Measurement and Explanation in the Comparative Study of American Police Organizations

by Edward R. Maguire and Craig D. Uchida

ABSTRACT

This essay serves as a roadmap for theory and research on American police organizations. Organizational scholarship in policing has not progressed in an orderly or cumulative fashion. Some of the classic works in the study of police organizations remain well read but infrequently replicated or improved upon. Current research on police organizations is beginning to build on foundations established more than three decades ago.

The essay explores trends in the measurement and explanation of police organizations since their emergence in the early 19th century. The discussion spans the gamut of measurement and explanation, from data collection and statistical analysis methods to scholarly theory and public policy on policing. The essay demonstrates that paying careful attention to sound measurement and explanation is vital for research, theory, and practice.

Edward R. Maguire, Ph.D., is Associate Professor of Administration of Justice at George Mason University in Fairfax, Virginia. Craig D. Uchida, Ph.D., is President of 21st Century Solutions, a crime and public policy consulting firm, in Silver Spring, Maryland.

Measuring profit in business is fairly straightforward. Measuring results in government is not.

—Osborne and Gaebler (1992, 349)

For the corporate executive, the bottom line is profits. Most businesses, whether small, medium, or large, ask: "How much did we earn this quarter? How much did we lose? How do we increase revenues? How do we increase productivity?" An accountant, business manager, planning and management team, or even a research and development division seeks and finds answers to these questions. To explain gains and losses, external auditors annually examine activities of the business and provide reports to shareholders and potential investors.

For the law enforcement executive, the bottom line is less clear. Is the measure of success crime, clearance rates, complaints, calls for service, or use of force incidents? Is it the number of community meetings attended by officers or the quantity and quality of problem-oriented policing projects? A crime analyst, a lieutenant in charge of special projects, an aide to the chief, a patrol officer who has expertise in data management, or a computer guru in the agency may be assigned to compile information. Periodic reports may be written, or an annual report may be produced, but in few instances do these reports fully explain the activities of the agency. To be fair, selecting appropriate measures is a problem shared by administrators in most public agencies that have no single, definable bottom line (Bayley 1994; DiIulio 1993; Wilson 1989, 1993). Furthermore, the administrative problem of identifying and defining those things that are important enough to measure is complicated by the political problem of whether they should be measured and the technical problem of measuring them.

If measurement is a problem within individual police agencies, then developing measures that allow us to compare multiple police agencies is like herding cats. It means developing a reasonable and useful standardized measurement system and encouraging local police agencies to comply with it. Despite the many difficulties inherent in developing comparison measures, comparing police agencies remains a popular idea for a number of audiences, including police administrators and planners, reformers, criminologists and other scholars, journalists, and policymakers with a variety of agendas.

This essay examines how various features of police organizations have been measured and explained over time and place. The central focus is not on measures developed within individual agencies but on measures that have been, or might be, used to compare police organizations. Although these organizations

have much in common, they also show tremendous variation. Some are large, but many are quite small; some patrol aggressively, arresting offenders for minor public order offenses, others enforce the law with less vigor; some have tall hierarchies and formal command structures, others are less formal, with only a handful of levels; some work closely with communities and spend time formulating customized solutions to local problems, others shun community involvement, instead providing more "traditional" police services. This variation in both what organizations *do* and what they *are* is not unique to police agencies. As Scott (1992) notes, "while organizations may possess common generic characteristics, they exhibit staggering variety—in size, in structure, and in operating processes." This essay explores efforts to measure and explain variation in American police organizations: variation in what they are and what they do, in form and function, in structure and process, and in policy and practice.

The subject of this essay is police *organizations.* The study of police agencies as organizations is growing, owing its theoretical roots to the sociological and social psychological study of organizations in general.[1] This focus on police as organizations is the common thread linking each section of the essay. We do not examine other frequently studied features of policing, including police culture, police discretionary behaviors (and misbehaviors), individual officer attributes, and other important phenomena occurring at units of analysis that are larger (e.g., states or nations) or smaller (e.g., officers or workgroups) than police organizations.[2]

There is some ambiguity over what constitutes a police organization (Maguire et al. 1998). As Bayley (1985, 7) notes, "police come in a bewildering variety of forms . . . moreover, many agencies that are not thought of as police nonetheless possess 'police' powers." To reduce the scope of our task, we focus on public police organizations in the United States whose primary purpose is to provide generalized police services, including responding to calls for service, to a distinct residential population.[3] This levels the playing field, allowing us to explore variation among organizations with a common purpose.

This essay discusses broad organizational properties rather than particular policies, programs, activities, or structural features. Researchers have produced valuable research on particular features of police organizations such as pursuit policies, D.A.R.E.® programs, the use of one-officer and two-officer patrol cars, and the establishment of special units for various tasks (e.g., narcotics, child abuse, gangs). The line between general and specific organizational properties is admittedly arbitrary. Nevertheless, the goal of the essay is to draw together a diverse body of scholarship on American police organizations. Research on specific (and sometimes esoteric) organizational properties makes it more difficult to consolidate this large body of theory and research. Therefore, we do not

discuss the prevalence of specialized bias-crime units, but we discuss specialization in general; we do not discuss the implementation of new technologies for processing offenders, but we examine innovation; we do not discuss drunk driving enforcement or use of deadly force, but we discuss aggressive patrol strategies and styles of policing.

Even after narrowing the focus in this way, there remain considerable variations among police organizations over time and place.[4] A substantial body of theory and research has been developed to measure and explain these variations. As one way to organize this body of scholarship on police organizations, we draw an important distinction between what they *do* and what they *are.* These categories sometimes overlap in practice, but there is some precedent in the development of organization theory for treating them separately.

What Police Organizations Do

Processes are not something that we invented in order to write about them. Every company on Earth consists of processes. Processes are what companies do.

—Hammer and Champy (1993, 117)

Like corporate America, police organizations do many things. Most people are unaccustomed to thinking of *organizations* as doing things. After all, organizations are composed of people, and it is the people within them who think, plan, act, decide, debate, respond, cooperate, and all of the other activities and behaviors in which *people* engage. Yet, as Maguire (forthcoming) recently argued:

> Organizations are greater than the sum of their parts. They expand and contract, rise and fall, and generally take on lives of their own. Organizations, like individuals and social groups, do not only act, but are acted upon as well. They are influenced, shaped and constrained by a complex interaction of political, social, economic, cultural, and institutional forces. Organizations exhibit patterned regularities, and they can (and indeed should) be studied apart from the people within them (Blau, Heyderbrand, and Stauffer 1966; Blau and Schoenherr 1971).

Recent work by King, Travis, and Langworthy (1997) takes this argument one step further, using a biological, or life course, perspective to study the birth, death, and aging processes of police agencies. Thinking about organizations as separate from the people within them—as "corporate persons"—is essential to understanding what they do (Coleman 1974).

Police organizations do many things. They make arrests, process offenders, find lost children, quell disturbances, respond to emergencies, solve problems, form relationships with the community, and perform many other activities too numerous to summarize briefly. These activities, in the aggregate, constitute the output of police organizations. Most attempts to measure and explain this output have relied on arrest, clearance, and crime statistics. Systematic collection of data from large samples of police agencies has shown considerable variation in the quantity and quality of this output over time and place. These data are used in many ways. Arrest and clearance statistics, for instance, are frequently used as measures of a police organization's productivity. As we will show later, the use of these kinds of performance indicators is beginning to fall out of fashion as police executives, scholars, and reformers focus on alternative measures. These data are also used as indicators of a police organization's "style."[5] Some agencies may emphasize aggressive enforcement of panhandling ordinances, for instance, but others may tend to ignore such minor offenses. Although the concept of organizational style is intangible and difficult to measure, researchers have attempted to draw inferences about policing styles by examining arrest patterns for discretionary offenses such as drunkenness or disorderly conduct (Wilson 1968b). Although police organizations do many different things, data are systematically collected on only a few of these activities. This limits the scope of measures that can be constructed from these data.

Police organizations do many things. They make arrests, process offenders, find lost children, quell disturbances, respond to emergencies, solve problems, form relationships with the community, and perform many other activities too numerous to summarize briefly.

One focus of this chapter is to examine variations in police activities, processes, performance, and style over time, across agencies, and across fully functioning subunits within agencies (which often resemble mini organizations). We will trace efforts to measure and explain what police organizations do, from the traditional focus on arrests and clearances to more recent efforts to use problem solving and community partnership strategies. Our discussion spans the gamut of analytical issues, from data collection and analysis strategies to appraisals of reliability, validity, theory, and causation.

What Police Organizations Are

Lord! We know what we are, but know not what we may be.

—William Shakespeare, *Hamlet* (1601) act 4, scene 5.1

What a police organization *does* is external, typically taking place outside of the organization: in the community, on the streets, in people's homes. The features that define what a police organization *is* tend to be internal: administrative arrangements, processing routines, structures, communication patterns, and overall "corporate" personalities.[6] In short, what police organizations *do* takes place within the framework (or context) of what they *are*. The social scientific study of what police organizations are has a much shorter history than the study of what they do. This history parallels a similar split in the study of organizations in general. Although output and performance have always been a primary focus of organizational research, it was not until the late 1950s that "researchers began to conceive of organizations as more than just rationally derived mechanisms for the production of goods and services, but as entities worthy of understanding for what they *are* in addition to what they *produce*" (Maguire forthcoming, 12; emphasis in original).

Researchers began to measure variation in the internal features of police organizations using systematic surveys in the late 1920s. Attempts to explain this variation came later, with theoretical explanations appearing in the 1960s and empirical studies beginning in the mid-1970s. Much of this research examines why we have the police organizations we have and seeks to isolate local characteristics (such as regional, historical, demographic, governmental, or cultural factors) that produce organizational variations from one jurisdiction to another.

The essay is organized into three parts: Measurement, Explanation, and Future Prospects. In part 1, we trace the evolution of measurement in the comparative study of American police organizations. This discussion spans the past 150 years, from crude early attempts to count police output to recent methodologically informed efforts to "measure what matters" (Langworthy 1999). In part 2, we trace the evolution of attempts to explain the variation in police organizations over time and space. This body of work was influenced heavily by research and theory in the sociology of organizations. In part 3, we review some general themes and discuss concrete ways to better measure and explain police organizations.

Measurement

But the main thing is, does it hold good measure?

—Robert Browning, English poet, 1850

Measurement and explanation are the twin pillars of social science. Measurement in the social sciences has the same purpose as in the physical sciences: to quantify, count, or assign meaningful scores to variations in some phenomenon, using valid and reliable methods. Clocks, thermometers, barometers, odometers, speedometers, and bathroom scales surround us, becoming so ingrained in our daily lives that we never stop to think about what they share in common: They are all measuring instruments.

Frequently, the traits measured in the social sciences are more ambiguous than properties like time, humidity, speed, or weight. For instance, psychologists have developed scores of "instruments" for measuring aggression, intelligence, mental illness, and humor. In the business world, researchers measure customer satisfaction, commitment, value systems, and other phenomena that are difficult to quantify. Testing and refining these measuring instruments is a labor intensive process that takes years, as evidenced by the debate over the development of standardized tests to measure individual intelligence and aptitude.

The difficulties in measuring ambiguous social properties apply equally to the police. Researchers, government officials, and police executives have debated the best ways to measure police performance for more than 100 years. This debate remains largely unresolved, though if the various parties agree about anything, it is that existing measurement systems are insufficient and alternatives are difficult to come by. According to Carl Klockars (1999, 198):

> [M]easuring in the social sciences is a very sad affair. It is an activity so fraught with mind- and soul-wrenching difficulties that only grossly ignorant beginning students and the least capable or least virtuous of social scientists engage in it with good humor. A warning is in order to any police practitioner who is approached by a quantitative criminologist with a smile on his or her face: Listen very, very carefully, keeping one hand on your wallet and the other on your gun.

The technologies used to record data in police organizations have evolved substantially, from archaic leather log books in police stations to high-speed personal computers that store and process vast amounts of data. The measurements constructed from these raw data have evolved as well, ranging from simple tallies of police activities and outputs to composite measures calculated using advanced statistical methods. In fact, recent research on police organizations

has begun to borrow some of the sophisticated statistical measurement techniques used by educational researchers and psychologists. In this section, we begin by examining the evolution in measures of what the police do, from just after the birth of police organizations to recent findings from a national forum of leading police experts. We then trace various efforts to measure what police organizations are.

Measuring what police organizations do

One of the first areas of measurement for police organizations focused on what they do: their outputs, their performance, and their effectiveness. Since the inception of municipal police departments in the early to mid-1800s, agencies have gauged their performance through arrest rates and reported crimes. In some instances, they recorded the number of lost children returned home, drunks taken home, and lodgers taken into the station house (Monkkonen 1981). As police became more "professionalized," the crimefighting image began to predominate, and agencies focused on collecting and publishing crime data. With the "discovery" of discretion in the 1960s, researchers and police administrators realized that order maintenance and other noncrime activities were also important to measure. The community policing movement of the 1980s and 1990s has led to a shift in attitudes about what *should* be measured, yet there is little agreement among researchers or police about how to do so. This section examines the types of data that have been collected to measure what police organizations do, including some of the problems those measures present and the ongoing debate about what should be measured.

Most urban police departments were created in the mid- to late 19th century as a result of growing concern over riots and disorder. Yet police neither measured the number of riots they broke up nor kept track of disorder. Instead, to measure the performance of uniformed police, city councils, State assemblies, and police administrators urged the collection of crime statistics (primarily arrests for various crimes) (Monkkonen 1981). As early as 1851, the New York City Police Department collected data on arrests and reported these in their semiannual reports (Miller 1977). Other large agencies, including Washington, D.C., Boston, Philadelphia, and Chicago, followed suit (see Count-van Manen 1977; Ferdinand 1967, 1972; Lane 1980; Surette 1984; Walker 1977). Police historians have only been able to trace the growth and development of police organizations by looking at annual reports that included arrests, number of officers, and other activities enumerated by the police. These data provide a glimpse of what police organizations did when they were first established (Count-van Manen 1977; Ferdinand 1967; Miller 1977; Monkkonen 1981).

According to Monkkonen (1992), police agencies in the 19th century also engaged in a number of social service functions. They took in "tramps, returned lost children by the thousands, shot stray dogs, enforced sanitation laws, inspected boilers, took annual censuses, and performed other small tasks" (p. 554). Toward the end of the century, they began to drop these functions and focus on crime control; however, some agencies kept careful records of these activities through the early 1900s.

Also near the end of the 19th century, problems in policing, particularly with corruption and inefficiency, began to surface. To resolve these problems, police reformers stressed managerial efficiency and professionalism, catchwords that, in 1894, heralded the development of the forerunner of the International Association of Chiefs of Police (IACP), and independent municipal groups began to collect law enforcement and crime statistics in the early 1900s. For instance, the Bureau of Municipal Research in New York City, organized in 1906, gathered statistics on police administration and operations as part of its investigation of corruption. The bureau not only collected data but also made recommendations to the departments regarding administrative practices. Although reforms were not readily made within the departments as a result of the bureau's work, these reports established the model for the police survey that, by the 1920s and 1930s, eventually became standard in police administration.

By the late 1920s, IACP and the Federal Bureau of Investigation (FBI) sought to professionalize the police by stressing crimefighting rather than noncrime services. This marked a profound shift in how police characterized their work and led to the collection of national data through the Uniform Crime Reports (UCR) (Uchida 1997). As police systems began to move toward professionalism, August Vollmer (chief of the Berkeley, California, Police Department from 1905 to 1932) and IACP urged departments to maintain records related to crime and operations. The IACP Committee on Uniform Crime Records was formed in 1927 to create a system for collecting uniform police data. Standardized definitions were formulated to overcome regional differences in the definitions of criminal offenses. Over a 2-year period, the committee examined variations among State codes and evaluated the recordkeeping practices of police agencies. By 1929, the committee finalized a plan for crime reporting that became the basis for UCR. The committee chose to obtain data on offenses that come to the attention of law enforcement agencies because they were more readily available than other reportable crime data. Seven offenses, because of their seriousness, frequency of occurrence, and likelihood of being reported to law enforcement, were initially selected to serve as an index for evaluating fluctuations in the volume of crime. These crimes, known as the Crime Index offenses, were murder and non-negligent manslaughter, forcible rape, robbery,

aggravated assault, burglary, larceny/theft, and motor vehicle theft. By congressional mandate, arson was added as the eighth Index offense in 1978.

In 1930, Congress enacted legislation authorizing the U.S. Attorney General to gather crime data. The Attorney General designated the FBI to serve as the national clearinghouse for data collected by the program. As Wellford (1982) indicates, there were two purposes for uniform crime reporting. First, police leaders saw the value of better data for the improvement of management and operation strategies. He cites Vollmer:

> How can we ever know the extent or the nature and distribution of crime or discuss the problem intelligently at our conferences or conduct a successful campaign to prevent crime until police statistics are accurately, adequately, and uniformly compiled? (Vollmer 1927).

Second was the desire for data that could combat the perception of "crime waves" created by the media. Police managers were concerned that such crime waves were seen as a reflection of their departments' inadequacies. They believed that uniform crime data would dispel the notion of crime waves and, therefore, demonstrate the value of police efforts to control crime. The tension between developing a system that would represent a true measure of crimes known to police and developing one that would prove crime was not increasing has been present in UCR since the beginning.

Since their inception in 1930, the Uniform Crime Reports have evolved from a relatively small data collection effort into a large-scale national effort. In its first year of operation, the program collected data from 400 cities in 43 States, representing about 20 million people. In 1998, UCR collected data from more than 17,000 cities in all 50 States, representing about 260 million people. UCR remains a voluntary reporting program, with city, county, and State law enforcement agencies reporting monthly to the FBI the number of part 1 offenses and part 1 and part 2 arrests that have occurred within their jurisdictions. In addition to monthly tallies of offenses and arrests, additional data are captured on particular offenses,[7] and data on age, sex, race, and ethnicity are collected for arrests. In 44 States, an agency reviews, edits, and compiles the data for statewide UCR reporting and then forwards the data to the FBI for inclusion in the national report.

Although crime data have been systematically collected for nearly 70 years, there has been controversy over whether and how these data actually measure crime and/or police performance. The increase in crime in the early 1960s raised questions about the effectiveness of police. In 1999, with the decrease in crime spanning 7 successive years,[8] police are praised by the President, the

Attorney General, and local politicians for their effectiveness. Yet many critics question the use of crime data as measures of police performance (Beattie 1960; Kitsuse and Cicourel 1963; Wolfgang 1963; Robison 1966; Seidman and Couzens 1974; Decker 1977; Maltz 1977; Walker 1992). Specifically, critics note that the ratio of recorded to unrecorded crimes may fluctuate by offense, jurisdiction, and year, regardless of the true incidence of criminal events. They also cite the impact of political and organizational pressures on the crime rate, suggesting that fluctuations in the recorded rates may occur independent of true changes. Although others recognize these problems with crime statistics, they indicate that UCR data have some potential (Nanus and Perry 1973; Berk 1974; Wellford 1974). They recommend the exercise of caution when using these data and suggest that crime data be used in combination with other measures. Decker (1981), for example, uses official crime data from UCR, arrest data (also from the FBI, but not widely disseminated), and victimization data for 25 cities. He concludes that "such a combination of measures could lead to a standardization of measures across jurisdictions" and that the three measures "expand the ability of analysts to determine the success of police efforts in dealing with crime."

One partial solution to the problems of UCR is the National Incident-Based Reporting System (NIBRS). NIBRS differs from UCR in a number of ways. The most notable difference is that in NIBRS, individual records related to a distinct crime incident and its associated arrest are recorded. NIBRS includes 52 data elements on 22 primary crime categories. It distinguishes between attempted and completed crimes, collects more detailed information on the victim/offender relationship and the circumstances of an offense, and eliminates the "hierarchy rule."[9] By collecting detailed data in an incident-based format, "practitioners and researchers will be able to undertake sophisticated, multivariate analyses of crime within a jurisdiction and link demographic and economic data" (Roberts and Jacobs 1994). This system, discussed and debated for almost 20 years, has yet to catch on but "holds great promise for tactical crime analysis, examining the effectiveness of specific law enforcement techniques, determining the allocation of scarce resources, and identifying and comparing trends in criminal justice activities exhibited in different counties or departments" (Coyle, Schaaf, and Coldren 1991).

Discretion came into play not only in decisions to arrest but also in every situation in which the police make choices about doing something.

The discovery of discretion

In the 1960s, the "discovery" of police discretion by legal commentators (Goldstein 1960; LaFave 1965; Davis 1969) and researchers (Wilson 1968b; Reiss 1971; Skolnick 1966) changed how we look at what police do and how we measure their behavior, both organizationally and individually. These writers emphasized the role that discretionary decisionmaking plays in the day-to-day work of police officers. The legal commentators examined discretion in terms of the criminal process, noting that police usurp the power of magistrates by making decisions in the field that are reserved for magistrates. Commentators believed that rulemaking and policy formulation were necessary to control police decisions to invoke the law (Goldstein 1960). Researchers and police administrators took a different approach. They saw that police officers and organizations were involved in complex work and emphasized the seriousness and importance of decisionmaking in every part of policing. Herman Goldstein (1963, 1977), for example, emphasized that discretion came into play not only in decisions to arrest but also in every situation in which the police make choices about doing something.

Overall, the discovery of discretion broadened our understanding of what police organizations do. It meant that the activities of police organizations had to be measured with data that went beyond arrests. This includes many discretionary choices that officers make: to use force; to make motor vehicle stops; to cite, warn, or scold; to be rude or polite; to search; to conduct a field interrogation; and so forth.

Although these writers demonstrated the use of discretion among *individual* officers, James Q. Wilson (1968b) showed how aggregate patterns of discretion within an agency can reflect an overall *organizational* style. Wilson proposed three major organizational styles of policing: watchman, legalistic, and service. He linked these styles to the policies of the police administrator, local politics, and community structure. But, as we demonstrate later, measuring these styles of policing is not easy. Wilson makes use of arrest data and calls for service for each of his eight agencies, but uses them only to augment his interviews and observations.

Overall, the discovery of discretion broadened our understanding of what police organizations do. It meant that the activities of police organizations had to be measured with data that went beyond arrests. This includes many discretionary choices that officers make: to use force; to make motor vehicle stops; to cite, warn, or scold; to be rude or polite; to search; to conduct a field interrogation; and so forth. Together, these choices shape the image, style, and character of

a police organization. Some agencies make a lot of arrests, use force frequently, and stop motor vehicles regularly; others focus on providing community service and upholding community standards. Although discretion is an individual attribute, it has organizational implications. More importantly, these organizational properties can and should be measured. Yet, for the most part, they are not.

Community policing

Traditional performance measures include reported crime rates, overall arrests, clearance rates, and calls for service and/or response times (Alpert and Moore 1993). Traditional measures, however, emphasize only the crime control aspect of policing and do not adequately address the many other police agency activities. This problem becomes increasingly apparent when we examine the recent interest in, and adoption of, community policing. Several data sources now exist for researchers to begin evaluating how to measure organizational involvement in community policing activities.

Over the past 7 years, there have been nearly a dozen national surveys of community policing in the United States. In 1993, with a grant from the National Institute of Justice, the Police Foundation surveyed more than 1,600 police and sheriffs' departments about their experiences with community policing strategies (Annan 1994; Wycoff 1994). The study was replicated in 1997 (Macro International 1997). National surveys also were conducted by several others, including the National Center for Community Policing and the FBI in 1993 (Trojanowicz 1994); Washington State University in 1993 and 1996 (Maguire, Zhao, and Lovrich 1999); The Urban Institute in 1995 and 1996 (Roth and Johnson 1997); the Bureau of Justice Statistics (BJS) as an adjunct to its 1997 Law Enforcement Management and Administrative Statistics (LEMAS) survey (Reaves and Goldberg 1999); and the University of Nebraska in 1998 (Maguire and Zhao 1999).

Other national data on community policing have been collected by the Justice Department's Office of Community Oriented Policing Services (COPS) since 1994. COPS has collected community policing data from more than 10,000 separate police agencies. For instance, data on 31 community policing activities were collected from a 1994 grant program called COPS FAST (Funding Accelerated for Small Towns) that focused on agencies serving populations of 50,000 or fewer. Nearly 6,000 agencies responded, serving populations ranging from 106 to 49,949. After COPS FAST was completed in 1995, a more comprehensive reporting format was instituted. The Community Policing Information Worksheets collect data on 49 separate community policing activities. Other COPS data collections are based on initial and annual reports completed by grantees. Although these datasets are based on nonrandom samples of agencies

and have other problems, they are still useful for some purposes (see Maguire and Mastrofski forthcoming).[10]

By the time this chapter appears in print, the newest national survey of community policing will have been completed. Mastrofski (1998b) and his colleagues surveyed more than 2,500 police agencies across the United States that employ 10 or more full-time sworn officers. This study improves on previous research in at least five ways. First, the mail survey instrument was designed to elicit the quantity or scope of community policing activities (known by social scientists as the "dosage"), rather than their mere presence or absence. This will result in more precise measurements of the nature and volume of community policing. Second, since community policing likely varies both within and among police agencies, separate surveys were distributed to district commanders in the largest agencies. Third, researchers are examining the measurement structure of the data using methods that are similar to those used in educational and intelligence testing. The purpose of these analyses is twofold: to measure intra-agency as well as interagency variation in community policing, and to ensure that the measures constructed from the data are both reliable and valid (Maguire and Uchida 1998). Fourth, because evidence shows that some respondents to community policing surveys may exaggerate their actual involvement (Maguire and Mastrofski forthcoming), respondents were promised full confidentiality. Finally, researchers visited some of the responding agencies, using a variety of semistructured qualitative research methods to record their observations while on site. This served as an additional check for reliability and validity, and produced additional insights about community policing as it is practiced (or not) in American cities and counties.

With these data sources, it appears that measuring community policing at the agency level is possible and plausible. We have explored methods to do so using the Police Foundation data from 1993. Further efforts to measure community policing using newer and better data sources are ongoing (Maguire and Uchida 1998; Parks 1999).

Measuring what police organizations do: Contemporary issues

We have described the kinds of data that have been collected to compare police organizations and spent time discussing how to turn those data into measures. However, there is another whole spectrum of measurement issues that we have not explored: the debate over the kinds of data that should be collected and how they should be used. Policymakers, reformers, scholars, and police administrators now routinely discuss measurement as a method for improving police performance. Some of these ideas involve collecting new kinds of data, others

involve using some of the traditional measures in new ways. We begin with the latter.

One of the most celebrated reforms in policing during the 1990s has been COMPSTAT (computer comparison statistics). First implemented in New York under Commissioner William Bratton, COMPSTAT is now being used by agencies around the United States and in other nations. As implemented in New York, COMPSTAT generates crime statistics for each precinct and uses them to hold precinct commanders accountable for addressing crime in their areas (Bratton 1999; Bratton with Knobler 1998). Blending technology and accountability in this fashion is popular in the private sector, but it is rare in the public sector. According to Bratton, he had "become a staunch advocate of using private-sector business practices and principles for the management of the NYPD, even using the business term 'reengineered' rather than the public policy term 'reinventing' government" (Bratton with Knobler 1998, 224).

COMPSTAT has been credited with lowering crime rates in several American cities, though some scholars express doubts about these claims (Bratton 1999; Eck and Maguire forthcoming). At a minimum, Bratton mobilized the New York Police Department (NYPD) to raise arrest productivity significantly.[11] From an administrative perspective, COMPSTAT represents a significant change. From a measurement perspective, however, it relies on the same crime data that have been criticized as inadequate measures of police performance for the past two decades.

Others also suggest new uses for these traditional measures. In England, for example, there is now a trend toward auditing police agencies (Hough and Tilley 1998; Leigh, Mundy, and Tuffin 1999). This involves having each police agency develop measures of crime and disorder and making these, together with the strategies used to address them, available publicly. As might be expected, concerns are being raised about the extent to which such data are comparable across agencies and the extent to which they can be used as relative measures of police performance. Sherman (1998) adds a new twist to this notion, suggesting the publication of rankings of police agencies, much like *U.S. News and World Report*'s annual ranking of American colleges and universities. Rather than using simple crime rates to rank performance, Sherman suggests using "risk adjusted" crime rates that account for community differences in factors thought to be

The intensive focus on numbers of crimes and arrests may lead police agencies to lose sight of other important goals, such as equity, fairness, or a spectrum of humanistic concerns that Mastrofski (1999) calls "Policing for People."

associated with crime. This method would pressure agencies with low relative performance to find and adopt more effective strategies.

For some, these suggestions raise the issue discussed in the introduction: Police organizations do not have a readily definable bottom line. Furthermore, the intensive focus on numbers of crimes and arrests may lead police agencies to lose sight of other important goals, such as equity, fairness, or a spectrum of humanistic concerns that Mastrofski (1999) calls "Policing for People" (also see Eck and Maguire forthcoming; Moore and Poethig 1999). As former Commissioner Bratton admits, his strategies for reducing crime in New York came with some consequences:

> We defined brutality as unnecessary behavior that caused broken bones, stitches, and internal injuries. But those were not the figures that had gone up significantly. What had risen were reports of police inappropriately pushing, shoving, sometimes only touching citizens. We were taking back the streets . . . we were being more proactive, we were engaging more people, and often they didn't like it. (Bratton with Knobler 1998, 291)

According to Mastrofski, all of the measures discussed thus far ignore a fundamental element of the relationship between police and communities: the nature of police-citizen encounters. He highlights six features of these encounters that should be measured: attentiveness, reliability, responsiveness, competence, manners, and fairness. Like other variables we have discussed, these are characteristics of individual encounters and officers, but collectively, they can be used to characterize and compare police agencies over time and place. Doing so will represent a fundamental challenge for both police administrators and researchers. Measuring these features in ways that are useful for comparing organizations is a challenge for researchers, and administrators will need courage and skill to implement them.

The notion that policing has competing bottom lines is perhaps clearest today. Although the Nation continues to experience dramatic reductions in violent crime, the problems of police-community relations identified three decades ago by the President's Commission on Law Enforcement and Administration of Justice (1967) continue to exist. Concern over use of force by police officers led Congress to order the U.S. Department of Justice (DOJ) to "acquire data about the use of excessive force by law enforcement officers" and to "publish an annual summary of the data acquired." (McEwen 1996, vi). Concern over the practice of "racial profiling" by police officers making traffic stops, a long-time concern of minority communities, has led to calls for measurement on the severity of the problem. Both the U.S. House of Representatives and the Senate are considering the Traffic Stops Statistics Act of 1999, which would

require DOJ to acquire "data from law enforcement agencies regarding the characteristics of persons stopped for alleged traffic violations and the rationale for subsequent searches" (Conyers 1999, E673). Although many observers applaud recent reductions in crime, others continue to wonder whether these reductions are worth the cost in terms of police-community relations, particularly in minority communities. Measurement plays an important role in this debate.

Measuring what police organizations are

Police agencies and researchers are not only concerned about measuring what the police do, they also are interested in other descriptive attributes such as their processes, policies, and structures. Since the 1930s, descriptive information on these internal features of police organizations has been collected, for the most part, on an ad hoc basis. Administrative and management data have been collected intermittently by the International City/County Management Association (ICMA), the Fraternal Order of Police (FOP), the Kansas City Police Department, the Police Executive Research Forum (PERF), the Police Foundation, BJS, and various National Institute of Justice (NIJ) grantees. Through national surveys, these organizations have collected data from police agencies that describe who they are, including salaries, equipment, policies, procedures, personnel, practices, structures, and other information. Only in the past decade, however, has there been a systematic data collection process in place to measure the internal characteristics of police organizations. BJS, through its LEMAS data series, collects input and process data that enable researchers and police executives to better understand police agencies. This section examines the data that are available and briefly discusses research efforts that make use of these data.

The evolution of data collection

The first nationwide collection of operational and administrative data occurred in 1929 under the Bureau of Municipal Research. The bureau surveyed 78 city police agencies and 9 State police forces about police wages and salaries, clothing reimbursement, room and board, sick leave, vacation leave, pension funds, and stability of employment (Beyer and Toerring 1929). In the 1930s, ICMA began the first data collection series, which exists to this day. These data were part of ICMA's annual *Municipal Yearbook* series, a collection of statistics on cities (and now counties) throughout the country. Initiated in 1934, the *Municipal Yearbook* reported on most facets of city management, from financial planning and form of government to law enforcement. By 1998, the *Yearbook* presented data from more than 7,000 police jurisdictions and included police personnel, salaries, and expenditures.[12]

By 1951, the Fraternal Order of Police and the Kansas City (Missouri) Police Department (KCPD) began collecting annual data from police agencies about their administrative practices. From 1951 to the mid-1980s, FOP collected and published salaries and benefits of chiefs and the rank-and-file, officer education level, and types of legal aid—information important to both administrators and unions. The KCPD collected process data from about 40 large agencies—serving populations of 300,000 to 1 million—for 22 years. Like FOP, the KCPD collected information about salaries and fringe benefits, but for a different purpose: to compare itself with similar agencies. It also asked about computer facilities, uniforms, weapons, and vehicles. By 1973, budgetary considerations forced the department to discontinue the survey, but 4 years later, it joined forces with the Police Foundation to reinstitute the questionnaire. Unlike the previous surveys, however, input data (calls for service) and output data (firearms incidents) were requested. Additional questions were asked about personnel (breakdowns by race and ethnicity), equipment, and special programs. A similar survey was distributed in 1981 with the Police Executive Research Forum.

A number of ad hoc administrative surveys have been fielded by research organizations. In the early 1970s, the Police Foundation, IACP, and the Educational Testing Service analyzed data on personnel practices from 481 respondents (Eisenberg and Kent 1973). In 1983, the National Association of Criminal Justice Planners and BJS collaborated on a survey that was sent to 53 agencies (Cuniff 1983). These data concentrated on four areas: calls for service, agency reports, investigations, and resources.

The most extensive collection of administrative data on a national level occurred through the Workshop in Political Theory and Policy Analysis at Indiana University (Ostrom, Parks, and Whitaker 1978a). Through a grant from the National Science Foundation, Ostrom and her colleagues collected and analyzed data from 1,827 police agencies within 80 Standard Metropolitan Statistical Areas (SMSAs). Five major areas were examined: service conditions, the legal structure, organizational arrangements, manpower levels, and expenditure levels. In phase 1 of the study, researchers collected data through the State capital, from local sheriffs' offices and police agencies in each SMSA, and from interviews with members of more than 600 police agencies. During phase 2, detailed observational data on police-citizen encounters and administrative statistics were collected from three metropolitan areas: Rochester, New York; St. Louis, Missouri; and Tampa-St. Petersburg, Florida.

With the data from phase 1, Ostrom and her colleagues described the services of police departments within the 80 SMSAs. At least 18 technical reports were published at Indiana University, along with their book, *Patterns of Metropolitan Policing* (Ostrom, Parks, and Whitaker 1978a). Few researchers, however, used

these data for further study. Only Robert Langworthy used the data from phase 1 extensively and in combination with the Kansas City General Administrative Survey. His dissertation as well as book and journal articles examine the causes and correlates of organizational structure in large police agencies (see Langworthy 1983, 1985a, 1986). In contrast, many more researchers have used the observational information collected during phase 2 (for a review, see Riksheim and Chermak 1993; Sherman 1980).

Law Enforcement Management and Administrative Statistics

In 1983, BJS noted that the collection of law enforcement data lagged behind data collection for jails, prisons, juvenile institutions, and the courts. To fill this gap, BJS initiated a program for the collection of these data on a national level (Uchida 1986). Through telephone interviews, a national assessment of data needs, and national conferences, Uchida and his colleagues developed the BJS Law Enforcement Management and Administrative Statistics series (Uchida 1986). In 1987, BJS launched the first wave of the new series. The survey was sent to all agencies with 135 or more sworn officers and to a random sample of smaller departments. In 1990, 1993, and 1997, the survey was expanded to include all agencies with more than 100 sworn officers and a random sample of smaller departments. Each of the resulting survey databases contains more than 500 variables on more than 3,000 law enforcement agencies.

The datasets discussed in this section represent only some of those that measure what police organizations are. We have tried to highlight those that either represent significant changes in measurement or that are most widely used. Overall, data describing the internal features of police organizations have evolved and are now of reasonably good quality. BJS publishes the findings from LEMAS surveys in paperback volumes that are useful for both practitioner and research audiences. It also releases the raw data files to data archives that are accessible through the Internet. Scholars now use LEMAS data for a variety of purposes, and their analyses are reported at academic conferences and in journals. BJS has been attentive to requests by scholars and practitioners to modify the survey, while trying to maintain the integrity of the longitudinal data series.

We close this section with a recommendation. When COPS was interested in collecting more data on community policing, it commissioned BJS in 1997 to add a community policing addendum to the existing LEMAS survey. LEMAS could be used to collect different types of data important to public policy on policing. However, it is only conducted every 3 years. BJS could follow the lead of the Census Bureau, which conducts specialized surveys in noncensus years, by conducting surveys on different topics in non-LEMAS years. Although

the topics could change depending on the current policy climate, they could include community policing, use of force, or other issues considered important at the time. These surveys could ride on the success of the existing LEMAS format.

From data collection to measurement

So far in this section, we have tracked the evolution of data systems useful for describing the functions, structures, activities, and performance of American police organizations. These data are available to police professionals, researchers, public policy analysts, and students of the police. Thanks to recent innovations in technology, these datasets are now in electronic archives such as the National Archive of Criminal Justice Data and the Inter-university Consortium for Political and Social Research. Although data sources vary in their quantity and quality, there is still much to be learned by examining them. With all of the archival data available to examine police agencies, relatively few researchers have done so.

Before moving on to our discussion of explanation, we want to carefully emphasize an important difference between data collection and measurement. For many people, data collection and measurement are synonymous. The usual method of doing organizational research on the police is to collect data from a sample of police agencies using telephone or mail surveys, compile the information into percentages and cross-tabulation tables, and publish these in a booklet containing the findings of the study. A typical conclusion from this kind of descriptive research is a statement like the following: "Eighty-two percent of police departments do X, but only 19 percent of departments do Y." These kinds of results are often useful, interesting, and informative, but they constitute the beginning, not the end, of measurement.

In doing scholarly research on the police, researchers and students are frequently interested in examining global or conceptual properties of organizations, such as the style of patrol, the degree of autonomy granted to officers, the decentralization of command, or the effectiveness and efficiency of various policing strategies. The problem for researchers is that these social properties are ambiguous and not directly measurable. To measure these kinds of ambiguous traits, researchers frequently select proxies or indicators that come as close as possible to being direct measures. For instance, most of the empirical research on police styles uses arrest rates as indicators. Yet the variation in arrest rates from community to community depends on many factors that may have little to do with policing styles. The portion of the variation that is not attributable to differences in police styles is the unreliable or error variation, and it has at least two sources: systematic error and random error. One obvious example of systematic error affecting measures of police style constructed from

arrest rates is, quite simply, differences in the number of offenses across communities. If the number of arrests varies in proportion to the number of offenses, then arrest rates may not measure police style at all. It is more likely that they are a partial measure of both the volume of offenses and police style. Sources of random error might include differences in arrest policies and recording practices. Though arrest rates are reasonable (and available) proxies for police style, they are imperfect measures. Despite this, researchers rarely acknowledge the error in their measures or attempt to deal with it.

Recently, social science researchers have begun to use a variety of techniques for transforming individual variables into useful composite measures of ambiguous theoretical concepts (Hayduk 1987; Schumacker and Lomax 1996). Just as a student's responses on a standardized test are combined to form an overall score that measures verbal and mathematical skills, items on a questionnaire might be used to form a similar type of composite score. Policing scholars are now beginning to adopt some of these advanced measurement techniques from other disciplines, especially psychology and education, as a means for measuring police organizations and their attributes. Through the use of structural equation modeling and confirmatory factor analysis, researchers can draw inferences about the reliability of their measures. Recent research applying these techniques to the study of police organizations detected measurement error in some constructs used in previous research (Maguire forthcoming). To illustrate how measurement error might apply in policing research, we present a simple and intuitive example.

When Wilson (1968a, 272) constructed his measure of police styles using arrest rates, he was one of the few researchers to acknowledge the problem of measurement error:

> As a substitute measure of law enforcement policy or style, we use the arrest rate for certain offenses where we know police discretion is great and thus where police style is likely to be most evident: larceny, simple assaults, drunkenness, disorderly conduct, and driving while intoxicated. It must be emphasized, however, that police style is not always best measured by arrest rates, even for high discretion offenses.

Because Wilson candidly acknowledged the potential problems of his measure, we examine the extent to which his suspicions were warranted. Using 1994 UCR arrest data on the same five offenses as Wilson used, and with roughly the same sample selection criteria, we estimated a confirmatory factor analysis (measurement) model treating each of the offenses as a measured indicator of a latent police style variable.[13] Several findings are noteworthy. First, by all conventional standards, and despite our best efforts to the contrary, the model fit

the data poorly.[14] Second, those offenses that were victimless and presumably the most discretionary (driving under the influence, drunkenness, and disorderly conduct), had the lowest loadings on police style. Those that were the least discretionary and likely brought to the attention of police by victims (larceny and simple assault), had the highest loadings. If the common variation across these five variables were truly a measure of police style when responding to discretionary offenses, the opposite pattern would be expected. Third, the indicator with the lowest loading was drunkenness. The latent variable (police style) accounted for only 10 percent of the variation in drunkenness. The rest of the variation in drunkenness was unreliable, which suggests that this indicator contributed mostly error to the model and should be dropped. Fourth, even though the fit of the model improved after dropping drunkenness as an indicator, the model still fit the data poorly (p=0.001). The unmistakable conclusion is that this model is full of measurement error and is not a good measure of police style. Any theory suggesting that the shared variance in arrest rates for these five offenses can be used to measure some organizational property needs to be reexamined.

This brief exercise was not meant to denigrate Wilson's (1968b) classic work. Wilson himself referred to his measure of police style as crude; therefore, we suspect he would probably agree with our findings. The point of this exercise was to demonstrate the severity of measurement error that is likely present in many relatively simple constructs used by social scientists to measure organizational phenomena. Yet, researchers have consistently ignored the issue of measurement error.

Once researchers have measured variation in police organizations, the next natural step is to explain why such differences exist. Like measurement, explanation is one of the principal goals of social science research.

There are many sources of error that affect the quality of measures. Some of these are random because they cannot reasonably be controlled or inferred by the researcher. Others are more systematic and can be dealt with through careful research designs. Still others constitute deliberate efforts by those responsible for keeping records to falsify data, as reported in several U.S. cities during the past few years. Addressing the full range of potential error in social measures is beyond the scope of this paper. Our point here is to highlight the need for researchers and policymakers to consider these issues carefully. Detecting and correcting the sources of measurement error in these constructs is an important and worthwhile undertaking, especially when trying to develop explanatory models.

Explanation

Once researchers have measured variation in police organizations, the next natural step is to explain why such differences exist. Like measurement, explanation is one of the principal goals of social science research. Social scientists usually arrive at explanations for social phenomena in one of two ways: induction and deduction. Using the inductive method, researchers collect data and then analyze or search for patterns in that data. Based on their observations and analyses, researchers develop theories. Using the deductive method, they begin by specifying a theory and then collect and analyze data to test the theory. In reality, these two processes tend to overlap. For example, social scientists often begin by stating an explicit theory and collecting data to test the theory (deductive method). Upon finding that the data only partially support the theory, researchers often modify the theory accordingly (inductive method). In the next two sections, we show how social scientists have used both methods to develop, test, and modify explanations about both what police organizations are and what they do.

Social scientists use the term "explanation" to refer to explanations for why a trait varies across time and/or place. For instance, some police organizations are steeped heavily in paramilitary culture; others appear more democratic and less rigid. When social scientists try to explain paramilitarism in police organizations, they are trying to explain why some organizations are more paramilitary than others. Explanations in social science nearly always have the goal of *explaining variation* among units of analysis.

For example, if we believe police organizations in turbulent political climates are less productive than others in terms of clearance rates, then to properly test the theory, we must collect data from a sample of police organizations in different political climates. If we were to study only police organizations in hostile political climates, we could not test the theory because we have nothing with which to compare them. In social science terms, this test would be flawed because the independent variable does not vary. A similar flaw, in which the dependent variable does not vary, is present in much of the current popular management literature. Many books in this genre study successful companies and identify common attributes. The flaw, of course, is that these same attributes might be present in unsuccessful companies, but we cannot know for sure because they were not studied (King 1999).[14] Peters and Waterman's *In Search of Excellence*, probably the most influential book in this genre, has been criticized for this and other reasons (Aupperle, Acar, and Booth 1986).

The key to developing, testing, modifying, and understanding social science explanations is *comparison.* The comparative method has come to be associated

with multinational research, but comparative research can focus on many types of organized collectivities, from police departments and schools to nations and societies (Blau, Heyderbrand, and Stauffer 1966; Ostrom 1973; Ragin 1987). It is a cornerstone of sociological research on organizations (Langworthy 1986; Scott 1992). The selection of a unit of analysis for comparison depends on the research question. If we want to know why some police organizations are more effective than others, our unit of analysis is police organizations. If, on the other hand, our interest is in how a single organization changes over time, our unit of analysis is the organization at specific points in time (e.g., the month or year). Sometimes the unit of analysis is more complex, combining cross-sections (organizations) and times (years). For instance, if we want to determine if changing the number of officers in municipal police agencies affects clearance rates, we need to collect and analyze data from multiple organizations at different times. Whether comparing multiple organizations, the same organization at different times, or both simultaneously, comparison is central to understanding social science explanations.

This section examines how social scientists have sought to develop explanations for various features of police organizations. Throughout this section, the concepts we have just discussed—explaining variation, units of analysis, and comparison—will continue to appear as important themes. The most common unit of analysis in our discussion is the police organization, and the studies we discuss usually allow for comparisons by including observations from a sample of such organizations. Nearly all of these studies try to explain why some police organizations are different than others, isolating the factors thought to be responsible for producing these variations. One thing that should become clear throughout this essay is how measurement—the focus of the previous section—is inextricably linked with explanation.

Explaining variation in police organizations

The comparative study of police organizations was born in the early 1960s. Following a trend in the administrative sciences, policing scholars began to explore the role of the environment in determining the nature of a police organization. Organizational scholars of that era were profoundly influenced by a series of studies stressing the importance of the environment on organizations. Classic works by Burns and Stalker (1961), Eisenstadt (1959), Emery and Trist (1965), and Lawrence and Lorsch (1967) introduced a new way of thinking (and talking) about organizations and their problems. Based on their influence, scholars, managers, and others interested in organizational life talked about the "fit" between an organization and its environment. The environment consists of everything external to an organization that is important for its functioning and

survival. "Funding agencies, raw materials, clients, potential employees, the media, politicians, rumors, legislation and employees' unions all reside in an organization's environment" (Maguire forthcoming).

Initial discussions of the linkage between police organizations and their environments were both subtle and implicit. For instance, Stinchcombe (1963) argued that the distribution of public and private spaces within a community has important effects on administrative practices and aggregate patterns of police behavior. Of particular importance here is his notion that different concentrations of public places within communities might account for differences between urban and rural policing. At around the same time, Wilson (1963) developed a theory linking the professionalism of police agencies to local government structure and political ethos. Though both of these early works seem to have disappeared from the landscape of modern police scholarship, they helped plant the seeds for a growing wave of police research and theory.

Presumably influenced by these earlier works, Reiss and Bordua (1967) highlighted some of the effects that the environment might have on police organizations.[16] They argued that the environmental perspective was especially important for police organizations, since "the police have as their fundamental task the creation and maintenance of, and their participation in, external relationships" (Reiss and Bordua 1967, 25–26). Reiss and Bordua described the "internal consequences" of three broad environmental features: the nature of the legal system, the nature of illegal activity, and the structure of civic accountability. They also noted several other environmental features that might be important in shaping police organizations. It is perhaps one indicator of halting progress in the study of police organizations over the past three decades that important theoretical propositions outlined by Reiss and Bordua have still not been empirically tested.[17]

These early works focused attention on some of the factors responsible for variation in police organizations—both what they are and what they do—across time and place. Yet, the appearance in 1968 of James Q. Wilson's classic book, *Varieties of Police Behavior*, signified the first attempt to formulate a theory of police departments *as organizations* and test the theory using a variety of qualitative and quantitative methods (Langworthy 1986; Maguire forthcoming). Wilson's book continues to influence police scholarship, though empirical research has still not effectively tested all of Wilson's propositions (Slovak 1986).[18] Nevertheless, these early works set the stage for three decades of research on interagency variation in police organizations. With this brief historical backdrop in mind, we now discuss the evolution of this body of research, starting with what police organizations do.

Empirical research on what police organizations do

This section reviews efforts to explain some of the external features of American police organizations, including their output, styles, and performance. Wilson's *Varieties of Police Behavior* (1968b) was the first and most influential attempt to explain the output and behavior of police agencies, which include arrest rates and styles of policing. Wilson's theory posited that local contingencies such as characteristics of the population, the form of government, and political culture shape agency behavior and therefore output. Wilson's work was the first to research the causes and correlates of police organizational output, which is most frequently operationalized as aggregate arrest rates for various offenses (Crank 1990; Langworthy 1985b; Monkkonen 1981; Slovak 1986; Swanson 1978).[19] More recent research extends these traditional output measures to include community policing activities, attempting to generate theoretical and empirical explanations for interagency variation in these activities (Maguire et al. 1997; Zhao 1996). Overall, this body of research seeks to determine whether the environmental, historical, and other contextual circumstances (known in organization theory as contingencies)[20] of police organizations play roles in shaping organization output and performance. This literature includes a range of theoretical explanations that has not been tested empirically (e.g., Crank 1994; Crank and Langworthy 1992; Duffee 1990). In addition, there is a large body of empirical research in this area that ranges from being nearly atheoretical to almost wholly guided by theory.

Exhibit 1 lists 21 studies that seek to explain variation in what police organizations do. All of the studies meet several criteria: (1) the dependent variable is an organizational property, (2) there is at least one explanatory variable, (3) the study is based on quantitative data, (4) it reports the results of a statistical analysis (loosely defined) of the data, and (5) the total number of observations in the analysis is at least 20 (to allow for adequate comparison). Because our focus is on what police organizations do, we do not include studies in which the dependent variable is a measure of crime. Although police organizations may have an effect on crime rates, crime is not an organizational property; in the parlance of performance measurement, it is an *outcome* rather than an *output*. The remainder of this section will draw on the information presented in exhibit 1. Not all of the studies listed in exhibit 1 will be discussed. Instead, we will select those studies that have paved the way for subsequent research, that have had a profound effect on the field, or that have contributed uniquely to the study of police organizations.

Wilson's *Varieties of Police Behavior* (1968b) was the first empirical study to use quantitative data from a sample of police agencies to explain what police organizations do. This analysis was separate from the bulk of the book, which

Exhibit 1. Empirical studies seeking to explain variation in what police organizations do

Study	Cross-section	Time	Organizational dimension	Measures of organizational dimension	Major findings
Wilson 1968b	146 police departments	1960	Style	Arrest rates for larceny, DWI, drunkenness, disorderly conduct, and simple assault.	The political culture of a community constrains the style of policing.
Ostrom, Parks, and Whitaker 1978b	1,159 police and sheriffs' departments	1974–75	Effectiveness	Nine separate indicators of police effectiveness (too numerous to summarize).	Smaller departments are generally as or more effective than larger agencies.
Swanson 1978	40 police departments	Unknown	Arrest patterns	Arrest rates for 11 offenses.	Organizational factors are less important than environmental factors in shaping arrest patterns in police agencies.
Wilson and Boland 1979	35 police departments	1975	(a) Arrest productivity (b) Patrol aggressiveness	Arrest rates for robbery. Moving violation citations per patrol unit.	Aggressive patrol strategies increase robbery arrests, and workload (crimes per patrol unit) decreases arrest productivity. Political culture and opportunity (automobiles per capita) increase the number of citations issued.

continued

Exhibit 1 (continued)

Study	Cross-section	Time	Organizational dimension	Measures of organizational dimension	Major findings
Monkkonen 1981	(a) 23 police departments	1860–1920	Arrest patterns	Three categories of arrest rates: total arrests, "initiative" arrests, and crime arrests.	Overall, this historical analysis shows that from 1860 to 1920, the police shifted their attention from controlling the "dangerous class" to controlling crime.
	(b) 37 police departments 72 police departments 127 police departments	1880 1890 1903	Arrest patterns	Total arrests.	
Liska and Chamlin 1984	76 police departments	1972	Arrest patterns	Arrest rates for personal and property offenses.	Supports conflict theory. Variables related to social structure and the racial/economic composition of the community have a substantial effect on arrest rates.
Surette 1984	Chicago Police Department	1873–1973	Arrest patterns	Two categories of arrest rates: the sum of all felony and misdemeanor arrests, and vagrancy arrests.	Police organizational activities are related to economic conditions for only one of the three dependent variables studied: vagrancy arrests. Police strength and serious arrests are unrelated to economic factors.
Langworthy 1985b	152 police departments	1975	Style	Arrest rates for larceny, DWI, drunkenness, disorderly conduct, and simple assault.	Generally supports Wilson's finding that the political culture of a community is related to styles of policing. By focusing on means *and* variances of arrest rates, he finds that Wilson's theory should be regarded as a theory of central tendency rather than a theory of constraints.

Exhibit 1 (continued)

Study	Cross-section	Time	Organizational dimension	Measures of organizational dimension	Major findings
Meagher 1985	249 police departments	Unknown	Style	Frequency with which officers performed 647 job tasks.	Although there is variation in what police officers do across agencies there is a great deal of commonality. Police officers from all agencies perform a common set of core tasks.
Murphy 1986	Unknown	Unknown	Style	Arrest rates.	"Bureaucratic R.C.M.P. detachments produce an aggressive policing style resulting in high arrest rates. Less bureaucratized police departments produce a more informal policing style with low rates of arrest" (abstract).
Slovak 1986	42 police departments	1976–79	Style	Arrest rates for Part 1 violent crimes and property crimes.	Environmental and organizational factors both contribute significantly to the variance in police legalism.
Cordner 1989	84 Maryland police and sheriffs' agencies	1985	Investigative effectiveness	Clearance rates, which are calculated by dividing the number of crimes cleared by either arrest or "exception" by the total number of reported crimes.	Region of the State (essentially a measure of urbanization) is the strongest predictor of investigative effectiveness. The proportion of crimes that include property offenses has weak and inconsistent effects, and workload (crimes per officer) and organization size have no effects.

continued

Exhibit 1 (continued)

Study	Cross-section	Time	Organizational dimension	Measures of organizational dimension	Major findings
Crank 1990	284 Illinois police departments	1986	Style	Arrest rates are computed for four offense categories: trespassing, disorderly conduct, motor vehicle offenses, and various crimes related to the use or sale of marijuana.	Both environmental and organizational variables have an effect on arrest rates. However, the magnitude and direction of these effects are different for urban and rural police departments.
Crank 1992	392 Illinois police departments	1986	Style	Arrest rates for aggravated battery, aggravated assault, burglary, theft, and motor vehicle theft.	Organizational factors are more important than environmental factors in shaping police styles with regard to legally serious crime.
Davenport 1996	78 Texas police departments	1994	Performance	Clearance rates for Part 1 Index offenses.	Most of the organizational and environmental measures used did not have a significant effect on performance. Environmental complexity had the most significant influence.
Zhao 1996	228 police departments	1993	External community policing reforms	Additive index composed of 12 indicators of "externally focused change."	Variation in externally focused change across agencies can be explained by features of the focal organization and by levels of social disorganization in the community.
Maguire et al. 1997	5,726 law enforcement agencies	1994	Community policing	Additive index composed of 31 community policing activities.	Interagency variation in community policing can be partially explained by region of the country and size of the agency.

Exhibit 1 (continued)

Study	Cross-section	Time	Organizational dimension	Measures of organizational dimension	Major findings
Roth and Johnson 1997	1,471 law enforcement agencies	1995 and 1996	External community policing reforms	Additive indices measuring community partnerships (11 items); problem solving (11); and primary (5), secondary (5), and tertiary (4) crime-prevention activities.	Agencies receiving Federal funding were more likely to participate in community partnership and problem-solving activities and, to a lesser extent, in crime prevention activities.
Gianakis and Davis 1998	90 Florida law enforcement agencies	Unknown	Community policing	A nine-category Guttman-type scale measuring the depth of community policing implementation (ranging from patrol philosophy only to restructuring the department and decentralized substations).	Depth of community policing implementation was unrelated to agency type, agency size, accreditation status, or date of community policing adoption.
Maguire and Katz 2000	1,604 law enforcement agencies	1993	Organizational claims regarding community policing	Categorical variable measuring agencies' general claims about participating in community policing.	Police agencies' general community policing claims are loosely coupled with their actual activities These general claims are shaped in part by the size and region of the agency.
Maguire et al. 2000	1,604 law enforcement agencies	1993	External community policing reforms	Additive indices composed of problem-solving and community partnership activities.	The proposed measurement model of community policing fits the data. Size and region are significant predictors of both internal and external community policing activities.

provided the better known details of his taxonomy of police styles (legalistic, watchman, and service). Wilson's theory was that local political culture constrains (but does not dictate) the style of policing within a community. We have already discussed the methods used by researchers to measure police styles. Wilson argued that measuring both style and political culture would be "exceptionally difficult if not impossible" (p. 271). Nevertheless, considering it to be worthwhile, he constructed a "substitute" measure of political culture focusing on the form of government, the partisanship of elections, and the professionalism of city managers (based on their education and experience). Acknowledging the presence of measurement error in his constructs, Wilson concludes: "[T]he theory that the political culture of a community constrains law enforcement styles survives the crude and inadequate statistical tests that available data permit" (p. 276).

Since the appearance of Wilson's book, a number of empirical studies of police organizational style have appeared. All of them measure police style using arrest rates for some mix of offense types, usually less serious offenses thought to be subject to greater discretion. Most of these studies find that organizational and environmental characteristics play a significant role in shaping police style, though there is little consensus or uniformity about what kinds of explanatory variables are important. Several other studies use arrest rates as a dependent variable but do not treat them as measures of police style. They are usually referred to more generally as indicators of organizational activity, behavior, or productivity.

Other empirical studies listed in exhibit 1 focus on effectiveness or performance, which are usually measured using objective criteria such as clearance rates or subjective criteria such as citizen evaluations of local police performance (Alpert and Moore 1993; Bayley 1994; Parks 1984).[21] One issue these studies address, in part, is whether bigger police departments are better, as some critics of American policing have claimed (e.g., Murphy and Plate 1977). Subjective studies of police performance conducted by Elinor Ostrom and her colleagues suggest that bigger is not necessarily better.[22] Cordner's (1989) examination of investigative effectiveness in Maryland found that the region of the State, which appears to be a proxy for urbanization, was an important predictor, but that crime, workload, and department size were generally insignificant. Davenport (1996) is the only scholar to test a model in which the environment has both a direct effect on department performance and an indirect effect on performance through organization structure. His findings are too numerous to summarize, but the most import predictor of department performance was the complexity of the environment. Overall, this line of research has generated mixed results. Therefore, it is not useful for generating axioms about the

performance and effectiveness of police organizations. Probably the most consistent finding is that larger police organizations are not necessarily more effective, and in many cases they are less effective than smaller agencies.

In the past few years, in response to the need for better measures of what police organizations do, researchers have begun to measure other facets of police behavior. We have already discussed the emergence of a new trend toward measuring the implementation of community policing in American police agencies. Using these measures, researchers have also attempted to explain variation in community policing across agencies. Using data from a national survey of police organizations, Zhao (1996) was the first researcher to test an empirical model explaining community policing. Recognizing that community policing is a catchphrase for a potpourri of different reforms, Zhao divided it into external and internal components, measuring and estimating models for each one separately. Exhibit 1 provides a summary of Zhao's findings regarding externally focused change because this index measures community policing activities occurring outside the police organization and in the community. His results for internally focused change are presented in the next section because these consist primarily of administrative reforms. For the five other community policing studies in exhibit 1, only the external components are listed if they can be easily separated, with the internal components appearing in exhibit 2. These studies use various methods to construct measures of community policing and then try to explain interagency variations in these measures. Probably the most consistent finding in these studies is the important role of region and department size in shaping community policing.[23] Emerging research continues to address the causes and consequences of adopting community policing.

Empirical studies seeking to explain what police organizations are

The topic of this section—explaining what the police are—was the last to emerge of the topics examined in this chapter. The reason, as in organizational studies in general, is that people likely are more interested in how organizations behave and what they produce than in mundane administrative details such as how they are structured. This is especially true in policing, where the bottom line is typically considered to be crime, a subject of fascination to many Americans. Although reams of paper have been expended by reformers trying to convince police administrators to change the structures and internal operating processes of police organizations, scholarly progress in producing theory and research on these organizational features has been slow. In this section, we trace the development of research on internal variation in police organizations, including structure, policy, and other administrative attributes.

Once again, we return to James Q. Wilson's *Varieties of Police Behavior* (1968b). Wilson's analysis did not explicitly consider internal organizational attributes as an object of study, but he refers throughout the book to the structural correlates of police style. Langworthy (1986) considered Wilson's work "the only empirically derived theory of police organization to date." Langworthy (p. 32) summarized Wilson's implicit linkage between style and structure as follows:

> Watchman police departments were said to emphasize order maintenance, to be hierarchically flat, unspecialized, and decentralized. Legalistic departments were characterized as oriented toward vigorous law enforcement, hierarchically tall, specialized in law enforcement function, and centralized. Service-style departments were described as responsive to requests for aid or action, highly specialized across a broad range of functions, decentralized in operations, and centralized administratively.

Thus, although Wilson's work is best remembered as a theory of police style, it also contains an implicit theory of police organizational structure.

The first empirical studies in this genre did not appear until the mid-1970s, emerging, like Wilson's work, from political science and urban studies. In 1975, Henderson published an empirical study in the *American Journal of Political Science* on the correlates of professionalism in sheriffs' agencies. The study falls within the class of theory and research that Langworthy (1986) classifies as normative because defining and measuring police professionalism requires the researcher to make personal judgments about what it means to be professional. It was the first (and perhaps only) study to treat professionalism as an organizational, rather than an individual, attribute. In 1976, Morgan and Swanson published an article in *Urban Affairs Quarterly* examining a number of organizational attributes. With little regard for theory, the researchers used exploratory factor analysis to construct both their independent and dependent variables. According to the Social Science Citation Index, neither study has been cited often (seven for Henderson and one for Morgan and Swanson), suggesting that the birth of empirical research on the causes and correlates of police organization was anonymous.

During the 1970s, Elinor Ostrom and her colleagues collected enormous amounts of data on American police organizations, even by today's standards. They examined policing as an "industry," focusing on patterns in the production and consumption of police services. In dozens of publications, most notably their book *Patterns of Metropolitan Policing* (Ostrom, Parks, and Whitaker 1978a), they described how police organizations in metropolitan areas rely on one another for mutual support and to provide specialized services.

Their work defied critics who argued that American policing was a loosely connected patchwork of small and untrained police agencies, often consisting of only a handful of officers (Murphy and Plate 1977; Skoler and Hetler 1969). Although the work of Ostrom and her colleagues made significant contributions to the study of policing, the focus of nearly all of their publications was the metropolitan area and its patterns of service production and consumption, not police organizations.[24] For that reason, most of their work falls outside the scope of this essay. Their focus on the internal consequences of police organizational size, however, was one of the earliest studies seeking to explain variations in police organizational structure (Ostrom, Parks, and Whitaker 1978b). We will return to their findings on organizational size.

Probably the most influential work in this area is Robert Langworthy's 1986 book, *The Structure of Police Organizations.* Langworthy argued convincingly that with the exception of James Q. Wilson's work, scholarly attention to police *organizations* had been restricted to normative theories and prescriptions about how they should be structured and what they should be doing. This tendency to prescribe rather than describe and explain, to say what police *should* be doing rather than what they *are* doing and why they are doing it, left a gap in our understanding of police organizations.[25] To begin filling this gap, Langworthy borrowed a series of propositions from organization theory (and from Wilson's work), constructing his own theory to explain variation in the structure of police organizations. Using data from two national surveys, including data from Ostrom and her colleagues and the Kansas City General Administrative Survey, Langworthy tested his theory empirically. His analysis was the first comprehensive empirical study to treat the structure of police organizations as a dependent variable. Langworthy (1986, 136) concluded that the causal forces in his study did not appear to exert a significant constraint on organization structure:

This tendency to prescribe rather than describe and explain, to say what police should be doing rather than what they are doing and why they are doing it, left a gap in our understanding of police organizations.

> It seems plain that the explanations, size, technology, population mobility, population complexity, and type of local government, although theoretically significant determinants or correlates of agency structure, explain very little of the variance in agency structure. The constraints, when they are suggested by the data, do not appear insurmountable.

These findings suggest that American police executives are, by and large, free to design police organizations as they see fit.

Research on the causes and correlates of police organizational structure continues to emerge. Crank and Wells (1991) found that size exerts a nonlinear effect on structure. King's (forthcoming) recent study on the effects of organizational age found that older police organizations employ fewer civilians than younger ones. Davenport (1996) found that violent crime, resource capacity, and environmental turbulence have mixed effects on measures of structure.[26] Maguire's (forthcoming) replication and extension of Langworthy's study found a series of mixed effects of age, size, technology, and environment on structure. Maguire divided the structure of police organizations into two domains: (1) structural complexity, and (2) structural coordination and control mechanisms. He found that the context of police organizations constrains structural complexity (vertical, functional, and spatial differentiation) but not structural control and coordination (formalization, centralization, and administrative intensity). Maguire and Langworthy are currently working with Jihong Zhao to replicate the findings from both of their studies, examining the causes and correlates of structural change during the community policing era. Overall, the study of police organizational structure has entered a stage of incremental development.

Other studies in this genre have examined the environmental and organizational correlates of police innovation and various internal (administratively oriented) community policing reforms. Based on the voluminous literature on innovation diffusion, Weiss (1997) examines two interesting questions: Do police organizations rely on informal communications with other agencies (peer emulation), and, if so, do these contacts result in the diffusion of innovation across agencies? Using innovative methods that we will discuss later, he found that agencies engage in informal information sharing and that peer emulation and cosmopolitanism both shape the adoption of innovations. King (1998) also examines the sources of innovation in police agencies, but his research is rooted more in traditional organizational theory than the diffusion literature. Using factor analysis, King examined the dimensionality of police innovation. He found that innovation is a multidimensional concept consisting of at least five separate dimensions: radical, administrative, technical, line-technical, and programmatic. Furthermore, he found additional evidence that at least some of these dimensions can be further reduced into subdimensions. The findings are too numerous to summarize here, but overall, organizational factors played a stronger role in shaping innovation than did environmental or "ascriptive" factors.

Several studies have examined just one category of innovation: the kinds of administrative changes occurring under the banner of community policing. Zhao (1996) was the first researcher to examine the causes of internally focused changes occurring under community policing. He constructed an additive index of internal change and then sought to explain variation in the measure using a

number of organizational and environmental predictors. His models were able to explain more of the variance in externally focused than internally focused change. In their evaluation of the Justice Department's COPS Office, Roth and Johnson (1997) found that although Federal funding may have affected external elements of community policing, agencies that received the funding were no more likely than nonfundees to have made internal organizational changes. Finally, in a study focusing on measurement rather than explanation, Maguire and colleagues (1999) developed reliable measures of internal change, which they termed "adaptation." Although region and department size were only included in the model for statistical reasons, once again, both were found to have a significant effect on adaptation.

Explaining what the police are—their policies, structures, programs, and other elements—probably represents the next frontier of research on police organizations. The research in this area is relatively undeveloped, and there is an untapped pool of theories to test. For instance, promising theories that were developed in the 1960s have still not been fully tested. These include the work of Reiss and Bordua (1967) and a number of propositions about police agency structure implicit in Wilson's (1968b) theory of police behavior (Langworthy 1986). In addition, there have been a number of recent theoretical contributions in the areas of contingency theory (Maguire forthcoming), institutional theory (Crank 1994; Crank and Langworthy 1992; Katz 1997; Mastrofski and Uchida 1993), resource dependency theory (Katz, Maguire, and Roncek 2000), and various combinations of these theories (Maguire, Zhao, and Lovrich 1999; Mastrofski and Ritti forthcoming). In part 3, we describe these theories and their promise for helping us understand police organizations.

What factors shape police organizations?

Many of the same variables are used to explain interagency variation in both what police organizations do and what they are. Undoubtedly, one reason for this is the availability of these measures in common sources such as Census Bureau publications and data or the *Municipal Yearbook*. Another reason is that many of the same theories are used to explain differences across police agencies. This section briefly reviews some of the factors thought to shape police organizations.

Isolating the factors that shape police organizations with any degree of certainty would require a book-length discussion. The studies listed in exhibits 1 and 2 contain at least 85 separate independent variables, even after combining those that are similar but not exactly the same (such as two different measures of political culture). The following list contains the 14 measures that had at least 1 significant effect in at least 3 separate studies. They are sorted in descending order by the number of studies in which they demonstrated a significant effect:

Exhibit 2. Empirical studies seeking to explain variation in what police organizations are

Study	Cross-section	Time	Organizational dimension	Measures	Major findings
Henderson 1975	65 Florida sheriffs' agencies	1969	Professionalism	Four-item factor score reflecting training and examination policies.	Environmental variables are more significant predictors of professionalism in sheriffs' agencies than the personal characteristics of the sheriff.
Morgan and Swanson 1976	40 police departments	1970	Organizational commitment to community relations	Factor score based on the percentage of employees with CR training and the percentage of CR employees.	Political culture is the only explanatory variable (12 total, 10 of which are factor composites) with a statistically significant effect on organizational commitment to community relations.
Walzer 1970	31 Illinois police departments	1958 and 1960	Efficiency	Municipal police expenditures divided by an index of services that measures the volume of police activity.	As the volume of police activity increases, the ratio of expenditures to activity decreases. This finding suggests an economy of scale in police organizations. Accordingly, the author suggests that police consolidation may be one possible solution to lowering costs.
Ostrom, Parks, and Whitaker 1978b	1,159 police and sheriffs' departments	1974–75	Structure	Administrative intensity and patrol density.	Smaller agencies assign a greater proportion of officers to patrol and a lower proportion to administration.
Monkkonen 1981	23 police departments	1860–1920	Structure	The ratio of nonpatrol to patrol officers is treated as an indicator of overall bureaucratization.	Police organizations became more bureaucratized from 1860–1920. Changes in the structure of policing "came about through external demands upon the police. . . and, to a lesser extent, through the 'natural' growth of the police bureaucracy" (p. 147).

Exhibit 2 (continued)

Study	Cross-section	Time	Organizational dimension	Measures	Major findings
Heininger and Urbanek 1983	100 police departments	1970–80	Civilianization (structure)	Percentage of employees who are not sworn officers.	Growth in civilianization is not associated with any of the five explanatory variables examined.
Langworthy 1983	69 police departments	1977	Structure	Administrative intensity and patrol density.	Refutes previous findings by Ostrom, Parks, and Whitaker (1978), based on measurement and sampling issues. Finds that there is no relationship between size and administrative intensity and only a very weak positive relationship between size and patrol density.
Steinman 1984	949 police departments	1975–76	"Rationalization"	An additive index composed of 10 binary variables relating to various structural and procedural features.	Police departments with higher expenditures and those employing chiefs with managerial training and/or educated chiefs are more rationalized. Rationalization is unrelated to numerous other explanatory variables.
Langworthy 1986	(a) 106 police departments (b) 69 police departments	1974–75 1977	Structure	Five measures of organizational structure were used: administrative overhead; and spatial, hierarchical occupational, and functional differentiation.	The effects of population and agency size on structure could not be disentangled. Agency size is strongly related to spatial differentiation but weakly related to other structural variables. Technology is strongly related to functional differentiation, less so to occupational differentiation, and weakly associated with or independent of other structural elements. Population complexity had a significant effect on only occupational differentiation. Good government cities have fewer ranks and employ more civilians than cities with mayor-council governments or those holding partisan elections.

continued

Exhibit 2 (continued)

Study	Cross-section	Time	Organizational dimension	Measures	Major findings
Slovak 1986*	42 police departments	1976–79	Structure	Three elements of structure were used: administrative intensity (an inverse of span of control), division of labor (percentage of officers in patrol), and civilianization.	Organizational size has no effect on division of labor. "Administrative intensity is a negative function of organizational size (recall that span of control, as measured here, is an inverse indicator of intensity) but is not directly related to differentiation; the innovation of civilianization is promoted by administrative intensity (again, recall the caveat about measurement) but is not directly affected by either size or differentiation" (p. 23).
Crank 1989	505 Illinois police departments	1973 and 1986	Civilianization (structure)	Percentage of employees who are not sworn officers.	Increasing civilianization was associated with community budgetary growth, police organizational downsizing, ruralization, and, to a lesser extent, reductions in crime.
Crank and Wells 1991	399 Illinois police departments	1986	Structure	Measures of four structural variables were used: height (number of ranks), civilianization, concentration, and supervisory ratio.	Variations in size were associated with three of the four dimensions of organizational structure examined: height, concentration, and supervisory ratio. When controlling for organizational size, urbanism did not have an independent effect on organizational structure.

* Slovak's model contains five "structural" variables. Maguire's forthcoming book on police organizational structure argues that two of these variables are not structural. Based on that argument, we include only three of Slovak's five variables here.

Exhibit 2 (continued)

Study	Cross-section	Time	Organizational dimension	Measures	Major findings
Davenport 1996	78 Texas police departments	1994	Structure	Two measures of structure were formed using exploratory factor analysis: organizational complexity and occupational differentiation.	Violent crime is the only one of four environmental variables with a significant (positive) effect on organizational complexity. Resource capacity and environmental turbulence have a significant positive effect on occupational differentiation. Overall, environmental variables explain only 16 percent of the variance in complexity and 17 percent in occupational differentiation.
Zhao 1996	228 police departments	1993	Internal community policing reforms	Additive index composed of six indicators of "internally focused change."	Variation in internally focused change across agencies cannot be explained as well as externally focused change (using organizational and environmental variables).
Maguire 1997	236 police departments	1987–93	Structure	Includes measures of five structural variables: vertical, functional, and occupational complexity; formalization; and administrative density.	Although police organizational structures are changing over time, these changes are unrelated to community policing.
Roth and Johnson 1997	1,471 law enforcement agencies	1995 and 1996	Internal community policing reforms	Additive index measuring organizational changes associated with community policing.	Agencies receiving Federal funding were not more likely than nonfundees to have made internal organizational changes associated with community policing.
Weiss 1997	134 police departments	Unknown	(a) Peer emulation (b) Innovation	Both concepts were measured using measurement models with multiple indicators and multiple "key" informants.	Risk mediation and cosmopolitanism each have a significant effect on peer emulation. Cosmopolitanism has a significant effect on innovation.

continued

Exhibit 2 (continued)

Study	Cross-section	Time	Organizational dimension	Measures	Major findings
King 1998	432 police departments	1993	Innovation	Ten dimensions of innovation were derived from exploratory factor analysis of 27 innovative police programs, activities, and functions.	Innovation is a multidimensional concept. Studies that measure innovativeness using only one or a handful of dimensions are trampling on complexity. Organizational variables play a stronger role than environmental or contextual variables in explaining innovativeness.
King forthcoming	334 police departments	1990	Structure	Five structural variables are included: civilianization, hierarchical and functional differentiation, formalization, and administrative overhead.	Older police departments employ fewer civilians than younger departments. There is no relationship between organizational age and structure for the remaining four dependent variables.
Maguire forthcoming	432 police departments	1993	Structure	Three measures of structural differentiation were used: vertical, functional, and spatial. Also includes three measures of structural coordination and control: formalization, centralization, and administrative intensity.	Environmental and contextual variables play a significant role in shaping structural differentiation but are unable to explain substantial portions of the variance in structural coordination and control mechanisms. The size and age of a police organization, the instability and dispersion of its environment, and the routinization of its social technologies all play a role in shaping its structure.
Maguire et al. 2000	1,604 law enforcement agencies	1993	Internal community policing reforms	Additive index of internal administrative changes related to community policing.	The proposed measurement model of community policing fits the data. Size and region are significant predictors of both internal and external community policing activities.

1. Organizational size (18).
2. City governance (5).
3. Region (5).
4. Concentration (4).
5. Crime patterns (4).
6. Organizational age (4).
7. Political culture (4).
8. Population size (4).
9. Population heterogeneity (4).
10. Poverty/income (3).
11. Urbanization or ruralization (4).
12. Span of control or supervisory ratio (3).
13. Time (3).
14. Vertical differentiation (3).

We are careful not to make too much of these findings. This list is simply intended to illustrate the kinds of variables that researchers have used to explain differences in police organizations and those that have been found important. These findings pertain to several different dependent variables, and neither the direction of effects nor the quality of the studies is considered. Nevertheless, this list illustrates some of the factors commonly thought and found to influence police organizations.

The most frequent and consistent finding in organizational research on police is the importance of organization size. The effects of size are not universal, as Ostrom and her colleagues have demonstrated; the research suggests that size has an important effect on style, structure, and processes, but not necessarily on effectiveness and efficiency. Region also continues to have a significant effect on the administration of public organizations. Yet, to date, researchers have not done a good job of isolating the theoretical reasons for these effects, though many possibilities have been suggested (Maguire et al. 1997). The structure of city governance, together with local political culture, also continues to have a significant effect on police organizations, suggesting that any comprehensive theory of police organizations needs to account for political effects. Another particularly noteworthy finding is the presence of two variables that suggest a historical effect on police organizations: the department's age and the passage of time. Despite assertions to the contrary, police organizations *do* change. The appearance of time and age in this list suggests that they change in ways that are sometimes predictable. Thus, any comprehensive theory of police organizations needs to account for historical effects. The remaining variables are all elements of the organization or its environment, and most are represented in traditional organizational theories.

Future Prospects

The empires of the future are the empires of the mind.

—Sir Winston Churchill (1944, 238)

The comparative study of police organizations has not evolved in a progressive, orderly fashion. Much of the research contains methodological and theoretical shortcomings, and for that reason it has been of limited use for understanding police organizations and the forces that shape them. A byproduct of this limitation is that this research has been of little practical use for police executives and policymakers. More than two decades ago, Dorothy Guyot (1977) bemoaned the lack of empirical research on police organizations, citing Wilson's *Varieties of Police Behavior* (1986b) as the lone exception. Nearly a decade later, Robert Langworthy (1986, 32) echoed Guyot's complaints, arguing that Wilson's work "remains the only empirically derived theory of police organization to date." Through the mid-1980s, police organizational scholarship did not substantially evolve beyond Wilson's seminal work.

Langworthy's 1986 book, *The Structure of Police Organizations*, was an important turning point in police organizational scholarship, although it met with mixed reviews. C. Ronald Huff (1987, 508) called it "an exemplar of theory construction and theory testing," and Peter Manning (1988, 323) described it as "an awkwardly written and jargon-filled monograph." A recent replication of Langworthy's study claimed "there is no doubt that it forged a new road in the study of the police" (Maguire forthcoming, 5). Langworthy's book (and other related work) takes its place among only a handful of other important studies that have blended theory and research in an effort to further our understanding about the structure and function of American police organizations. Perhaps even more importantly, it inspired a new generation of police organizational scholarship (Crank and Wells 1991; King, Travis, and Langworthy 1997; King 1999; Maguire 1997, forthcoming).

Thus, as the new millennium arrives, we cannot complain as forcefully as our predecessors about the status of police organizational scholarship. The past decade has seen a number of improvements in theory, data, and method, though much remains to be done. This section has two simultaneous goals: to diagnose some of the weaknesses in this line of research and to suggest ways that researchers might continue to breathe new life into it. We consider three primary areas: theory, research, and policy.

Theory

Throughout this chapter, we have referenced theories used by scholars to explain interagency variation in police organizations. Some of these theories have received empirical support, others have not, and others remain untested. This section briefly reviews the state of theoretical explanation in the study of American police organizations. Many of these theories make strange bedfellows, often emerging from a variety of disciplines or competing paradigms. Some are difficult to test using the quantitative and comparative methods discussed in this chapter. Others are theoretical statements without clear roots in an established body of theory. Nevertheless, all of them seem to be promising frames of reference. Some readers may find these theories to be abstract, but we urge you to think about their implications for shaping police organizations.

We begin by restating contingency theory because it is an inclusive theory of structure, process, and performance. Briefly stated, contingency theory holds that organizations will be effective only if they remain dynamic, adapting to changes in technology and environment. Technology is used in the broadest sense, referring to tools and strategies used by the organization to process raw materials. In addition to the material technologies that are having such a profound influence in policing (Ericson and Haggerty 1997; Manning 1992), it includes the social technologies used by the police to process and change people and communities (Maguire forthcoming; Mastrofski and Ritti forthcoming). The environments of police organizations are complex, but contingency theory focuses predominantly on the "task environment." This includes those elements of the environment with direct relevance for the work of the organization. In policing, the task environment includes citizens, courts and other parts of the criminal justice system, patterns of crime and criminality, sources for recruiting and training officers, physical and social attributes of the community, and other external forces that shape the structure and function of police agencies.

Contingency theory is the implicit foundation of nearly every study of police organizations. It is the implicit source of most of the explanatory variables used in models explaining organizational features, such as size, technology, and the various elements of the environment. It is based on the assumption that effective organizations are rational entities seeking to maximize their levels of effectiveness and efficiency. It is somewhat Darwinian in its assumption that organizations that do not adapt to changes in technology and environment will be ineffective and therefore probably fail and be replaced by others (Langworthy

Most researchers who study police organizations would probably not describe them as rational, dynamic, or adaptive.

1992).[27] This inherent rationality is why many organizational scholars have abandoned contingency theory (Donaldson 1995). Most researchers who study police organizations would probably not describe them as rational, dynamic, or adaptive. The failure of contingency theory to effectively explain the structure and function of organizations has led to the development of other theories. We now discuss three alternative perspectives on the role of organizational environments: as sources of legitimacy, resources, and information.

Institutional theory has its roots in the early study of organizations by such influential theorists as Talcott Parsons and Philip Selznick. Selznick, for example, described institutionalization as the process by which organizations develop an "organic character" (Perrow 1986) and become "infused with value beyond the technical requirements of the task at hand" (Selznick 1957, 17). Selznick was fascinated by the paradox that organizations are created for rational action but that they never quite succeed in conquering irrationality. Institutional theory has experienced a revival over the past two decades, a trend that many attribute to an influential article by Meyer and Rowan in 1977. Meyer and Rowan argued that the environment is more than a source of raw materials, clients, technologies, and other technical elements essential to the function of an organization. Environments are also the sources of such intangible elements as standards, norms, rumors, myths, symbols, knowledge, traditions, and standards. These elements constitute the institutional environment, and though they are often less rational than elements in the technical environment, they are essential sources of organizational legitimacy. Because organizations require legitimacy to survive and prosper, they are often more responsive to institutional concerns than to technical concerns. Institutional theory has begun to occupy an increasingly important role in the study of police organizations (Mastrofski, Ritti, and Hoffmaster 1987; Crank and Langworthy 1992, 1996; Crank 1994; Mastrofski 1998a; Mastrofski and Ritti 1996, forthcoming; Maguire forthcoming; Maguire, Zhao, and Lovrich 1999; and Maguire and Mastrofski forthcoming). For instance, Katz (1997) recently used institutional theory to explain why a police organization created a gang unit although the community did not have a serious gang problem; it was to achieve legitimacy in the view of powerful local stakeholders. Due to its nature, institutional theory is difficult to measure and test in a definitive manner. Enough has been written about institutional theory in policing that finding ways to test it is an important next step.

Although institutional theory is based on the role of the environment as a source of legitimacy for the organization, resource dependency theory focuses on the environment as a source of valuable resources. The principal statement of resource dependency theory is Pfeffer and Salancik's (1978) book, *The External Control of Organizations.* Resource dependency theory is essentially

a theory of power and politics, and the methods used by organization actors to secure the flow of resources. Because organizations frequently depend on resources from the environment, they are to a certain extent "externally controlled." Resource dependency theory has not yet been applied to policing in a comprehensive way, though two recent papers have described its relevance to police organizations (Katz, Maguire, and Roncek 2000; Maguire and Mastrofski forthcoming).

The next theory views the environment as a source of information. Weick (1969) and Duncan (1972) have both demonstrated how various sectors of the environment contain "pools" of information that are critical to the organization. Organizations process this information in a way that decreases "information uncertainty." As the pace of computerization in police agencies continues to grow, the role of information may become more relevant. Two recent discussions have focused on the centrality of information to police organizations. Peter Manning (1992) outlines the links between organizations, environments, and information-processing technologies such as computer-aided dispatch systems, centralized call collection (911) mechanisms, "expert" systems, management information systems, and other tools designed to increase the organization's capacity to intake and process information. Manning concludes by suggesting that information technologies have "an indeterminate effect on the organizational structure of policing; technology is used to produce and reproduce traditional practices, yet is slowly modifying them" (1992, 391). Ericson and Haggerty (1997) explore similar though much broader themes in their recent book, *Policing the Risk Society*. They view police organizations as part of a larger network of institutions responsible for identifying, managing, and communicating risks. They argue that policing (at multiple levels) is shaped by external institutions and their need for information about risks. Theories about the environment as a source of information are not yet well developed. In addition, they contain a host of ambiguities about the proper unit of analysis.[28] Nonetheless, given the emergence in policing of sophisticated technologies for collecting and processing information, this perspective deserves further attention.

Although all of these theories offer substantial promise for understanding police organizations, there is also a wealth of potential explanations immediately available. Stinchcombe (1963) made a series of early propositions in which the distribution of public and private spaces within communities serves as an important source of variation in police practice administration. His work foreshadowed the emergence of large private spaces policed by private entities, such as malls, amusement parks, and gated communities. Other classic theoretical statements appearing in the 1960s (Bordua and Reiss 1966; Reiss and Bordua 1967; Wilson 1963, 1968a) have still not been adequately tested. These classics need to be dusted off and revived.

Many of the studies reviewed earlier in this chapter have not been adequately rooted in theory. Yet, it seems clear that the reason is not a lack of existing or promising theories. In diagnosing the current state of police organizational scholarship in the United States, we find little reason for concern about the nature or number of theories on which to base solid empirical research. One area for improvement is exploring how a good theory of police organization might differ from a theory of organizations in general or of public service organizations in particular. There is already some evidence that theories designed to explain private organizations, especially those in manufacturing industries, are inadequate for explaining police organizations (Maguire forthcoming). The answer may exist in either the artful blending of existing theories or the emergence of new and better ideas.

Research

In this section, we consider each of the three elements of the research process: data collection, measurement, and explanation.

Data collection

Data collection in policing is currently in an exciting and rapid state of development. Much of this can probably be attributed to the emergence of new technologies for recording, collecting, processing, and distributing data. Police organizations are now experimenting with technology at a record pace, implementing or updating their management information systems, computer-aided dispatch centers, geomapping and other modern forms of crime analysis, mobile data terminals in patrol cars, and many other advances emerging in the past decade. One consequence of the proliferation of information-processing technologies is that police agencies now contain vast archives of data. Although much of this data is not useful for national comparative research, it is changing the face of policing in important ways.

National data collection on police organizations is not in a state of crisis. Police agencies are more open than ever. Careful surveys conducted by researchers, government agencies, and survey firms routinely obtain response rates of 70 to 90 percent. There are numerous sources of data, and although most could be improved, they are generally of decent quality. In a recent article, we criticized some of the data inventories used by government agencies for counting the number of police agencies and officers in the United States over the past several decades (Maguire et al. 1998). Many of the problems cited in that article have been rectified, though some remain. Consequently, current efforts to enumerate the American police are more accurate than ever. Finally, several agencies within the Justice Department now routinely include in their police agency

databases a common FBI code, enabling researchers and policymakers to link separate databases and test interesting new hypotheses. Although there is always room for improvement in the kinds of data that are collected, the methods used to collect data from police organizations tend, on average, to be fairly good.

Our optimism here is not meant to suggest that there remain no challenges. For example, in response to the Violent Crime Control and Law Enforcement Act of 1994, BJS and NIJ have undertaken efforts to measure the use of force by police agencies throughout the Nation. BJS has added supplemental questions on police use of force to its national household survey. Although this strategy is useful for some purposes, it undercounts at least three classes of people who may be more likely to have force used against them by the police: the homeless, the incarcerated and institutionalized, and those without telephones.[29] A second strategy, undertaken by IACP with funding from BJS and NIJ, will be to develop a national police use-of-force database based on confidential reporting by police departments of use-of-force incidents. This method, too, contains a number of problems. Most importantly, it relies on official records that may reflect as much about the organization's willingness to record use-of-force incidents as the actual number of incidents that occur. Other entities, including the Police Complaint Center and the American Civil Liberties Union, collect data on excessive force and patterns of discrimination from citizens alleging to be victims of these offenses. Although these may serve a useful social purpose, neither group attempts nor claims to carefully enumerate use-of-force incidents nationally.

If the 1999 Traffic Stops Statistics Bill is enacted, police agencies will face a new challenge with regard to data: collecting detailed information on the characteristics of those who are stopped and the reasons for conducting searches. This enterprise is fraught with the potential for error (and possibly subversion) and will be difficult to implement nationally. The demand for these kinds of alternative measures reflects a point we first raised in the introduction: Policing does not have one bottom line—it has many. The demand for these new data collection efforts reflects a concern for something other than the war on crime and drugs. It reflects a growing concern for equity and fairness on the part of the police. Once again, data collection will play a central, if challenging, role in this issue.

The demand for these kinds of alternative measures reflects [that] policing does not have one bottom line—it has many.

Measurement

We have discussed at length the difference between data collection and measurement. In addition, we demonstrated how relatively simple constructs might

The demand for these new data collection efforts reflects a concern for something other than the war on crime and drugs. It reflects a growing concern for equity and fairness on the part of the police.

not measure what they appear to measure. Measurement error is probably a significant problem in police organizational research but we cannot know for sure because researchers have, by and large, ignored it. Few police researchers have systematically accounted for measurement error in their data. Maguire (forthcoming) and Weiss (1997) both used structural equation modeling techniques to produce reliable measures of organizational variables. Weiss went a step further, using a "key informant" approach to the administration of his survey. He distributed his survey to multiple respondents within each agency as a means of reducing the error associated with any single individual's response. This kind of comprehensive and sophisticated measurement strategy sets a benchmark to which organizational researchers should aspire.

Explanation

The methodologies used in the comparative study of police organizations have improved over the past three decades. Yet, many of the studies we examined are flawed in both theory and method. If we had to identify the single most serious problem in the entire line of research, our choice would undoubtedly be the failure to consistently root empirical studies in theory. Some of the studies with the worst methodological flaws contained flawless reviews of the relevant literature and theory. The indiscriminate use of exploratory factor analysis with little attention to theory is common in much of the research. Judging from this literature alone, it appears that a crucial point in the research process that many people either ignore or find difficult is the translation of a theoretical model into an empirical one. Our goal here is not to denigrate past researchers, but to point out some of the flaws in the research in the hope of deterring future researchers from making the same mistakes. Nearly every study contributes at least one new insight to the literature.

A modest vision for future research

Sometimes it seems that empirical research on police organizations is a lot like making minestrone soup: in the absence of a good recipe (theory), find whatever vegetables that happen to be convenient (the data), toss them into the pot (the model), cook it (execute the statistical program), and see if it tastes good (check the R^2). Continue to make adjustments (capitalizing on statistical chance) to the soup until you like the way it tastes.

Our vision for the future of police organizational research is simple. Begin by explicating a reasonable theory, translate the theory into an empirical model, collect reasonably good data that are useful for testing the theory, turn those raw data points into theoretically meaningful and reliable measures, and then test a model that posits a causal order among the measures. Do not capitalize on statistical chance by endlessly tinkering with the model if it does not fit. If this is the case, return to step one and modify the theory. Recent advances in statistical modeling techniques and software packages that implement these techniques make it easy for most social scientists to become skilled and careful theory testers. This is our "recipe" for achieving incremental progress in the study of police organizations.

Policy

Police executives and policymakers are concerned with the day-to-day realities of their worlds. They want answers about what works and why. They want measures that assist them in making decisions and policy. They want explanations for why things happened. In the academic world of theories, data, and publishing, researchers want precision and statistically significant findings. They want analysis driven by theory. Coming to grips with both of these worlds is difficult but not insurmountable. The policy implications that derive from theory and analysis need to be made explicit by researchers. From our experience, we have found that police executives and policymakers want good measures and explanations, and they want them in ways that are more understandable. They want direct answers to questions such as "How does my department compare with others in terms of community policing or officer performance? Are we on the right track? What should we do that works?" As researchers, at least one of our jobs is to assist policymakers in answering these types of questions. Balancing all of these competing interests—by using adequate theory, collecting good data, formulating accurate measures, developing sound explanations, and describing clearly the implications for policy—is no small task. Pulling all of these separate pieces together is a worthwhile challenge.

Conclusion

This chapter is meant to serve as a resource for scholars, students, policymakers, and others interested in the evolution of research on American police organizations. We have tried to escort readers on a journey from the elementary beginnings of data collection to the birth of scholarly theories; from the development of simplistic measures based on quantitative data to the sophisticated research that is now taking place. Along the way there have been many pitfalls: insufficient attention to conceptualization and theory, unrealistic measures, inadequate

statistical methods, and an overall lack of appreciation for previous research. Looking back on the classics in the field provides a sense of foundation, perhaps with a touch of nostalgia, but countless avenues for refinement and rediscovery remain. Chief among these are two responsibilities that may seem at first like strange bedfellows: doing quality research that (1) is based firmly in new or existing theories, and (2) contributes to the understanding or practice of policing. By tracing the evolution of research on police organizations from past to present, bumps and all, we hope this chapter provides a clear road map of what is to come. As we approach the 21st century, much remains to be learned.

We are grateful to Kimberly Hassell, William King, Robert Langworthy, Steve Mastrofski, Hank Robinson, and the members of the editorial board for their comments on earlier drafts.

Notes

1. This line of research also grew out of the political science tradition of measuring and explaining variations in local government policies and structures (Meyer and Baker 1979; Wilson 1968a, 1968b).

2. Several levels of analysis are commonly used within organization studies. The level of analysis in this essay is called the "organization set." The defining characteristic of the organization set "is that it views the environment from the perspective or standpoint of a specific (focal) organization" (Scott 1992, 126). This limits the scope of the essay to a particular (though broad) analytical framework. Many studies of police organizations are implicitly based on a different level of analysis, including Ostrom, Parks, and Whitaker's (1978a) study of metropolitan areas and Bayley's (1985, 1992) study of nations.

3. This definition excludes agencies that are specialized by function (e.g., fish and wildlife police) or territory (e.g., park or airport police), including most Federal law enforcement agencies, many county sheriffs' departments and State highway patrol agencies, and private security firms. Although using such a restrictive definition reduces the level of variation among the organizations under study, it defines a set of core tasks and functions that all the organizations presumably share.

4. There are also numerous similarities among police organizations. As Wadman (1998) points out, all of the largest municipal police agencies have hierarchical rank structures (though some may be flatter than others); they all have divisions for patrol, investigations, and administration; and they all devote a disproportionate share of their resources to motorized patrol.

5. Although there is some overlap, the style of a police organization is conceptually different from the style of an individual officer (Talarico and Swanson 1979; Wilson 1968b).

6. We are careful to distinguish between what an organization does and what it is by the location of the activity, behavior, or program, rather than its degree of visibility to the public. Much of what the police do *externally* occurs in low visibility settings (Goldstein 1960). On the other hand, the *internal* features of organizations (such as their structures) are often designed to serve as signals to external constituents that the organization is doing the right things (Meyer 1979).

7. For example, the Supplementary Homicide Report collects data on the age, sex, race, and ethnicity of the victim and the offender; the weapon used; and the circumstances of the offense.

8. A number of national and local media, including the Associated Press, *Washington Post*, *New York Times*, *Los Angeles Times*, and *USA Today*, reported the 7-year decline in crime on May 17, 1999, following the release of preliminary data by the FBI.

9. The hierarchy rule limits the reporting of multiple offenses committed within the course of a single criminal incident to the single most serious offense.

10. The COPS datasets contain a number of biases. They are completed by agencies that apply for or receive community policing grants from COPS, which provides respondents with an incentive to exaggerate their involvement in community policing. All of the datasets are based on convenience samples and contain a number of technical problems that limit their utility. They were not collected by social scientists and were not designed for social scientific analysis. Their purpose is to encourage local agencies to think about their community policing efforts and to communicate their progress to Federal authorities. On the other hand, they contain some of the largest sample sizes in police research (Maguire and Mastrofski forthcoming).

11. Misdemeanor arrests rose from 133,446 in 1993 to 205,277 in 1996, but misdemeanor complaints during the same period rose only slightly (Harcourt 1998, 340).

12. Bruce Smith (1949, 282) reported that the Uniform Crime Reports (UCR) occasionally contained "special treatments of material relating to the operation of police forces, the number of police employees, their distribution among the various phases of police work, the types of major police equipment in use, and the method of their employment." These special administrative surveys must have been fielded between the establishment of UCR in 1930 and the publication of Smith's text in 1949.

13. We selected cities between 25,000 and 100,000, just as Wilson did; however, because of the growth of cities over the past three decades, our sample size was much larger (n=1,633).

14. Chi-square tests of model fit suggest that the specified model has less than 1 chance in 1,000 of being the correct model (one that is able to closely reproduce the sample data). This finding held through various modifications to the model, including the use of different estimators (maximum likelihood and asymptotic distribution free).

15. A similar issue arises in mortality studies. Studying only the dead to learn about causes and correlates of death is a flawed strategy because we cannot know whether these same conditions might be present in people who lived (Kaufman 1976; King, Travis, and Langworthy 1997).

16. These same themes are also discussed in an earlier article by Bordua and Reiss (1966).

17. In one example, Reiss and Bordua (1967) discuss two environmental variables that are important to the organization: the security of the police chief's tenure and the degree of accountability that the government executive demands from the chief. Cross-classifying these two variables, Reiss and Bordua formed a crude taxonomy of four department types that might reflect variation in political interference into police department affairs. They suggested that these and other environmental variables were important because they "structure the effective range of command and control" (p. 49) in municipal police departments.

18. Slovak (1986, 5) laments that "there is a very real sense in which the promise offered by Wilson's original analysis has gone unfulfilled."

19. Aggregate arrest rates are sometimes used as an indicator of police agency style.

20. In general, structural contingency theory suggests that no single organizational form is ideal for all circumstances (Donaldson 1995; Lawrence and Lorsch 1967). Successful organizations survive by adapting to the contingencies of their specific tasks and environments.

21. We do not include the subjective studies here since they do not really represent organizational variables. They are, nonetheless, important.

22. Ostrom and Parks (1973) found curvilinear relationships between city size and citizen ratings of police performance. For central cities, performance ratings increased as city size approached 100,000 residents, after which ratings decreased; the same relationship was found for suburbs, but the population threshold was only 20,000 residents. The study was criticized for failing to control for "social or economic differences between respondents and their neighborhoods" (Whitaker 1983, 187). Whitaker concludes that the size of a police organization is more important than the size of a political jurisdiction, thus lending support to reform strategies that seek to simulate the feel of small-town policing in large cities through the use of precinct stations, substations, and other strategies. Whitaker's chapter is the most comprehensive (though dated) review of the effects of police agency size.

23. There is a shortage of theory to explain either of these consistent findings. Region size may simply be a proxy for any number of political, historical, economic, or demographic differences between regions. Organizational size seems to affect nearly every aspect of what organizations do. One possible reason that larger police agencies may

report engaging in more community policing activities is simply that they have more employees to assign to such functions.

24. For instance, Clark, Hall, and Hutchinson (1967) treat interorganizational relationships and network properties as contextual rather than organizational variables in their study of police performance.

25. According to Duffee (1990), this problem applies to all sectors of criminal justice. His advice to criminal justice scholars is particularly appropriate—we should describe and explain what criminal justice organizations *do* rather what they *should be doing.*

26. Unfortunately, Davenport's (1996) study misses one of the most consistent findings in research on structure: the importance of organizational size. Davenport treated size as an organizational rather than a contextual variable. This decision has some precedent in the literature and is not problematic. The problem is that he failed to control for the effects of size on other organizational variables. This is not intended as a blanket indictment of Davenport's study because it contains several features from which students of police organizations can learn.

27. Conventional wisdom in policing suggests that police organizations do not "go out of business" (Travis and Brann 1997). Recent work by William King and his colleagues (King forthcoming; King, Travis, and Langworthy 1997) challenges this assumption. Based on a survey of county sheriffs in Ohio, King documented the death of 104 police agencies (and the birth of an additional 15). He is now replicating this study in several other States.

28. Weick's (1969) discussion is inherently social psychological, but Manning (1992) and Ericson and Haggerty (1997) span levels from the individual to the institution.

29. We are grateful to Paula Kautt at the University of Texas–San Antonio for pointing this out.

References

Alpert, Geoffrey, and Mark H. Moore. 1993. Measuring police performance in the new paradigm of policing. In *Performance measures for the criminal justice system.* Bureau of Justice Statistics—Princeton University Study Group on Criminal Justice Performance Measures. NCJ 143505. Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics.

Annan, Sampson. 1994. Community policing strategies: A comprehensive analysis. Methodology report submitted by the Police Foundation to the U.S. Department of Justice, National Institute of Justice, Washington, D.C.

Aupperle, Kenneth E., William Acar, and David E. Booth. 1986. An empirical critique of *In search of excellence:* How excellent are the excellent companies? *Journal of Management* 12 (4): 499–512.

Bayley, David H. 1994. *Police for the future.* New York: Oxford University Press.

———. 1992. Comparative organization of the police in English-speaking countries. In *Modern policing*, edited by Michael Tonry and Norval Morris. Vol. 15 of *Crime and justice: A review of research.* Chicago: University of Chicago Press.

———. 1985. *Patterns of policing.* New Brunswick, New Jersey: Rutgers University Press.

Beattie, Ronald. 1960. Criminal statistics in the United States. *Journal of Criminal Law, Criminology, and Police Science* 51:49–51.

Berk, Richard A. 1974. Performance measures: Half full or half empty? *Social Science Quarterly* 54:762–764.

Beyer, William C., and Helen C. Toerring. 1929. The policeman's hire. *Annals of the American Academy of Political and Social Sciences* 146 (November): 135–146.

Blau, Peter M., Wolfe V. Heyderbrand, and Robert E. Stauffer. 1966. The structure of small bureaucracies. *American Sociological Review* 31:179–191.

Blau, Peter M., and Richard A. Schoenherr. 1971. *The structure of organizations.* New York: Basic Books.

Bordua, David J., and Albert J. Reiss, Jr. 1966. Command, control, and charisma: Reflections on police bureaucracy. *American Journal of Sociology* 72:68–76.

Bratton, William J. 1999. Great expectations: How higher expectations for police departments can lead to a decrease in crime. In *Measuring what matters: Proceedings from the Policing Research Institute meetings*, edited by Robert H. Langworthy. Research Report, NCJ 170610. Washington, D.C.: U.S. Department of Justice, National Institute of Justice and the Office of Community Oriented Policing Services.

Bratton, William J., with Peter Knobler. 1998. *Turnaround: How America's top cop reversed the crime epidemic.* New York: Random House.

Burns, Tom, and George M. Stalker. 1961. *The management of innovation.* London: Tavistock.

Churchill, Winston. 1944. Speech at Harvard University, 6 September 1943. In *Onwards to victory*. Boston: Little, Brown and Company.

Clark, John P., Richard H. Hall, and Bruce Hutchinson. 1967. Interorganizational relationships and network properties as contextual variables in the study of police performance. In *Police and society*, edited by David H. Bayley. Beverly Hills: Sage Publications.

Coleman, James S. 1974. *Power and the structure of society.* New York: W.W. Norton and Company.

Conyers, John, Jr. 1999. Representative Conyers of Michigan introducing the Traffic Stops Statistics Act of 1999, H.R. 1443, 106th Cong., 1st sess. *Congressional Record,* 15 April, vol. 145, no. 52.

Cordner, Gary W. 1989. Police agency size and investigative effectiveness. *Journal of Criminal Justice* 17:145–155.

Count-van Manen, Gloria. 1977. *Crime and suicide in the Nation's capital: Toward macro-historical perspectives.* New York: Praeger.

Coyle, K.R., J.C. Schaaf, and J.R. Coldren, Jr. 1991. *Futures in crime analysis: Exploring applications of incident-based crime data.* NCJ 127201. Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics.

Crank, John P. 1994. Watchman and community: Myth and institutionalization in policing. *Law & Society Review* 28 (2): 325–351.

———. 1992. Police style and legally serious crime: A contextual analysis of municipal police departments. *Journal of Criminal Justice* 20:401–412.

———. 1990. The influence of environmental and organizational factors on police style in urban and rural environments. *Journal of Research in Crime and Delinquency* 27 (2): 166–189.

———. 1989. Civilianization in small and medium police departments in Illinois, 1973–1986. *Journal of Criminal Justice* 17 (3): 167–178.

Crank, John P., and Robert H. Langworthy. 1996. Fragmented centralization and the organization of the police. *Policing and Society* 6:213–229.

———. 1992. An institutional perspective of policing. *Journal of Criminal Law and Criminology* 83 (2): 338–363.

Crank, John P., and L. Edward Wells. 1991. The effects of size and urbanism on structure among Illinois police departments. *Justice Quarterly* 8 (2): 170–185.

Cuniff, Mark. 1983. *Beyond crime: Law enforcement operational and cost data.* NCJ 92481. Washington, D.C.: U.S. Department of Justice, National Institute of Justice.

Davenport, Douglas R. 1996. Public agency performance and structure: Assessing the effects of the organizational environment. Ph.D. diss., Texas Tech University.

Davis, Kenneth C. 1969. *Discretionary justice: A preliminary inquiry.* Baton Rouge: Louisiana State University Press.

Decker, Scott. 1981. Alternate measures of police output. *American Journal of Police* 1 (1): 23–35.

———. 1977. The evolution of crime statistics as a police problem. *Journal of Police Science and Administration* 6:67–73.

DiIulio, John J., Jr. 1993. Measuring performance when there is no bottom line. In *Performance measures for the criminal justice system.* Bureau of Justice Statistics—Princeton University Study Group on Criminal Justice Performance Measures. NCJ 143505. Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics.

Donaldson, Lex. 1995. *American anti-management theories of organization: A critique of paradigm proliferation.* Cambridge: Cambridge University Press.

Duffee, David. 1990. *Explaining criminal justice.* 2d ed. Prospect Heights, Illinois: Waveland Press.

Duncan, Robert B. 1972. Characteristics of organizational environments and perceived environmental uncertainty. *Administrative Science Quarterly* 17:313–327.

Eck, John, and Edward R. Maguire. Forthcoming. Have changes in policing reduced violent crime?: An assessment of the evidence. In *The crime drop in America,* edited by Alfred Blumstein and Joel Wallman. New York: Cambridge University Press.

Eisenberg, Terry, and Deborah Ann Kent. 1973. *Police personnel practices in State and local governments.* Washington, D.C.: International Association of Chiefs of Police and the Police Foundation.

Eisenstadt, S.N. 1959. Bureaucracy, bureaucratization, and debureaucratization. *Administrative Science Quarterly* 4 (3): 302–320.

Emery, Fred, and Eric L. Trist. 1965. The causal texture of organizational environments. *Human Relations* (February): 21–32.

Ericson, Richard B., and Kevin D. Haggerty. 1997. *Policing the risk society.* Toronto: University of Toronto Press.

Ferdinand, Theodore N. 1976. From a service to a legalistic style police department: A case study. *Journal of Police Science and Administration* 4 (3): 302–319.

———. 1972. Politics, the police, and arresting policies in Salem, Massachusetts since the Civil War. *Social Problems* 19:572–588.

———. 1967. The criminal patterns of Boston since 1869. *American Journal of Sociology* 73:688–698.

Gianakis, Gerasimos A., and G. John Davis III. 1998. Reinventing or repackaging public services? The case of community-oriented policing. *Public Administration Review* 58 (6).

Goldstein, Herman. 1977. *Policing a free society.* Cambridge, Massachusetts: Ballinger.

———. 1963. Police discretion: The ideal versus the real. *Public Administration Review* 23:140–148.

Goldstein, Joseph. 1960. Police discretion not to invoke the criminal process: Low visibility decisions in the administration of justice. *Yale Law Journal* 69:543–594.

Guyot, Dorothy. 1977. Police departments under social science scrutiny. *Journal of Criminal Justice* 5:105–118.

Hammer, Michael, and James Champy. 1993. *Reengineering the corporation.* New York: HarperCollins Publishers.

Harcourt, Bernard E. 1998. Reflecting on the subject: A critique of the social influence conception of deterrence, the broken-windows theory, and order maintenance policing New York style. *Michigan Law Review* 97:291–389.

Hayduk, Leslie A. 1987. *Structural equation modeling with LISREL: Essentials and advances.* Baltimore: Johns Hopkins University Press.

Heininger, B.L., and J. Urbanek. 1983. Civilianization of the American police: 1970–1980. *Journal of Police Science and Administration* 11 (2): 200–205.

Henderson, Thomas A. 1975. The relative effects of community complexity and of sheriffs upon the professionalism of sheriff departments. *American Journal of Political Science* 19 (1): 107–132.

Hough, Michael, and Nick Tilley. 1998. *Auditing crime and disorder: Guidance for local partnerships.* Briefing Note. London: Home Office Police Research Group.

Huff, C. Ronald. 1987. Organizational structure and innovation in urban police departments. *Public Administration Review* 47 (6): 508–509.

Katz, Charles M. 1997. Police and gangs: A study of a police gang unit. Ph.D. diss., University of Nebraska at Omaha.

Katz, Charles, Edward R. Maguire, and Dennis W. Roncek. 2000. The creation of specialized police gang units: Testing contingency, social threat, and resource dependency explanations. Unpublished manuscript, University of Nebraska at Omaha.

Kaufman, Herbert. 1976. *Are government organizations immortal?* Washington, D.C.: Brookings Institution.

King, William R. Forthcoming. Time, constancy, and change in American municipal police organizations. *Police Quarterly.*

———. 1999. Personal communications with Edward R. Maguire, March–May.

———. 1998. Innovativeness in American municipal police organizations. Ph.D. diss., University of Cincinnati.

King, William R., Lawrence F. Travis III, and Robert H. Langworthy. 1997. Police organizational death. Paper presented at the 1997 Annual Meeting of the American Society of Criminology, 22 November, San Diego.

Kitsuse, John, and Aaron Victor Cicourel. 1963. A note on the uses of official statistics. *Social Problems* 11:131–139.

Klockars, Carl B. 1999. Some really cheap ways of measuring what really matters. In *Measuring what matters: Proceedings from the Policing Research Institute meetings*, edited by Robert H. Langworthy. Research Report, NCJ 170610. Washington, D.C.: U.S. Department of Justice, National Institute of Justice and the Office of Community Oriented Policing Services.

LaFave, William R. 1965. *Arrest: The decision to take a suspect into custody.* Boston: Little, Brown and Company.

Lane, Roger. 1980. Urban police and crime in nineteenth-century America. In *Crime and justice: An annual review of research*, edited by Norval Morris and Michael Tonry. Vol. 2. Chicago: University of Chicago Press.

Langworthy, Robert H. 1992. Organizational structure. In *What works in policing?*, edited by Gary W. Cordner and Donna C. Hale. Cincinnati: Anderson Publishing Company.

———. 1986. *The structure of police organizations.* New York: Praeger.

———. 1985a. Police department size and agency structure. *Journal of Criminal Justice* 13:15–27.

———. 1985b. Wilson's theory of police behavior: A replication of the constraint theory. *Justice Quarterly* 2 (1): 89–98.

———. 1983. The effects of police agency size on the use of police employees: A reexamination of Ostrom, Parks, and Whitaker. *Police Studies* 5:11–19.

———, ed. 1999. *Measuring what matters: Proceedings from the Policing Research Institute meetings.* Research Report, NCJ 170610. Washington, D.C.: U.S. Department of Justice, National Institute of Justice and the Office of Community Oriented Policing Services.

Lawrence, Paul R., and Jay W. Lorsch. 1967. Differentiation and integration in complex organizations. *Administrative Science Quarterly* 12 (1): 1–47.

Leigh, Adrian, Gary Mundy, and Rachel Tuffin. 1999. *Best value policing: Making preparations.* Police Research Series paper 116. London: Home Office Police Research Group.

Liska, A.E., and M.B. Chamlin. 1984. Social structure and crime control among macrosocial units. *American Journal of Sociology* 90 (2): 383–395.

Macro International. 1997. *Community policing: 1997 national survey update of police and sheriffs' departments.* Washington, D.C.: U.S. Department of Justice, National Institute of Justice.

Maguire, Edward R. Forthcoming. *Context, complexity, and control: Organizational structure in American police agencies.* Albany: State University of New York Press.

———. 1997. Structural change in large municipal police organizations during the community policing era. *Justice Quarterly* 14 (3): 701–730.

Maguire, Edward R., and Charles M. Katz. 2000. Loose coupling, sensemaking, and community policing in American police agencies. Unpublished manuscript, University of Nebraska at Omaha.

Maguire, Edward R., Joseph B. Kuhns, Craig D. Uchida, and Stephen M. Cox. 2000. Measuring community policing at the agency level. Unpublished manuscript, University of Nebraska at Omaha.

———. 1997. Patterns of community policing in nonurban America. *Journal of Research in Crime and Delinquency* 34:368–394.

Maguire, Edward R., and Stephen D. Mastrofski. Forthcoming. Patterns of community policing in the United States. *Police Quarterly.*

Maguire, Edward R., Jeffrey B. Snipes, Craig D. Uchida, and Margaret Townsend. 1998. Counting cops: Estimating the number of police departments and police officers in the USA. *Policing: An International Journal of Police Strategies & Management* 21 (1): 97–120.

Maguire, Edward R., and Craig D. Uchida. 1998. Measuring community policing at the precinct and agency levels. Paper presented at the 1998 Annual Meeting of the American Society of Criminology, 14 November, Washington, D.C.

Maguire, Edward R., and Jihong Zhao. 1999. Structural change in large municipal police organizations. Paper presented at the Annual Conference on Criminal Justice Research and Evaluation, 20 July, Washington, D.C.

Maguire, Edward R., Jihong Zhao, and Nicholas Lovrich. 1999. Dimensions of community policing. Unpublished manuscript, University of Nebraska at Omaha.

Maltz, Michael. 1977. Crime statistics: A historical perspective. *Crime & Delinquency* 23:32–40.

Manning, Peter K. 1992. Information technologies and the police. In *Modern policing*, edited by Michael Tonry and Norval Morris. Vol. 15 of *Crime and justice: A review of research.* Chicago: University of Chicago Press.

———. 1988. Review of *The structure of police organizations* by Robert Langworthy. *Administrative Science Quarterly* (June): 323–327.

Marvell, Thomas B., and Carlisle E. Moody. 1996. Specification problems, police levels, and crime rates. *Criminology* 34 (4): 609–646.

Mastrofski, Stephen D. 1999. *Policing for people.* Ideas in American Policing Series, March. Washington, D.C.: Police Foundation.

———. 1998a. Community policing and police organization structure. In *How to recognize good policing: Problems and issues*, edited by Jean-Paul Brodeur. Newbury Park, California: Sage Publications.

———. 1998b. *Patterns of community policing: Tracking organizational change undertaken with COPS funding, phase two.* Washington, D.C.: U.S. Department of Justice, Office of Community Oriented Policing Services.

Mastrofski, Stephen D., and R. Richard Ritti. Forthcoming. Making sense of community policing: A theory-based analysis. *Police Practice and Research: An International Journal.*

———. 1996. Police training and the effects of organization on drunk driving enforcement. *Justice Quarterly* 13 (2): 291–320.

Mastrofski, Stephen D., R. Richard Ritti, and Debra Hoffmaster. 1987. Organizational determinants of police discretion: The case of drinking-driving. *Journal of Criminal Justice* 15:387–402.

Mastrofski, Stephen D., and Craig D. Uchida. 1993. Transforming the police. *Journal of Research in Crime and Delinquency* 30 (3): 330–358.

McEwen, Tom. 1996. *National data collection on police use of force.* NCJ 160113. Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics and National Institute of Justice.

Meagher, M.S. 1985. Police patrol styles: How pervasive is community variation? *Journal of Police Science and Administration* 13 (1): 36–45.

Meyer, Fred A., Jr., and Ralph Baker, eds. 1979. *Determinants of law-enforcement policies.* Lexington, Massachusetts: Lexington Books.

Meyer, John, and Brian Rowan. 1977. Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology* 83 (2): 340–363.

Meyer, Marshal W. 1979. Organizational structure as signaling. *Pacific Sociological Review* 22:481–500.

Miller, Wilbur R. 1977. *Cops and bobbies: Police authority in New York and London, 1830–1870.* Chicago: University of Chicago Press.

Monkkonen, Eric H. 1992. History of urban police. In *Modern policing*, edited by Michael Tonry and Norval Morris. Vol. 15 of *Crime and justice: A review of research.* Chicago: University of Chicago Press.

———. 1981. *Police in urban America: 1860–1920.* Cambridge: Cambridge University Press.

Moore, Mark H., and Margaret Poethig. 1999. The police as an agency of municipal government: Implications for measuring police effectiveness. In *Measuring what matters: Proceedings from the Policing Research Institute meetings*, edited by Robert H. Langworthy. Research Report, NCJ 170610. Washington, D.C.: U.S. Department of Justice, National Institute of Justice and the Office of Community Oriented Policing Services.

Morgan, David R., and Cheryl Swanson. 1976. Analyzing police policies: The impact of environment, politics, and crime. *Urban Affairs Quarterly* 11 (4): 489–510.

Murphy, Christopher J. 1986. The social and formal organization of small-town policing: A comparative analysis of RCMP and municipal policing. Ph.D. diss., University of Toronto.

Murphy, Patrick V., and Thomas Plate. 1977. *Commissioner: A view from the top of American law enforcement.* New York: Simon & Schuster.

Nanus, B., and L. Perry. 1973. A planning oriented measure of crime and delinquency. *Journal of Criminal Justice* 23 (1): 32–40.

Osborne, David, and Ted Gaebler. 1992. *Reinventing government.* New York: Addison-Wesley.

Ostrom, Elinor. 1973. On the meaning and measurement of output and efficiency in the provision of urban police services. *Journal of Criminal Justice* 1:93–112.

Ostrom, Elinor, and Roger B. Parks. 1973. Suburban police departments: Too many and too small? In *The organization of the suburbs*, edited by Louis H. Masotti and Jeffrey K. Hadden. Urban Affairs Annual Reviews Series, vol. 7. Beverly Hills: Sage Publications.

Ostrom, Elinor, Roger B. Parks, and Gordon P. Whitaker. 1978a. *Patterns of metropolitan policing.* Cambridge, Massachusetts: Ballinger.

———. 1978b. Police agency size: Some evidence on its effects. *Police Studies* (March): 34–46.

Parks, Roger B. 1999. Measuring community policing. Paper presented at the 1999 Annual Meeting of the American Society of Criminology, 18 November, Toronto.

———. 1984. Linking objective and subjective measures of performance. *Public Administration Review* (March/April): 118–127.

Perrow, Charles. 1986. *Complex organizations: A critical essay.* 3d ed. Glenview, Illinois: Scott, Foresman and Company.

Pfeffer, Jeffrey, and Gerald R. Salancik. 1978. *The external control of organizations.* New York: Harper & Row.

President's Commission on Law Enforcement and Administration of Justice. 1967. *Task Force report: The police.* Washington, D.C.: U.S. Government Printing Office.

Ragin, Charles C. 1987. *The comparative method: Moving beyond qualitative and quantitative strategies.* Berkeley: University of California Press.

Reaves, Brian A., and Andrew L. Goldberg. 1999. *Law enforcement management and administrative statistics, 1997: Data for individual State and local agencies with 100 or more officers.* NCJ 171681. Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics.

Reiss, Albert J., Jr. 1971. *The police and the public.* New Haven: Yale University Press.

Reiss, Albert J., Jr., and David J. Bordua. 1967. Environment and organization: A perspective on the police. In *The police: Six sociological essays*, edited by David J. Bordua. New York: John Wiley & Sons.

Riksheim, Eric, and Steven Chermak. 1993. Causes of police behavior revisited. *Journal of Criminal Justice* 21 (4): 353–382.

Roberts, David J., and Seth F. Jacobs. 1994. *Demonstrating the operational utility of incident-based data for local crime analysis: Reporting systems in Tacoma, Washington, and New Bedford, Massachusetts.* NCJ 145860. Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics.

Robison, Susan. 1966. A critical view of the Uniform Crime Reports. *Michigan Law Review* 64:1031–1054.

Roth, Jeffrey A., and Calvin C. Johnson. 1997. COPS context and community policing. Paper presented at the 1997 Annual Meeting of the American Society of Criminology, November, San Diego.

Schumacker, Randall E., and Richard G. Lomax. 1996. *A beginner's guide to structural equation modeling.* Mahwah, New Jersey: Lawrence Erlbaum Associates.

Scott, W. Richard. 1992. *Organizations: Rational, natural, and open systems.* 3d ed. Englewood Cliffs, New Jersey: Prentice Hall.

Seidman, David, and M. Couzens. 1974. Getting the crime rate down: Political pressure and crime reporting. *Law & Society Review* 8:457–493.

Selznick, Philip. 1957. *Leadership in administration.* New York: Harper & Row.

Sherman, Lawrence W. 1998. *Evidence-based policing.* Ideas in American Policing Series, July. Washington, D.C.: Police Foundation.

———. 1980. Causes of police behavior: The current state of quantitative research. *Journal of Research in Crime and Delinquency* 17:69–100.

Skoler, D.L., and J.M. Hetler. 1969. Criminal administration and the local government crisis—The challenge of consolidation. *Prosecutor* 5 (4).

Skolnick, Jerome. 1966. *Justice without trial: Law enforcement in a democratic society.* New York: John Wiley & Sons.

Slovak, Jeffrey S. 1986. *Styles of urban policing: Organization, environment, and police styles in selected American cities.* New York: New York University Press.

Smith, Bruce, Jr. 1949. *Police systems in the United States.* 2d rev. ed. New York: Harper & Row.

Steinman, M. 1984. Rationalizing police operations: Some explanatory factors. *Journal of Criminal Justice* 12 (3): 221–233.

Stinchcombe, Arthur L. 1963. Institutions of privacy in the determination of police administrative practice. *American Journal of Sociology* 69:150–160.

Surette, Raymond. 1984. A note on the historical relationship between the economy and police organizational activities. *Criminal Justice Review* 9 (2): 47–52.

Swanson, Cheryl. 1978. The influence of organization and environment on arrest practices in major U.S. cities. *Policy Studies Journal* 7:390–398.

Talarico, Suzette M., and Charles R. Swanson. 1979. Styles of policing: An exploration of compatibility and conflict. In *Determinants of law-enforcement policies,* edited by Fred A. Meyer, Jr., and Ralph Baker. Lexington, Massachusetts: Lexington Books.

Travis, Jeremy, and Joseph E. Brann. 1997. Introduction to *Measuring what matters, part two: Developing measures of what the police do.* Research in Action, NCJ 167255. Washington, D.C.: U.S. Department of Justice, National Institute of Justice and the Office of Community Oriented Policing Services.

Trojanowicz, Robert. 1994. *Community policing: A survey of police departments in the United States.* Washington, D.C.: U.S. Department of Justice, Federal Bureau of Investigation.

Uchida, Craig D. 1997. The development of the American police: An historical overview. In *Critical issues in policing: Contemporary readings.* 3d ed. Edited by Roger G. Dunham and Geoffrey P. Alpert. Prospect Heights, Illinois: Waveland Press.

———. 1986. Law enforcement management and administrative statistics: Research and development, final report. Manuscript prepared for the Institute of Criminal Justice and Criminology, University of Maryland.

Vollmer, August. 1927. Presidential Address. In *Proceedings of the annual meeting of the International Association of Chiefs of Police.* Cited in Charles F. Wellford, Redesigning the Uniform Crime Reports, *American Journal of Police* 1 (2) (1982): 76–93.

Wadman, Robert C. 1998. Organizing for the prevention of crime. Ph.D. diss., Idaho State University.

Walker, Monica A. 1992. Do we need a clear-up rate? *Policing and Society* 2:293–306.

Walker, Samuel. 1977. *A critical history of police reform: The emergence of professionalism.* Lexington, Massachusetts: Lexington Books.

Walzer, C. 1970. Economies of scale and municipal police services. Ph.D. diss., University of Illinois.

Weick, Karl E. 1976. Educational organizations as loosely coupled systems. *Administrative Science Quarterly* 21:1–19.

———. 1969. *The social psychology of organizing.* Reading, Massachusetts: Addison-Wesley.

Weiss, Alexander. 1997. The communication of innovation in American policing. *Policing: An International Journal of Police Strategies and Management* 20 (2): 292–310.

Wellford, Charles F. 1982. Redesigning the Uniform Crime Reports. *American Journal of Police* 1 (2): 76–93.

———. 1974. Crime and the police: A multivariate analysis. *Criminology* 12:195–213.

Whitaker, Gordon P. 1983. Police department size and the quality and cost of police services. In *The political science of criminal justice*, edited by Stuart Nagel, Erika Fairchild, and Anthony Champagne. Springfield, Illinois: Charles C. Thomas.

Wilson, James Q. 1993. The problem of defining agency success. In *Performance measures for the criminal justice system.* Bureau of Justice Statistics—Princeton University Study Group on Criminal Justice Performance Measures. NCJ 143505. Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics.

———. 1989. *Bureaucracy: What government agencies do and why they do it.* New York: Basic Books.

———, ed. 1968a. *City politics and public policy.* New York: John Wiley & Sons.

———. 1968b. *Varieties of police behavior: The management of law and order in eight communities.* Cambridge: Harvard University Press.

———. 1963. The police and their problems: A theory. *Public Policy* 12:189–216.

Wilson, J.Q., and B. Boland. 1979. *Effect of the police on crime.* Criminal Justice Perspectives, NCJ 58531. Washington, D.C.: U.S. Department of Justice, Law Enforcement Assistance Administration.

Wolfgang, Marvin. 1963. The Uniform Crime Reports: A critical appraisal. *University of Pennsylvania Law Review* 111:708–738.

Wycoff, Mary Ann. 1994. *Community policing strategies. Final report*. NCJ 159603. Washington, D.C.: U.S. Department of Justice, National Institute of Justice.

Zhao, Jihong. 1996. *Why police organizations change: A study of community oriented policing.* Washington, D.C.: Police Executive Research Forum.