trial detention is still less common. Most metropolitan areas are highly dominated by a single producer of chemical analysis - often a state crime laboratory. Pre-trial detention is also highly dominated by a single producer in most SMSAs - typically by the county sheriff. Dominance is somewhat less for training; although in over half of the SMSAs the dominant producer serves over three-fourths of the direct service police agencies. Even for radio communication the dominant producer serves one out of four direct service agencies in the median SMSA.

There is a marked difference between the organization of direct police service production and the organization of production of auxiliary police services. In general, many fewer agencies produce auxiliary services and there is less alternation and coordination of auxiliary service production. Dominant producers of auxiliary services are more likely to serve the preponderance of direct service agencies, than dominant direct service agencies are to serve most of SMSA population.

The measures just discussed concern the manner in which services are produced. Other types of information can be coded in the matrix to indicate different aspects of the relationship between producers and consumers. A measure of the quantity of service provided by each agency to each consuming unit could be entered in the appropriate cells. The number of patrol cars on duty, or the number of assigned officers per hour could be used as a measure of service quantity. Similarly measures of service quality could be entered in the matrix. An agency's average response time in each consuming unit or the percentage of its calls in which it satisfies the complainant through the service it provided are possible measures here.

Service Representation Charts

The constituency-government matrix provides the means for organizing information about interaction between these components of public service delivery. Again examples may

prove helpful. Figure V presents these service representation charts for the two example SMSAs. The columns in these charts are identical to those in the producer-consumer matrices shown in Figure IV. The rows are different. Governments have been substituted for agencies. A count of the rows in each matrix tells us the government multiplicity for patrol services in these SMSAs. A relative measure of government multiplicity is the number of governments divided by the total population of the SMSA. The entries in the cells indicate which consuming units are a part of the constituency of each government. Checking across the rows for C's tells us how fragmented each constituency is in terms of other governments and agencies which serve the same people. Checking down each column tells us how many governments which provide for the service overlap for that group of citizens. Notice that overlap of a service provision is not the same as duplication of service production. On Figure IV we see no duplication of service delivery. At the same time Figure V clearly indicates that one of three consuming units in SMSA II and two of the three consuming units in SMSA III have overlap. Two or more governments make decisions about service delivery for these areas. Our relative measure of overlap is the sum of the populations of overlapped consuming units divided by the total SMSA population. Other measures could be entered in the matrix to show different aspects of the relations between constituents. The number of representatives from each consuming unit could be used to measure formal representation. The taxable wealth within each consuming unit could be used as a measure of resource capacity. The extent of electoral competition in each consuming unit could be measured by the number of contested elections, or the number of party changes. In short, many of the factors of political decision-making which have interested political scientists can be incorporated into the service structure framework.

Service Provision Charts

The government-agency matrix organizes data on the interaction of these components of the public service delivery system. Figure VI presents the service provision charts for our two example SMSAs. Governments are the rows and agencies are the columns for these matrices. The cell entries shown in Figure VI indicate the kind of legal arrangement which links governments and agencies. In SMSA II each of the governments providing patrol services does so through its "own" agency. That is, each of the producers is a bureau which is organized as part of the government providing the service. In SMSA III

Figure V

Service Representation Charts
General Police Patrol

SMSA II

	B (City B)	$\overline{A \cup B}$ (City B's extra-territorial jurisdiction)	$\overline{C}$ (County A outside of City B's service area)
City B	C		
County A	C	C	C

SMSA III

	Y (City Y)	Z (City Z)	$\overline{Y \cup Z}$ (Unincorporated part of County X)
City Y	C		
City Z		C	
County X	C	C	C

Figure VI

Service Provision Charts
General Police Patrol

SMSA II

	City B Police Dept.	County A Sheriff's Dept.
City B	O	
County A		O

SMSA III

	City Z Police Dept.	County X Sheriff's Dept.
City Y		C
City Z	O	
County X		O

there are also two governments which provide patrol services through their own agencies. There is also one government which contracts for patrol services with the producing agency. Independence can be measured as the percentage of governments in the SMSA providing service only through their own agencies. The extent of contracting in an SMSA is the percentage of governments providing the service through contractual arrangements. Other entries could indicate the level of funding which each government was providing to each agency; the type of budget review exercised by each government over each agency; the participation of government in the selection of agency personnel. The types of measures of interest here include many of the characteristics of government/agency interaction which students of politics and administration have long found of interest. What we propose is that rather than restricting analysis to the government or agency level of analysis, we look also at the patterns of interaction between governments and agencies within metropolitan areas and undertake analysis at the public service delivery system level.

Summary

Use of this public service delivery system framework and the structural measures derived within it enables an analyst to be quite specific about the ways in which one metropolitan area is similar to or differs from other metropolitan areas. When many metropolitan areas are simultaneously being considered, the structural measures can be used as variables in statistical analysis to determine which factors are associated with particular patterns and levels of public service performance within SMSAs. In this way the complexity of urban public service systems can be made intelligible. The effects of various forms of metropolitan organization can only be established after we have developed the means to comprehend the structures which exist. By viewing public service delivery systems as the interaction of people, governments, and agencies, perhaps we can develop reform proposals based on the evidence of experience.

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