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Advanced information processing technologies and police discretion

Kevin Wayne Howard
University of Northern Iowa

ADVANCED INFORMATION PROCESSING TECHNOLOGIES AND POLICE DISCRETION

An Abstract of a Thesis

Submitted

in Partial Fulfillment

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ABSTRACT

This research seeks to evaluate the influence of advanced information processing technologies on police discretion. I have developed three propositions. First, advanced information processing technologies used in municipal law enforcement enable policing managers to easily collect and analyze large amounts of information. Second, the information acquired from these same technologies is used to create and/or modify bureaucratic rules regarding police work. Third, this combination of technological and bureaucratic processes has led to a reduction of patrol officers' discretion. Advanced information processing technologies include crime mapping, video surveillance, mobile data terminals (in-car computers), global positioning systems, and computer statistics (Compstat), a data-collection system. Data for this study was collected through qualitative ethnographic methods. I interviewed a total of twelve patrol officers and police administrators employed in a medium-sized municipal police department. The interviews were semi-structured, and an interview guide was used during each interview. A narrative analysis was administered to examine the data. By using this approach, I examined themes across the narrative accounts of the research participants. Cross-coding was used to see how each officer responded to each topic. I hypothesize that advanced information processing technologies have added new limits on the decision-making discretion of patrol officers.

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CHAPTER 1

INTRODUCTION

In 1979, Egon Bittner posited that police officers generally enjoyed "a wide area of unregulated decision-making" that extended beyond "the limits of necessary discretion" (Rumbaut and Bittner 1979:243). Bittner (1970) argued that it is typical for officers to decide on their own whether to make an arrest based on the characteristics of the situation. Because conditions faced by police officers vary greatly, formal procedures generally did not provide specific guidance about what action an officer should take in any given situation. Therefore, police were seen to require ample discretion to handle each situation as they saw fit.

Another important example of police discretion involves the decision to use force. According to Bittner, "police officers' authorization to decide to use force is essentially unrestricted" (1970:128). Bittner (1970) asserted that there are only three limits to patrol officers' use of force. First, the police are not allowed to shoot a fleeing misdemeanor suspect. Second, the police are not allowed to use force to advance their own personal gain. Third, force should not be used frivolously. However, Bittner argued that these limitations were generally not well enforced. Moreover, he found there were frequently no practical consequences when one of these limits was violated. He also claimed that upper-level managers or judges rarely reviewed police actions involving the use of force. According to Bittner, there are a couple of reasons why police actions to use force are not reviewed. First, for the police to be able to successfully intervene in a situation, they must have the authority to overpower any resistance while solving the problem at hand. If

police officers were reviewed, their tactics used to overpower resistance may be called into question, thus reducing their authority. Second, police officers tend to fight dreadful individuals on a regular basis, which over time inclines them to become a little dreadful themselves. Those who oversee police officers accept that this dreadfulness is rooted in the nature of policing.

A key question, however, is whether Bittner's arguments about police discretion are as accurate today as they were thirty years ago. My research evaluates the extent to which Bittner's general claim about police discretion remains true today. There is ample research regarding police discretion. The scope of this research encompasses use of force, working rules in the field, racial biases and the police officer's decision-making process. This study should help improve the body of literature on police decision-making by exploring the influence of modern technology on officer's discretion. Some of these technologies include crime mapping; surveillance, body microphones, and in-car video cameras; global positioning systems; and Compstat, a data-collection system. I have assessed whether any of these technologies have reduced the amount of discretion possessed by contemporary police officers.

I propose that advanced information processing technologies, in conjunction with bureaucratic controls, have added new constraints on the decision-making discretion of police officers to the extent that Bittner's argument of essentially unrestricted discretion is no longer true. The contemporary use of technology and bureaucracy by police managers guides police behavior in ways that are relatively new. During the past 20 years, several technological controls have become prominent.

The mapping of crime locations first appeared in the 1940s when Shaw and McKay mapped juvenile gang activity in Chicago. However, it was not until the use of computerized mapping, during the 1990s, that it gained acceptance as a policing tool. Chainey and Ratcliffee asserted that crime mapping is a tool used to "effectively understand crime distribution, and to explore the mechanisms, dynamics and generators to criminal activity, through pattern analysis with other local data" (2005:4).

Like crime mapping, video surveillance has also become more common in the last two decades. Peterson (1988) found that most surveillance systems include a camera mounted in the patrol car, a video or digital recorder in the trunk, and a wireless microphone carried by the police officer. These systems are able to provide audio and video recordings for each situation officers encounter. Information produced by these technologies can be used by investigators, managers, or others to evaluate an officer's behavior in the field. The surveillance systems are also used to protect officers from claims of abuse or attacks, protect civilians from civil rights violations, and ensure that officers are following current policies and procedures.

Manning (2008) asserted that global positioning systems, as of recent years, are also standard in many patrol cars and can be considered a separate form of surveillance. These devices are helpful when navigating in the field. Global positioning systems are also used to track the route of patrol units throughout a shift.

According to Manning (2008), real-time data-collection has also changed various aspects of policing. Computerized crime data-collection, frequently referred to as Compstat, was first developed by the New York City Police Department. "'Compstat' was

a filename given to a program developed to compare crime data and became a general term for the meetings and process of crime analysis based on mapping" (2008:39). The system is used by upper-level managers to monitor crime and disorder and to allocate police resources, including the distribution of police officers. Similar data systems have been adopted by police departments in many other cities. Computerized crime data systems can manage and transmit data with a high-level of efficiency.

Theoretical Framework

During the early 1990s Harland Prechel developed neo-Fordist theory as a means for explaining changes in the organizational structure of large private sector corporations. According to neo-Fordist theory, large organizations use advanced information processing technologies to manage environmental uncertainty. For example, advanced technologies allow managers to respond to such crises of control as a sudden decline in resources or more intense competition for market share (Gorton 2002; Prechel 1994).

Four factors are related to the use of advanced information processing technologies to achieve this goal. First, advanced technologies allow managers to collect large amounts of information that can be instantly transferred into centralized databases. Second, the raw data are analyzed and used to create new decision-making parameters that can be imposed on lower-level managers. Third, as the environment produces new demands, advanced information processing technologies are used to adapt to these demands. In this way, technology is used to constrain lower-level decisions while simultaneously making an organization more efficient, effective, and flexible. Ultimately, authority and decision-making become more centralized, while responsibility for proper

execution is decentralized (Gorton 2002; Prechel 1994). Gorton argues that "neo-Fordist theory suggests that rather than decentralizing authority, computerized information management systems enable upper-level managers to place limits on subordinate managers' options for solving organizational problems" (2002:18; also available Prechel 1994:741--42).

The purpose of this thesis is to assess whether neo-Fordist theory effectively explains contemporary changes in police discretion. For example, are new technologies and bureaucratic controls being used in ways that negate Bittner's earlier claims about police decision-making?

According to the neo-Fordist model, increases in bureaucratic controls are possible because of upper-level managers' ability to use advanced information processing technologies to rapidly obtain information about what is happening in the field. This information can be used by managers to create new formal procedural constraints on police officers' decision-making. These conditions constrain police officers to obey policies and procedures, thereby limiting their discretion to decide about how to handle specific situations. The core arguments of neo-Fordist theory predict that within contemporary police departments, advanced information processing technologies are used to create new bureaucratic controls that centralize authority while decentralizing responsibility.

Propositions

This research seeks to evaluate the influence of advanced information processing technologies on police discretion. I have developed three propositions. First, advanced

information processing technologies used in municipal law enforcement enable policing managers to more easily collect and analyze large amounts of information. Second, the information acquired from these same technologies is used to create and/or modify bureaucratic rules regarding police work. Third, this combination of technological and bureaucratic processes has led to a reduction of police officers' discretion.

CHAPTER 2

LITERATURE REVIEW

The situations patrol officers face in the field can vary greatly. Therefore, police discretion plays a critical role in law enforcement. Police discretion, however, is not easy to define. Davis (1975) asserted that discretion is the *freedom* of officers to "make policy about what law to enforce, how much to enforce it, against whom, and on what occasions" (1975:1). In their use of discretion, police officers are guided by their experience, observation, thoughtfulness, and understanding of the situation. Furthermore, Davis suggested that discretion is absolutely essential in policing, and any effort to completely eliminate discretion would be ridiculous. In contrast, Inciardi (1987) viewed police discretion as the *authority* of an officer to choose between alternative actions when dealing with a situation in the field.

In an earlier study, Bordua and Reiss (1966) analyzed the role of bureaucracy in modern policing. They examined how technology is used to hold police officers accountable to bureaucratic policies and procedures. Their paper defines bureaucratization as "an organizational technique whereby civic pressures are neutralized from the standard point of the governing regime" (1966:68). Bureaucracy commits police officers to pursuing the organizational goals of the department and places them in a subordinate status to the upper-level managers. Technology has helped upper-level managers hold police officers accountable to policies and procedures. Furthermore, "every development in the technology for police control of the population is accompanied by changes in the capacity of the organization to control its members" (1966:69).

Bordua and Reiss found that technology has permitted a relatively high degree of central control over operating units in the field. For example, two-way radio communication within patrol cars enables greater "dispersion and flexibility in the allocation of patrols, while at the same time bringing the patrolman or team more nearly within the range of constant control" (1966:70). Additionally, a centralized radio communication system makes it possible for upper-level managers to have direct knowledge of incidents to which police are called and which officer is assigned to each call.

More recent research about police decision-making has focused on the influence of computer-based technologies and police discretion. Kathryn Schellenberg's research (2000) focused on the effect of video surveillance on police officer discretion. She hypothesized that emerging technologies, specifically audiovisual recorders, would alter officers' discretionary behavior. Schellenberg posited that reductions in officer discretion were likely to occur because audiovisual technology provides street-level visibility to upper-level management. Participants for her study were selected from several police districts in Canada. Schellenberg administered a computerized questionnaire and interpreted it by cross tabulations. The questions were centered on how officers would handle a hypothetical traffic offense. The hypothetical scenario was, "How would the participant sanction a 30-year-old driver caught speeding en route to a job interview according to whether the incident is videotaped?" (2000:679). Half of the 265 officers were asked to imagine being videotaped while the other half were not given this request.

Schellenberg (2000) found that, regardless of being videotaped, most officers either wrote a reduced ticket or let the driver off with a warning. The analysis also revealed that officers who were not recorded were more lenient on male drivers. Officers from different police districts seemed to react differently when the camera was present. In the first district, 40 percent of both male and female officers gave the driver a warning without a camera present, while 33 percent gave a warning with a camera present. In the second district designated by Schellenberg, 63 percent of officers were likely to warn without a camera present, while 53 percent of officers were likely to warn with the camera present. The third district differed significantly, however. Seventy percent of officers in the third district who were off camera provided a warning as opposed to giving a ticket. Surprisingly, nearly 90 percent of officers in the third district let drivers off with a warning when a camera was present. Schellenberg concluded that the effects of surveillance were not clear; the video camera encouraged both generosity and strictness. According to Schellenberg's analysis, officer decisions "appear to have been influenced by a complex mix of factors including the institutional environment, organizational expectations, personal insecurities, job satisfaction, work experience, and social integration" (2000:683).

Police discretion might also be influenced by crime mapping technologies. Weisburd and Lum (2005) examined the diffusion of computerized crime mapping and the rate at which this technology has been adopted by police departments across the United States. Data for their analysis were drawn from quantitative methods gathered by the Law Enforcement Management and Administrative Statistics (LEMAS) and the

Crime Mapping Research Center. Comparative statistics from these two data sets were used for the analysis. In addition, a survey was administered to police officers to identify indicators of role performance. The officers surveyed were randomly selected from the LEMAS dataset.

The comparative statistical analysis revealed a relatively high rate of diffusion of crime mapping technologies in large police agencies during the 1990s. Weisburd and Lum claim a crisis of confidence in police practices erupted in the 1970s and 1980s, which led to a "wide recognition of a need for change" by police administrators and political leaders (2005:424). It was the "call for change," depicted by research studies, that spurred the adoption of crime mapping technologies. Furthermore, the survey data confirmed that computerized crime mapping technology had been implemented by larger police agencies at a rapid rate in the 1990s. Weisburd and Lum concluded that "computerized crime mapping has emerged as an important focus of innovation in policing" (2005:420).

Another technology linked to police decision-making are mobile data terminals (MDT) typically found in patrol vehicles. A mobile data terminal is a computer system that allows officers to transmit and receive a limited range of information between the communications center and the officer. For instance, MDTs enable officers to receive their calls on the MDT as opposed to over the radio.

Albert Meehan's research (1998) sought to determine how information technology used in contemporary policing affected traditional communication strategies in policing. Meehan's research was carried out in a suburban Midwestern police department that

employed 40 full-time police officers in a town of approximately 25,000 residents. Qualitative methods were used for this study. Meehan had logged over 300 hours of ride-alongs to observe how MDT technology affected patrol officers' daily work routines. Semi-structured interviewing took place during his ride-alongs.

According to Meehan's analysis (1998), MDTs had a significant influence on communication strategies in policing as well as authority relationships between patrol officers and supervisory personnel. Meehan discovered that MDT technology allowed officers to initiate more police work rather than react to incoming calls. With this technology, officers were expected by department managers to participate in more traffic stops and were deployed to targeted areas of the community and instructed to look for specific violations. MDT technology enabled officers to conduct more record checks and stops without requesting information from dispatchers. This technology also made it easier for upper-level managers to monitor the work police officers are doing. For example, MDT "enables officers to send typed private messages to the station," which "can be reviewed by department administrators" (1998:243). Meehan concluded that MDT is "an important innovation in information technology, which can potentially increase proactive patrol work" (1998:250). Some interviewees repeated that over-reliance on MDT technology sometimes led to a decline in officers using their discretion or "cop skills." Meehan's analysis suggested that younger police officers, who have used this technology from the beginning of their careers, could depend too much on the

information it provides. Regarding the authority structure of policing, he concluded that, because MDT technology threatens the "solidarity of line officers and creates a more segmented top down information chain, officers can be expected to find ways to resist it" (1998:251).

Ioimo and Aronson (2004) also examined the use of field mobile computing systems. The goal of this paper was to see if field computing systems improved police officer productivity and whether data provided by MDTs were helpful to police officers in the field. They also sought to learn whether the use of field computing improved police officer performance. Like Meehan, they found that the primary purpose of mobile data terminals is to allow officers to provide moment to moment information about their location and the incidents to which they responded. The patrol officers were also able access more information without requesting that dispatchers look up a license plate or conduct a warrant check. To evaluate the officer's perception of the usefulness of MDT, a departmental-wide survey was distributed to 500 randomly selected members of an Arizona city police department. One hundred surveys were completed. To assess the effectiveness of filed mobile computing, Ioimo and Aronson used Goodhue's task-technology fit data-collection tool. According to the authors, the survey instrument used in their analysis is "a proven instrument specifically designed to assess the end users' perception of how well the information technology they use meets their needs and helps them perform their jobs more efficiently" (2004:410).

Ioimo and Aronson (2004) did not find significant evidence that MDT improved field officers' productivity. There were, however, findings to suggest that field computing did increase the productivity of other employees within the department. The examination of the survey results indicated that "field officers recognize the potential value of field computing but that the current implementation is doing little to improve their productivity or assist them with the tasks they perform as a normal course of their jobs" (2004:425).

According to Manning (2008), Comparative Statistics, or Compstat, was developed by the New York City Police Department and replicated in cities across the United States. Compstat is used to create a database that can analyze information about crime patterns. Weisburd et al. (2003) examined the diffusion of Compstat programs and the varied uses of Compstat models throughout the United States. Their analysis also assessed the use of Compstat for various levels of problem solving across police departments in the United States. Data for the study were collected through a mail survey sent by the Police Foundation to American police agencies. The mail survey was sent to 598 agencies with over 100 sworn police officers and to 100 agencies with 50 to 99 sworn police officers. Eighty-six percent of the 698 mail surveys were returned. Weisburd et al. found that Compstat was endorsed by at least one-third of the departments included in the survey. Several more of the departments were planning to implement a program similar to Compstat in the future.

According to Weisburd et al. (2003), Compstat fits well with the paramilitary elements of policing. They argue that this is one reason why this technology has spread so widely across the nation. Compstat is a tool used "to empower police organization by

harnessing the hierarchy to achieve top management's objectives" (2003:447). Consistent with this view, Weisburd et al. posit that Compstat may be used as much for reinforcing the bureaucratic controls of a police organization, as for reforming modern policing.

Another technology that has become more common in modern policing is the in-car video camera (ICV). According to Bartollas and Hahn (1999), in-car video cameras typically are mounted above the dash of police cars and automatically begin recording when an officer turns on the vehicle emergency lights. The video camera "records everything that is taking place in front of the patrol car, or the camera can be swiveled to record a prisoner's actions in the back seat" (1999:344). In addition, Bartollas and Hahn assert that it is not uncommon for officers to wear body microphones that record conversations of the parties being video tapped.

In their analysis, Maghan, O'Reilly, and Shon (2002) examined the benefits of IVC technology and officer resistance toward this technology. Data for their study were obtained from a Chicago Police Department pilot program that evaluated the use of squad car video technology.

After reviewing data from the Chicago pilot study, Maghan et al. (2002) concluded that the benefits of ICV technology could not be ignored. Video technology "could deter abuses by officers, limit frivolous complaints against officers about alleged abuses, and help restore confidence in the fairness of police departments" (2002:39). Video cameras also provide evidence when officers are attacked or abused and ensure the humane treatment of suspects. Maghan et al. posited that ICV systems potentially add a layer of accountability and trust between police officers and the public. In contrast to

these benefits, Maghan et al. also warned that officers in the pilot study may have felt suffocated by constant surveillance in the field, which could lead to resistance to the newer technologies.

This chapter provided a review of past literature on technology and modern policing. The remaining chapters of this thesis will focus on the methodological framework used for this analysis, the research findings, and an evaluation of the research propositions.

CHAPTER 3

METHODOLOGICAL FRAMEWORK

This study evaluates changes in the amount of discretion police officers have today compared to the amount when Bittner published his articles in the 1970s. This study seeks to improve the body of literature regarding advanced information processing technologies and police discretion. This analysis also tests the applicability of neo-Fordist theory for explaining the changes in police discretion.

Data Collection

Data for the study were derived from qualitative ethnographic methods. Patrol officers and upper-level managers employed by a mid-sized police department participated in semi-structured interviews. Observational data was collected during ride-alongs with several patrol officers. In order to preserve confidentiality, I refer to the department as Middletown Police Department.

Middletown is a city in the Midwest with a population of just under 40,000 people. Residents are predominately white, non-Hispanic, with an average age of 26 years old. Middletown is also considered a "college town," as it is home to a state university. Major industries in Middletown include manufacturing, healthcare, and retail services.

The violent and property crime rates of Middletown were relatively similar to those of the state of Iowa. The violent crime rate reported in Middletown was 337.9 in 2003, 270.9 in 2006, and 395.8 in 2009. In comparison, Iowa's reported violent crime rate was 288.7 in 2003, 299.3 in 2006, and 289.4 in 2009. The property crime rate in

Middletown was 3016.3 in 2003, 2768.3 in 2006, and 1970.3 in 2009. Iowa's property crime rate was 3038.1 in 2003, 2897.0 in 2006, and 2352.7 in 2009. When compared to national data, Middletown's violent and property crime rates were lower in every year analyzed. The national violent crime rate was 475.8 in 2003, 480.6 in 2006, and 429.4 in 2009. The national property crime rate was 3591.2 in 2003, 3357.7 in 2006, and 3036.1 in 2009 (Iowa Department of Public Safety, 2011a, 2011b, 2011c; U.S. Department of Justice, 2010a, 2010b, 2010c).

Middletown Police Department has 42 sworn patrol officers. Other staff members include three civilian employees, eight community service officers, and 19 reserve officers. The patrol unit's primary functions are traffic direction and control, traffic enforcement, preventive patrol, accident investigations, and communications.

In preparation for my in-depth interviews, I went on eight ride-alongs. Each ride-along ranged from four to six hours in length. Two of my ride-alongs took place on first shift. The other six ride-alongs were split evenly between second and third shift. The two first shift ride-alongs, one second shift, and one third shift ride-along took place during week days. The remaining four ride-alongs took place during weekends. The ride-alongs gave me the opportunity to see how the advanced information processing technologies were used in the field. I took detailed notes of my experience after each ride-along. I interviewed eight patrol officers and four police administrators. All four of the police administrators were also sworn patrol officers with several years of patrol experience. I obtained a list of full-time sworn patrol officers to select possible participants. I randomly selected the 12 officers and administrators from the list by using a randomly selected

number as N. Every Nth person from the list was selected until I generated a list of 12 officers and administrators. I contacted each officer to setup an interview time that took place when they were off-duty. The participants ranged in age and years of experience. Four of the officers interviewed had been working at the department between two and five years and were under the age of 35. Three of the officers had between five and 10 years of experience and were between 25 and 40 years old. Five officers had 15 years or more experience in policing and were 30 years of age or older.

The interviews were semi-structured, which means they had an open-ended quality. A list of discussion topics was used to help guide the interviews. All participants were asked questions about the role technology plays in policing, what the advantages and disadvantages of the technologies were, and how helpful the technologies were in the field. Topics discussed with police administrators included the usefulness of information gathered by the technologies and how the information affected policies and procedures. On average, the interviews lasted 45 minutes. Each interview was recorded and transcribed verbatim. Also, to protect their confidentiality, every officer was assigned a pseudonym during the transcription process. To further protect confidentiality, I do not distinguish participant's rank within the department. For example, upper-level managers are all referred to as police administrators opposed to referencing their specific titles.

Data Analysis

A narrative analysis was administered to examine the data. According to Riessman (2005), there are several narrative analysis models. The method used in this study relied upon the thematic narrative analysis. A thematic analysis emphasizes the

content of the interviewee's stories rather than how the content is being delivered. I used a narrative analysis for three reasons. One, a narrative analysis is an effective method for organizing officers' accounts of the role technology plays in policing. Two, a narrative analysis is designed for data collected from in-depth interviewing. Three, this approach is appropriate for the utilization of a cross-coding method to examine themes across all the narratives of my research participants. Cross-coding assesses the officer's responses to each topic. I developed a cross-coding table with a list of each officer on one axis and individual topic areas on the other axis. This approach enabled me to determine the consistency and saliency of each theme that emerged in the interview data.

CHAPTER 4

FINDINGS

This analysis evaluates three research propositions. First, advanced information processing technologies used in municipal law enforcement enable policing managers to more easily collect and analyze large amounts of information. Second, the information acquired from these same technologies is used to create and/or modify bureaucratic rules regarding police work. Third, this combination of technological and bureaucratic processes has led to a reduction of police officers' discretion.

In this chapter, I present the themes and exceptions to those themes that emerged in my analysis of the narratives provided by research participants. As discussed in my methodology section, 12 law enforcement officers and upper-level managers were interviewed to supply the data for this project. In preparation for my in-depth interviews, I participated in several police officer ride-alongs to familiarize myself with the advanced information processing technologies officers are equipped with and how they are used. The technologies used at Middletown Police Department include surveillance; body microphones, in-car video cameras, and lapel cameras; TRACKS, a data-collection and report writing system; tasers; cell phones and mobile data terminals (MDT). Despite the growing presence of global positioning systems in policing, GPS technology is not used by the Middletown Police Department at this time. These technologies are used to rapidly collect information from the field. The following discussion reveals support for the first

proposition that advanced information processing technologies used in municipal law enforcement enable policing managers to easily collect and analyze large amounts of information.

The MDT is the hardware that is used by Middletown Police Department's data-collection software. Essentially, most of the report functions officers previously completed at the station can now be done in their squad cars. For example, internet searches and e-mail can be done through the MDT. Also, the MDT is equipped with an in-car printer that prints citations and other information for citizens involved in traffic accidents.

Several other benefits of the MDT are accessible through the Middletown Police Department TRACKS data-collection system. TRACKS is a click-box computer program that prompts officers to input certain information for dispatched calls, traffic stops and accident reports. At the end of each incident report, there is room for a short narrative to further explain the details of an accident. The TRACKS system records all response times. Officers input the time that calls are received, when they arrive on the scene, and when they have finished with the incident. Through TRACKS, officers can also access tow vehicle inventory reports, write citations, look up vehicle registrations, access an individuals' arrest history, and access a local business directory, for example. TRACKS is used for intra-department communication as well. Police administrators are able to constantly monitor officers' field locations and send instant messages from the station to officers on patrol. Finally, TRACKS is equipped with a crime-mapping tool that upper-level managers use to identify crime patterns.

Surveillance technologies play an essential role at Middletown Police Department. Every squad car in the department is equipped with an in-car camera. These cameras automatically begin recording when an officer initiates the overhead lights. The camera can also be turned on manually by the officer in the car, or by turning on the body transmitter, when he/she is away from their squad car. The camera actually starts recording the 30 seconds prior to initiation, which helps to record what occurred just prior to an officer's decision to engage the overhead lights. The video from the in-car camera and the audio from the body transmitter are integrated. A microphone is also included inside the patrol vehicle.

Lapel cameras are relatively new to Middletown Police Department. Three cameras, which are cordless and wireless are being used on a trial basis, and are mainly utilized by the second and third shift officers. Unlike the in-car camera, lapel cameras are able to record video and sound of an incident regardless of the officer's proximity to their squad car.

The cell phone is another technology used by Middletown Police Department. Cell phones are not mandatory equipment for patrol officers, but most officers use their personal cell phone for communication. Almost all the officers choose to use their personal cell phone for police work. The primary use for cell phones in the field is to communicate with fellow officers and communicate with supervisors. Officers use their cell phone to discuss incidents with one another for two primary reasons. First, it frees up their radio. Second, the media and citizens sometimes listen to police scanners. Cell phones enable greater privacy when officers communicate with each other and with

headquarters. Also, officers may use their cell phone to call a business or a citizen regarding a case they are working on. By using their cell phone, they do not have to return to the station for a phone connection. Also, cell phones have information-gathering capabilities. Police administrators are in real-time contact with officers through this device.

Another information-collecting technology used by Middletown Police Department is the taser. The taser is a less than lethal weapon primarily used to reduce the potential for injury during arrests. All officers are required to carry the taser during their shift. Each taser has a time/date stamp for when it was used and how long it was used.

The information gathered by these technologies is centralized within a database managed by Middletown Police Department information technology professionals and police administrators. Data on response times, officer status in the field, and incident reports are updated to the central database within the department periodically throughout each shift. This is possible through officers' MDTs, which are networked directly to the departments' central computer system.

The information recorded from the in-car camera and audio transmitter is wirelessly downloaded to the database within the department. The transmission automatically occurs every time an officer parks at the station or fuels their squad car. The lapel cameras have a memory card that saves the digital video and audio recording, which the officer downloads at the end of their shift. Like the lapel camera, the time/date stamp inserted in the taser is also downloaded at the end of each shift. Information

technology professionals manage the information from the memory cards on the department's central database. Also, the communication technologies such as e-mail, the TRACKS instant message feature, and cell phones are used for real-time information collection. Police administrators can contact officers in the field at any time to obtain incident information or an officer's location. Furthermore, police administrators can potentially obtain a record of past e-mails, officers' chat log, and cell phone activity.

The information-technology professionals also organize the information into formats appropriate for managerial use, enabling police administrators to directly extract specific data by running individual queries. For example, a police administrator can run an analysis to view patrol officer response times for service calls in the last month. Also, police administrators can access all incident reports of patrol officers and look for trends and exceptions to those trends. Police administrators can also receive a digital copy of any video and audio data file related to questionable incidents. That information can be used for training purposes or to hold officers accountable to specific patrol orders and department procedures. Essentially, this information can be used to monitor patrol officers' performance in the field and to hold officers accountable to bureaucratic policies and procedures.

During the ride-alongs, officers were encouraged to discuss their personal views about their basic duties. Several of the officers described the duties of patrol work as being random with each day differing slightly. Almost all the officers agreed that responding to incident calls was their primary duty. Typical incidents include car accidents, bar fights, and cases of domestic violence. Other patrol duties include

monitoring traffic, parking enforcement, business checks (walking in the mall, for example), and the overall promotion of public safety. Although the department has an investigative unit, patrol officers frequently assist with investigations work, which can include interviewing victims, witnesses and suspects as well as collecting and presenting evidence. Patrol officers routinely provide testimony in criminal court trials. Patrol officers also engage in ancillary tasks such as ensuring vehicles and equipment are properly maintained.

My analysis of the interview data revealed five primary themes: (1) the role and perceived advantages of technology used by MPD officers; (2) the evolution of technology over time; (3) the perceived disadvantages of technologies used by the MPD; (4) how the information gathered is used to modify bureaucratic rules; (5) the reduction of police discretion.

The Role and Perceived Advantages of Technology

Overall, the patrol officers view technology as playing a significant role in policing. Over half of the interviewed officers have been on patrol 10 years or less, and therefore have not experienced policing without the assistance of advanced information processing technologies. Most officers believed that newer technologies have made their duties and responsibilities easier to accomplish.

Officers Becker and Smith described how having an in-car computer makes keeping track of vital information easier:

> Before the computer, officers would write down all the information received from the dispatcher. Now, with calls sent straight to the in-car computer, the officer can see all the information right in front of him. (Becker)

> Everything used to be done over the radio, so you would have to remember the address, names of people and why you were going to the address all in your head, while you were also trying to navigate through traffic and reach the location of the incident. More than likely you would have had to recheck with dispatch once or twice, which is hard with a lot of radio traffic. Now, dispatch sends the call straight to the in-car computer. It is great. If I need more info, I still don't need the radio; I can just get dispatch to send me an instant message. I don't know how I would work without the computer. I can do traffic and warrant checks right on my computer, too. (Smith)

Officers Turner and James believe that the mobile data computer is an officers' lifeline throughout the day:

> All of the information [for an incident] is sent right to our computer from dispatch. This gives us less to remember when we are in a hurry. (Turner)

> I use it all the time. Everything that I can do at the station, I can do in the car. I don't really like coming into the station; I like staying out in the car. I can type my reports in there, I can get the internet, and I do my citations on the computer. The citations on the computer have happened within this last year. I don't have to go into the station anymore. I can park anywhere, monitor traffic while doing my paperwork, it's great. There is also a "green effect" of these technologies. For example, officers use much less paper for accident and incident reports, and more citations are completed on the computer, which saves paper as well. (James)

The TRACKS system, which runs on the MDT, has major advantages as well, according to the officers. Officers Becker and Turner explain:

> Before this program, accident reports were really time-consuming. Now, a lot of the generic information is already filled in. You only have to modify

> the information you need to change. You don't have to memorize the codes, it is all right there. It also has diagram options so we don't have to draw the scene of the accident. Between symbols, stop signs, one ways and a narrative section, for example, we are able to accurately depict what happened. (Becker)

> We can check vehicle registration, driver license status, for example. I do all my traffic citations on the computer through TRACKS. With TRACKS, we can do accident reports or pull up a tow vehicle inventory report. If we were to make an arrest or someone reports damage to property, we do it in the incident reporting window in the TRACKS software. Supervisors are trying to get away from having so much paper. They like us to do them [the reports] on the computer. Electronic tickets make it a little easier for records people. (Turner)

The TRACKS system helps with communication, too. Officer Reed explains:

> We can instant message each other or e-mail each other. We can see the location and the call number of other officers, as well.

Almost all the officers interviewed described benefits of these technologies. According to Officer Becker, surveillance technologies help officers obtain more proof of crimes being committed:

> The camera is always recording but erases until you turn the lights on. Once the lights turn on, the camera saves, starting with the 30 seconds prior to initiation. This is a great feature for court.

Several of the officers gave positive feedback about the loop recording feature of the in-car surveillance technology described by Officer Becker. For example, Officer Skelly discussed the role surveillance technology plays in policing:

> The video in the cars are great. Most incidents, especially with OWIs, we always use the video. Our video and our transmitter records everything outside of the car. Every time we flip the lights on, the camera comes on. We can activate the camera and transmitter from a button in the car or on our person on the transmitter device itself. If you are going up to a house, your camera will not catch what is happening, but just push the button on the transmitter and the microphone will catch most of what you say. The

> body camera can be used in this instance as well. The department has two that are in trial stages, but I think we will get more of them down the road. Surveillance records help when cases go to court. Juries like to see the video. Courts want us to have things recorded and so do our supervisors. At one time, an officer's word was good enough, but it is not like that anymore.

Officer Turner agrees with many of his colleagues on the usefulness of surveillance technologies. These technologies help officers to complete their reports with more accuracy:

> With the video camera and body transmitter, I think it is very helpful. It turns on automatically when we make a traffic stop. If we are talking to someone away from our car, we can turn it on manually. It helps for court purposes. People are not honest in court, so I can rely on my recording. The video speaks more to juries, when they see the offender during an OWI test or something. It has helped me with writing reports; I can look back at the tape. My reports are more detailed. We don't have to rely so heavily on memory of what has happened at a certain incident.

Officer Phelps affirmed the benefits of surveillance technologies, indicating that these technologies can help protect officers against false claims:

> Take the camera and microphone transmitter, for example. The video and transmitter are streamed together. Those are wonderful to an extent because citizens are known to complain about a traffic ticket or officer conduct. When you have it on audio, video or both, it really helps to see whether that officer was out of line or not. Most of the time, the video shows the officer doing his or her job correctly. It can offer protection to the officer.

Officer Reed asserted that overall the role of technology in policing was to help improve response times:

> We have more information readily available, which saves time. I don't have to be parked on the side of the road writing everything down that comes across dispatch. Officers can see the details of a call on the computer screen while they are driving to the scene.

Police Administrators Walker and Schultz discussed several benefits of technology used at Middletown Police Department:

> The technology for me as a supervisor has been a huge asset to streamlining my duties. Probably the biggest things for me to use day to day is the car-camera system. It records incidents for court and legal purposes. If there was an OWI [for example], nothing helps more than a jury being able to see how intoxicated someone is. It speaks much louder than words. It is not uncommon for citizens to come down and make accusations against officers; "the officer that pulled me over was rude and belligerent." We sit down with the citizen and view the video together. Most times the citizen says, "You are right, I was just upset about receiving a ticket." We used to have to take each complaint down and investigate them. We still do that sometimes, but the video documentation prevents a lot of this. (Walker)

> The duties we used to have to come to the station to do, we don't have to do that anymore. Accident reports, incident reports. I can now sit at a busy intersection and complete these reports in my car. I can provide that presence in the field and do enforcement at the same time. This increases productivity, less time inside the PD, more visibility. It all comes back to security. When people see the police, there is a security feeling. We want people to feel safe in their communities. The fear of crime, whether it is valid fear or not, is just as significant as the actual presence of crime. You have to reduce crime and the feeling that crime is present in a neighborhood. The media coverage can prevent people from feeling safe. If one or two violent homicides get a lot of media attention, it can increase fears. Providing a presence on the streets has benefit and value to the community. These technologies help us to provide that. An increase person's feeling of security. (Schultz)

The cost benefit of newer technologies was an advantage described by Police Administrator Scott:

> One question I always ask myself is whether the technology helps us to do our job better; can it help us be more efficient? If a 10,000 dollar device can do the work of two people, it is clearly cost effective. So you think about those kinds of things. Car-computers are somewhat expensive, but they are very functional. I remember when I first started working at the police department: if you wanted to check a license plate, you had to call it in. If you wanted to check a driver's license, you had to call it in. You

> received all the information from dispatch. You had a yellow pad and that is where you would write down all the information, while trying to drive and talk on the radio. Now, it all pops up on the screen in front of you. It provides information, stays on the screen so you don't forget it, and you can focus more on the driving. I remember when we were first getting the computers. At the time, my superior was describing how the increase of hits was because officers are able to run more plates. Before the computer, there were times that I would not even call stuff in, because there was such a backload on the radio. So we have more productivity now.

The Evolution of Technology Over Time

When discussing the evolution of technology in policing, the officers generally focused on the technologies as a whole, and only specified specific technologies when giving examples. Almost all the officers were in agreement that the technologies used in policing are improving with time:

> The technologies are always getting more useable. They are updating and upgrading our technologies all the time. We started with a boxy camcorder that was mounted on the windshield. Over the years the surveillance technologies improved. Now we have smaller, more powerful digital cameras. These changes are for the better. (Patten)

> Take the user friendliness of digital verses tape surveillance records, for example. The digital log opposed to stored tape makes it much easier to go back and review an incident. The MDT has improved as well. It is smaller and more versatile. We can now pull it out of the car and take it into the hospital to type a statement after an accident, for example. This is a very usable feature. (Smith)

According to the officers, TRACKS, the data-collection system, has become more useful overtime but still has flaws. Several of the officers explained that when TRACKS first was used on the mobile data terminals, it was not user friendly at all. Some of the officers were openly opposed to having to use TRACKS because they did not find it to be

very efficient. There was agreement among the officers that TRACKS will be much easier to use even five years from now. Officer Smith described how TRACKS will evolve in user-friendliness:

> It takes so long to do a report. To check the boxes and type it all in takes forever. It is nice for supervisors, and the people in records or the people in Des Moines, but not for us. Before, the records clerks typed this in, but now they just have to look at it and scan it. When we get swamped with cases, I wish it would just take less time.

Most officers agreed that technology will only play more of a role in Middletown policing in the future. Officer Patten's view was that technologies like video recording devices will become even more prevalent:

> One thing that might be coming down the road is the video camera that is on our lapel. It runs off of a USB drive; plug it into the computer to upload anything. The officers on third shift uses these quite a bit when they are doing bar checks. I have not used it yet. From what I have heard, it makes it a lot easier if you are writing a citation for a minor possessing alcohol or misuse of an ID. A judge or jury can see the conversation happening rather than the officer just writing notes down of what happened. You get a video of them drinking. It all helps. I think it would be a good idea to have more of these cameras but they are expensive. Plus, where it sits on the body it is a little awkward. They are still in a trial stage.

Police administrators mostly agreed that advanced information processing technologies are beneficial to the MPD. Police Administrator James recalled that when he started his career, the major piece of technology was a computer housed in the station to type reports:

> Technology has come a long way since then. The internet really blew things up a lot, as far as being able to research and look things up. Newer programs developed for report writing and information gathering have been a major advantage because they simplify report writing and save time.

Police Administrator Schultz described how technology has evolved to the point where it is standard equipment that is essential to Middletown Police Department. Over the years, a younger, more educated force has been better able to embrace the evolution of technology within the department and use it to its full potential:

> The single biggest reason why the computers are more used now than when they first were put in the cars is because of the turnover of police officers. When I started, we had officers in their 50s who went through high school in the 60s and 70s and they were computer illiterate. 50 year olds are just not as likely to accept computers. Now officers coming out of high school and college are more computer savvy. Computers are part of police patrol culture now. Education comes with computer skills now. Some of our older retires or officers who are about to retire can struggle with these new technologies. If it is mandatory equipment like digital in-car cameras, they have to learn it. There is no option about it, it is policy. If you are on patrol you are using your camera. We search for companies that have user-friendly technologies. Body microphones for example, there are many options, and we choose one that you just "push a button." Very simple. We also take the time to train and educate each officer on how to use these new technologies. The Vietnam-era officers are retired now. That has made a difference in the use of these technologies. Not being willing to adapt and learn is not an option for modern police officers. You have to use the technology and we will spend whatever time it takes for you to get used to it and get good at it. There are some resistances sometimes, and we are not surprised by that.

Police Administrator Scott described the critical thinking process he goes through when purchasing technologies. He used the lapel camera as an example:

> There are several models of body cameras out there; I look for the one that will be easiest to use, even if it costs a little more. The ones we have now, that are in the trial phase, have a sliding mechanism. Slide it open it turns on, slide it shut it turns off, very easy to use.

The Perceived Disadvantages of Technology

Officers' views about the disadvantages of the advanced information processing technologies included the following concerns: overreliance on these technologies,

constantly being monitored, technology malfunctions, the distraction of the technology, issues specifically with TRACKS, and the cost and training of new technologies. My analysis revealed that several officers believe there is an overreliance on surveillance technologies, specifically by supervisors and members of court. Officers Phelps, Reed and Hanson described this:

> It is now to a point where reports need to be very detailed. If it is not in the report, then it did not happen. Officers are starting to think if it is not on camera or audio feed, it did not really happen. But in reality, it is impossible to record everything. Let's say that the officer obtains both stories of the incident by the husband and wife on his transmitter. If they both agree to calm down for the night, and the officer shuts off the microphone, a watch commander or attorney may ask, "Well, why did you turn your audio off? What were you saying?" They think you are hiding something. They would try to blame the officer for cutting off the recording. (Phelps)

> We can rely too much on the technologies. We can forget the basics of policing. I love being able to figure out where everyone is just by looking at my computer. But, unlike the computer, the radio always works; I should be listening to my radio more. So, I guess a disadvantage is just being too dependent on the technologies because when they do not work, we are in trouble. (Reed)

> The courts are almost expecting video anymore. If you don't have the video, they question your credibility. Where before [surveillance] technologies, it was the officer's word against the citizen's word. Yeah, courts and lawyers all expect video anymore. (Hanson)

Officer Hanson, a veteran with many years of experience, remembered seeing only disadvantages when new technologies were first implemented. He also was worried about being recorded:

> I had initial hesitation of the technologies. Why are they doing this? Are they going to watch me do my job? Why have this camera? [However,] I can't do much about it now, though. Every car has it now. That is just the way it is.

Officers Becker and Turner affirmed this point of constantly being monitored:

> The idea of being constantly recorded can at first make you nervous. The eyes can feel heavy on you. At first I was not that relaxed when I was first training. We just focus on doing our job and focus on why we are out there. I just had to remember that the camera is there for evidence collection to document what is going down. And it is for our protection. It is not there to monitor me. (Becker)

> Personally, I don't see it [surveillance] as a disadvantage. In general, a part of our job is to remain professional so you have to be careful about what you say and how you react to things. If there is audio or video of the incident, you could be held responsible for what you say. (Turner)

Another perceived disadvantage revealed in my analysis were problems caused by malfunctions. Officer Turner described how productivity and information gathering virtually stops when the technologies are not working:

> When the technology does not work, it can be a pain. It takes time to have someone come into the station and fix our computer system, or if the printer in our car breaks down. Sometimes we have to ask citizens to come to the station to pick up paper work if we cannot give them the paperwork at the scene of the incident.

Some officers also explained concerns about the distractions related to the new technologies. Officers Becker, Skelly and Reed described feeling distracted when using these technologies:

> Using the computer while trying to drive can get to be a lot at once. We are trained to be distracted while we work, but still. (Becker)
>
> The computer can be a major distraction. If you are driving and looking at the computer, you have to be safe. If you are watching suspects during a traffic stop, it is just another place to keep your eyes. Safety is so important, you don't know if the person you stopped has a gun or what, so when you are looking at the computer, you just have to be careful. (Skelly)
>
> The computer is less useful when we are driving because you have to look around it. I try to keep it closed so the screen is not in my line of view. I can't use it when it is closed, though. (Reed)

Although Officer Patten did not believe the technologies had any significant disadvantages, he also mentioned the point of distraction:

> One disadvantage would be using these technologies while multitasking. We have a lot going on. Instead of typing something in, we need a voice recognition device system. [When trying to think about] where certain switches are and what button to push, [the technology] gets awkward. This happens while we are driving and talking on the radio and everything else. But I don't see too many drawbacks. I would like more hands free, voice activated stuff, though. The other thing is the MDT is distracting. We are trying to read remarks from calls; you have to watch the street, and the computer screen can block our view. I usually keep it closed while driving. [The technologies are] a lot safer to use while you are in park.

The TRACKS data-collection system has disadvantages as well. In Officer Hanson's view, the system has too many flaws to be effective:

> I don't like TRACKS at all. We are required to follow set forms. When you do an incident report, there are way too many boxes you have to fill in that are not relevant half the time. You are following a standard set by the state. It was easier when we were able to just write out the reports. In the old the days we would mainly write out accident reports. Now, you enter it

> into the computer. If they [the citizens involved in the incident] don't have [the right] documents to scan, we have to do more work. People don't have all their information, so you have to type stuff in, print it out, and then re-type it in, [for example].

Police Administrators Walker and Schultz described the department's overreliance on technologies as a disadvantage:

> The camera or transmitter does not always pick every detail up. If a jury is watching a video recording, as soon as the officer and citizen walk out of view, there are all types of questions from the jury. The camera is stationary, so when it does not catch something, the officer's word is not very credible, unfortunately. When technology does not work, it is unthinkable. People on the jury may think, "My cell phone works all the time, why does your camera not work all the time?" We have become really reliant on these technologies to the point it calls into question the credibility of the officer. Technology has become expected in law enforcement, and I even expect it of my officers. (Walker)

> We become over reliant on them. When the technology goes down it screws everything up. For example, power outage, a flood or just human error. Operations get backed up when technology goes down. We are less functional when technology goes down; [it is something] we are working on. We are looking into better backup systems. It hinders our ability to do our job. (Schultz)

Police Administrator Schultz pointed out disadvantages in MPD's surveillance technologies, as well:

> The biggest disadvantage I can see to the in-car videos is this. We talk [about the portrayal of criminal justice in the] media, criminal justice education, and about the importance of video. It has gotten to the point that people expect it. Now, if the video is not there, it is like we cannot get our point across. For example, juries now expect video. If the video is not there, we have a very difficult time getting a conviction. Where in years past, there was never any video and the officer's word meant a little bit more than it does not now. There can be a number of different reasons why there is no video. Maybe it is broke down, mechanical problems, technical problems. We need all of our squad cars, we try to avoid using the cars with video down, but sometimes we have to [use a car that does not have a working camera]. A part of using video is that you have to

> educate the courtroom on the use of video and the limitations of video. People automatically assume there is video, and if there is not, then the officers are in the wrong. We have to say, "This is how the video system works; if X, Y, and Z happen, we are not going to have video." There is a CSI mentality. The technology in these shows is beyond realistic.

The final disadvantage of advanced information processing technologies was the training and cost of the technologies. Police Administrator Walker discussed constant training as a disadvantage of newer technologies:

> It is very easy to teach the younger generation these technologies. Senior officers, some who have been here for 20 years, won't issue a citation on a computer because they have always done it on paper. They are not going to change. They tried to force older officers to issue tickets on computer. But then, the officer just didn't issue citations. How do you get the senior officers into the computer without forcing the technology on them? The older officers do not like to be disrupted by technology. When the paper jams or something does not work, the older officers are less patient. Wide-range of ages needs to be looked at before the next big thing of technology comes. Sometimes not all the bugs are worked out before the officers have it in their car to use. Technology was forced down the throat of older officers in this department. It just did not go over well. As an administrator, I was learning new technology and mentoring guys who have been here longer than me.

Police Administrator Olson described the cost of newer technologies as a disadvantage:

> We have to rely on grant money and city budgets. I have to do a cost-benefit analysis before I even considering buying a new piece of technology for the department.

How the Information Gathered from Newer Technology Augments Policy

My analysis revealed that the patrol officers were somewhat split on their opinions about the use of information gathered by advanced information processing technologies. Several of the officers did describe incidents of policy and procedure

change that could have come from the information gathered by advanced information processing technologies. However, a few officers described not knowing if the information gathered affected policies and procedures. Police administrators described policy and procedural changes in greater detail.

Officer Phelps described how the information gathered from advanced information processing technologies change the type of information recorded by officers:

> Over the time I have been here, the details we need to log for an incident have changed slightly. Newer programs call for more details to be entered. At one time, if an officer were to pull someone over for a break light that was out, he/she would just write on the report "break light out." Well, if the person calls in and says, "My break light is working," the supervisor has to be able to look up the details of the report to see what the officer did during that accident. So, the officer now writes in the report "the left, rear, blinker is out." More details are necessary. This is because the public deals with police administrators. Sergeants or lieutenants looks up the incident and looks at officer remarks. The sergeant needs to be able to see the remarks to effectively deal with the public.

Officer Reed discussed how police administrators use advanced information processing technologies to stay in communication with officers in the field:

> Supervisors watch their computers. If my supervisor sees I am out by a gravel road near the time bars are closing, he will wonder what is going on. The information does get reviewed.

Officer Becker described the changes in behavioral policies due to the information gathered by the newer technologies:

> Some of the older officers don't like it. They are a little resistant to change. We have the policies to protect everyone, though. Take the camera, for example. We are trained to have the camera on as much as possible, but policy does not say we have to. It says "you shall" as far as I know. It is much different than it used to be, though; you don't do your job without your camera.

Incident reports created in TRACKS are used by police administrators to modify future patrol procedures so that officers are deployed efficiently in the field. Officers Becker and Skelly described this happening at Middletown Police Department:

> When we have a briefing, we talk about high volume areas for accidents or speeders. The supervisors review numbers and stats to see where the busier areas are. They receive reports from citizens too. Last year, we had a high level of car burglaries. We started putting needles in mats to see where these crimes were taking place. (Becker)

> TRACKS records the location and times of all past incidents. Supervisors want to know this stuff. If a burglar gets away, and we are keeping track of our times, we can gauge how long a criminal has been at large. Supervisors can print out a map and show you where the last 10 burglaries were in the last three weeks. Then they tell you where the criminals had not hit already and we ended up catching them that way. (Skelly)

Officers Turner and Patten described informal communication policy changes due to information processing technologies:

> I use the instant message system on the computer. I don't use the e-mail a whole lot, but sometimes. When you don't want to say something over the radio, we can use the email. I do use my cell phone too. If you are not close to your car to get to your computer, you can use your cell phone. I primarily use my cell phone to contact my supervisor if I know they are in the office. If it is a simple question with a yes or no response, I will use the radio. We don't always want to tie up the radio if someone else needs it. My supervisors will contact me through my cell phone too. It is our personal cell phone, but most of us have unlimited minutes. (Turner)

> We can instant message back and forth. It helps with all the scanners out there. It is easy to type a quick message over to the person. Dispatch can send us a phone number over the system. It frees up the radio traffic. We use our cell phones too. I will call the community service officer or my supervisor. We don't have to use the phones but sometimes our supervisor will call us on them. I mainly communicate to the supervisor through cell phone or stopping by the station. (Patten)

Also, Officer Patten described how the usefulness of information gathered by surveillance technology will lead to more information processing technologies:

> Newer technology is always coming. For example, there is a camera that scans licenses plate's numbers of close cars automatically. We would not even have to touch a button and it would upload on our computer screen. Bigger city departments use this for parking enforcement. As they drive down the street, the camera will check how many parking tickets cars have. After the camera scans a plate and says how much the owner owes on parking tickets, they can turn back around and tow the vehicle. It is too soon for that in this area; we are too small.

Police Administrator James described how the information gathered from these technologies has changed privacy and taser policies:

> Since we can get to information a lot quicker, privacy policies have changed a lot. We have access to a lot of sensitive information, so we need to be aware of that.
>
> We use the taser more effectively now than we did when we first started carrying it. First, the public thought we would just use a taser for everything. It is a controversial piece of equipment. The public feared we were going to be tasing everyone. It didn't happen, though, because our policies and procedures adapted as we used it.

The status monitor is a tool that can be used to influence policies and procedures. Police Administrator Walker has used the information gathered by technologies to modify standard procedure depending on the characteristics of an incident:

> My computer gives me real-time log of where officers are. I like to know where they are at all the time. What are they out on and what are they doing, and do they need help? I can see calls that are waiting, and arrange them from low to high-level calls. Dispatch sends the calls to the officers. However, I will tell which officer to go where. I want to get a high-level call out first. I will tell dispatch to send these two officers out on one call opposed to another because I understand the details of the call.

Police Administrator Schultz discussed how the information gathered by surveillance technologies is used as a training tool to alter procedures or help officers follow policies and procedures more carefully:

> It helps improve tactics in the field. Supervisors review the videos of young officers. I see mistakes that could have got the officer hurt, or they did not provide the service they should have. It is a matter of being a rookie. I sit down with the officers and we look at the video together. I say to them, "This is what you did; let's think about how we can do this better." The officer can see exactly what they did. Emergency driving is the biggest liability area we deal with in law enforcement, for example. I review these videos. I review video where there are driving lights and sirens. And I correct people. "You should not do that, you were going too fast. This intersection you should have done this, not that." It has improved the safety of officers and citizens.

Police Administrator Scott discussed how the information from surveillance technologies assists with observing officer demeanor and training, and how information gathered from TRACKS can be used for crime mapping:

> Officers are seeing themselves regularly, and they can see how they come across. It is a natural improving ground for everyone. "I was a little grouchy with that guy." "I need to watch my attitude." I have found that from when I first started until years after when we have had the video, the officer's behavior is much better. Officers are more patient, better at treating people with respect. Behavior is better with video. Supervisors watch video. Certain videos I watch. Pursuit, I get a copy, certain activities, I get a copy. I see what is going on out there. I say, "Yeah we are doing well," or "Oh, we are getting a little scary, we need to talk about this a bit." How the officer portrays himself does still matter. Confidence of the officer in court matters, too. The video helps the credibility because it affirms the words of the police officer. It has not hurt officer credibility.

Police Administrator Scott also explained that the TRACKS system has a useful crime-mapping feature and is a useable database for extracting crime history like traffic stop history and history of a specific location. TRACKS also makes it easier to view past incidents, which help officers to be more efficient:

> I can get maps from TRACKS. I can pull up any intersection and see how many accidents have happened there. Police administrators can obtain a report, tell how many accidents, what the cause was, what time of year and weather elements. I can get all that information very quickly. We can do that with burglaries too. "How many were there and where were they at?" [It is] better than getting a list of burglaries and paging through it. [It] gives us much more information that I was not able to obtain in the past. In our department, we are a smaller community so I mean we know where our problems are. We do use it with car burglaries. Last summer we had a group walking around looking for unlocked vehicles. We ran the crime-mapping tool; we found the parts of towns they were really hitting. From the information provided by TRACKS, we decided they were on foot and their home was in the area. So it helped us to pinpoint the criminals a little bit. Put the crime in a smaller geographic area. It is software that we know will be way better in 5 years, but it still is a heck of a lot better than what we had 5 years ago.
>
> We capture a lot of information. When we make traffic stops, all the information is held on the computer. If an officer is like, "I am looking for a blue Chevy." Now, an investigator can go to the computer and search for blue Chevys stopped in the last six months. We can search for a lot of specific information. We can see how many times we have been to a residence, and if there had ever been a weapon present, for example.

The Reduction of Police Discretion

The interview data revealed that the combination of technologies that are able to collect large amounts of information and the use of that information to create and modify policies and procedures has led to the reduction of police officer discretion. Both patrol officers and police administrators implied that new technologies have led to reductions in

police discretion. Officer Patten discussed how newer communication methods like e-mail and instant messaging, through the MDT, has enabled police administrators to direct patrol units more effectively in high-intensity incidents:

> We can instant message with other officers or the supervisor. The supervisor can e-mail or instant message any officer no matter where they are in the field. If the supervisor wants all officers to know something right away, they can send a mass e-mail that all officers are supposed to respond to. Officers are to respond accordingly.

Several officers described the surveillance technologies such as the in-car camera and body transmitter as technologies that can affect officer's behavior in the field:

> It may not be an official policy, but it is strongly suggested that our camera is on during every traffic stop, you don't flip your camera off. If we are going to an emergency call, our video should be on in case we get in an accident or a car pulls out and hits us. These technologies are provided to us and we are suggested to use it. Trainers [at the academy] and supervisor encourage it. They expect us to use what is available to us. If I were to get into an accident, I better have it on. (Patten)

> There are times when you don't really want to be recorded, but it helps you, it is always in the back of your mind, so it will help you keep your professionalism in check. There are times when someone really gets under your skin, but you have to remember this is a job and you have to be professional. Do your job, but don't let it get personal. (Turner)

> Supervisors strongly encourage us to have our transmitter on when we are out in public. The recording does take up space, so if you are just walking the mall, you don't need it on, but they like it on when you are encountering someone. If something happens and you don't have it on, your supervisor will ask why. [Take OWIs for example,] the court asks, "If it was not on camera, was it really said?" I know it is on. I am careful of what I say. (Smith)

> At the academy they really try to scare you about being recorded. Our instructors would say, "Remember that you are always being recorded." I'm not here to get away with anything, though. I will say the same thing if I am being recorded or not. Who knows if someone else like the citizen is or is not recording? I don't say things I would not want recorded. Officers obviously get in trouble for that kind of stuff. I try to stay professional.

> Even here at the PD, most of what is said is recorded. In Target the retail store, all things are recorded. I've got nothing to hide. You don't want to be hiding stuff or shutting off your recording. How do you explain that in court, a sudden gap in the recording? If the defendant picks up on that, they could say, "The officer said he was going to tase me to death in the gap of recording." (Reed)

Officer Reed also discussed how police administrators change patrol procedures due to information gathered by technologies:

> Our city is divided into three areas. All three areas are made into a grid. At the beginning of the shift, we are assigned a specific location of the grid. For each incident we record in the MDT, the computer remembers the area in the grid that the crime happened. This is helpful for our supervisors when dispatching us on patrol. Also, they can see where we are at due to the status monitor. We know which areas we get called to more often just from constantly patrolling. We know our busy areas.

Police Administrators Schultz and Walker discussed how improved communication methods through newer technologies have helped them monitor and direct patrol officers in real-time:

> We have always had the radio, but that is not secure. Now I can contact my officers through the mobile data terminal or by cellular phone, [for example]. I can monitor patrol units from my desk and can review reports or surveillance from a shift on my computer. (Schultz)

> I am in real-time contact with my officers discussing information that should not go out through the radio. I am accessible to my supervisor and my patrol officers are accessible to me. (Hill)

Police Administrators James and Walker both commented on the role surveillance technologies play in holding patrol officers accountable:

> Surveillance technologies help you to better do your job and not make things personal. There are times when you don't really want to be recorded, but it helps you, it is always in the back of your mind, so it will

help you keep your professionalism in check. There will always be times when someone really gets under your skin, but you have to remember that this is a job and you have to be professional. (James)

The camera helps our officers to maintain a high standard of decorum. The camera encourages officers to be even more polite and professional. My officers know they are being recorded and supervisors will review those videos. (Walker)

CHAPTER 5

DISCUSSION

By way of review, I will restate my three propositions that describe how the core tenants of neo-Fordist theory Gorton (2002) and Prechel (1994) are able to explain the changes in police discretion and refute Egon Bittner's argument (1970) that patrol officers are essentially unregulated and unrestricted in the field. First, advanced information processing technologies used in municipal law enforcement enable policing managers to easily collect and analyze large amounts of information. Second, the information acquired from these same technologies is used to create and/or modify bureaucratic rules regarding police work. Third, this combination of technological and bureaucratic processes has led to a reduction of police officers' discretion.

The findings from this analysis support the proposition that advanced information processing technologies used in municipal law enforcement enable policing managers to easily collect and analyze large amounts of information. The advanced information processing technologies, which include surveillance; TRACKS, a data-collection and software system; tasers; and mobile data terminals (MDT), rapidly centralize information.

The surveillance technologies include body microphones, in-car cameras and lapel cameras. The information obtained from the in-car video and body microphone is wirelessly uploaded to a central location each time officers arrive at the station. The lapel camera is turned in at the end of the shift and is uploaded to the computer through a USB port. The digital copy of each recording is easily accessible for review by upper-level managers of the department.

The mobile data terminal has a lot of usable features for the officer. He/she is able to look up more information without dispatch, does not have to rely so much on memory, and has access to other resources like the internet. The two primary ways upper-level managers benefit from the mobile data terminal is through communication and the TRACKS system. With the in-car computer, upper-level managers have the ability to contact officers in the field through e-mail or instant message. This is an asset over using the radio because it is a more private form of communication. Also, instant messaging is faster than radio communication, and officers don't have to worry about the volume of radio traffic. Patrol officers are more readily available to their supervisors because supervisors have more ways to communicate with them.

The findings from this analysis of MDTs correlate with the findings discussed in the literature by Albert Meehan (1998). He discovered that MDT technology made it easier for upper-level managers to monitor the work police officers are doing. For example, MDT "enables officers to send typed private messages to the station," which "can be reviewed by department administrators" (Meehan 1998:243).

TRACKS, a data-collection and software system, which is similar to Compstat, holds data including responses times, officer location, a record of citations, and all incident and accident reports. Response times are monitored regularly. Each time an officers receive a call, they input when they took the call, when they arrived, and when the incident was resolved. Upper-level managers, including city officials, view these times and augment policies when needed to improve efficiency. The police administrator can see the location of all officers in the field from his or her office computer due to a

status monitor featured on the TRACKS system. For example, if an officer is spending a lot of time out of their patrol area, the police administrator will be able to see that on his or her computer. Also, police administrators can review incident and accident reports faster and easier when they are held electronically in one location as opposed to being filed hard copies. Upper-level managers review reports for details and accuracy and can compare the report to the video of the incident. Police administrators can administer queries that look for patterns in officer's reports as well. Finally, a crime mapping tool can be used to help control crime. Officers input information about crimes that they are dispatched to, and managers use the crime mapping tool to analyze this data for patterns. Police administrators use crime pattern information to position patrol units in the field.

The analysis of Middletown's TRACKS software system is consistent with the literature discussed by Weisburd et al. (2003). Compstat is a tool used "to empower police organization by harnessing the hierarchy to achieve top management's objectives" (2003:447). Weisburd et al. posit that Compstat may be used as much for reinforcing the bureaucratic controls of a police organization as for reforming modern policing.

The taser classifies as an advanced information processing technology because it has a device that records how the taser is being used. The taser records the number of times a person is tased, the duration of each tase, and the voltage of the tase. The chip that saves the information is turned in along with a hand-written report of each taser deployment. Each officer has their own taser, and all officers are held responsible for how they use their taser.

My second proposition, which states that the information acquired from these technologies is used to create and/or modify bureaucratic rules regarding police work, is supported by my findings only to a certain extent. I cannot say it is fully supported because several of the officers had trouble describing how the information gathered from advanced information processing technologies augmented policies and procedures. Also, a couple of the officers felt like the information did not augment policies and procedures at all. However, it is possible that the information gathered by the technologies is not formally translated to bureaucratic controls because Middletown Police Department is relatively small. Police administrators do use the information to create new policies and procedures but impose the new controls informally. This may not be possible in larger departments where bureaucratic controls are more likely to be communicated in writing.

There were a couple of officers who did describe policy changes, and the police administrators definitely described the usefulness of information gathered by advanced information processing technologies to augmenting bureaucratic controls. The taser, for example, has been subject to several policy changes in its short time of use at Middletown Police Department. Police administrators use the readouts of prior incidents where the taser was deployed to augment policies to ensure that it is being used in the most humane and efficient way possible.

Upper-level managers certainly use information from advanced information processing technologies to hold officers accountable to current policies and procedures. Upper-level managers review past incident reports through TRACKS to see how officers are handling incidents in the field. Again, the idea of bureaucracy constraining patrol

officer behavior in the field is discussed in the literature by Bordua and Reiss (1966). Their study took place in the 1960s and examined in-car radio technology. One of their findings was that that a centralized radio communication system makes it possible for upper-level managers to obtain knowledge of what is happening in the field. Two-way radio communication within patrol cars enables greater "dispersion and flexibility in the allocation of patrols, while at the same time bringing the patrolman or team more nearly within the range of constant control" (1966:70).

Police administrators also review the digital videos of officer's incidents as well. When the managers observe something on these videos they do not like, they call the officer in and discuss how the officer should handle similar incidents in the future. Also, when cases go to court, officers are held accountable by the technologies because the information gathered by them can be used in court. Finally, the information gathered from these technologies helps managers see how practical current policies and procedures are.

Maghan et al.'s analysis (2002) examining how surveillance technology holds patrol officers accountable to bureaucratic processes offered similar findings. One of their conclusions was that officers could potentially feel suffocated by constant surveillance in the field. The fear of constantly being watched could lead to resistance to the newer technologies.

My final proposition that the combination of technological and bureaucratic processes has led to a reduction of police officers' discretion, is supported by my findings. Police administrators have a greater understanding of how patrol officers are

achieving their job duties in the field due to advanced information processing technologies. Simultaneously, advanced information processing technologies make patrol officers more accessible to police administrators by providing more ways for supervisors to monitor and communicate with patrol officers in the field. This combination enables upper-level managers to centralize authority and decision-making and decentralize the execution of policies and procedures for incidents that happen in the field. Patrol officers cannot use solely their personal judgment when dealing with incidents anymore. They are constrained to a limited number of options developed by police administrators that are articulated in bureaucratic processes. Finally, the information gathered from advanced information processing technologies is used to hold officers accountable in accomplishing their duties that coincide with the policies and procedures of the department. Officers' discretion is constrained because the information gathered by advanced information processing technologies can be used to verify that the options officers use to solve incidents in the field correlate with the options specified by bureaucracy. If officers defy codes of behavior conduct or use their judgment to solve problems in ways that contradict bureaucratic processes, they will have to explain their actions to their superior. This analysis suggests that Egon Bittner's argument that patrol officers generally enjoy "a wide area of unregulated decision-making" that extend beyond "the limits of necessary discretion" (Rumbaut and Bittner 1979:243) is no longer accurate.

Despite the evidence of a loss of discretion, most of the patrol officers at Middletown Police Department did not complain of this happening. Instead, patrol

officers' accounts of the role technology plays in policing focused on the benefits of the technologies. There are several potential reasons why officers accept a loss of discretion. One, the added benefits of the technologies overshadows the disadvantages of a loss of discretion. Two, patrol officers are forced to use advanced information processing technologies. Three, most of the senior officers who remember policing without these technologies have retired. The younger officers do not know policing without the dominate role of advanced information processing technologies.

The findings from this study should improve the body of literature on advanced information processing technologies and police discretion. I believe that my argument of constrained discretion outlined in my three propositions explicitly puts into question Egon Bittner's claim (1970) that police discretion is essentially unregulated and effectively applies neo-Fordist theory in explaining the changes in police discretion from the 1970s to now. The next section of this thesis will conclude with limitations of this study and recommendations for future research.

Limitations and Future Research

One limitation of this study is the limited scope of the data. I interviewed 12 officers from one police department. Although the sample size is large enough to represent the population of Middletown Police Department, in broader terms, it is relatively small. It is also important to point out that the interviews differed from each other due to personality differences among the participants. Some officers were far more

attentive and detailed when giving their narrative of the role advanced information processing technologies plays in modern policing. Other officers were very private and did not give as many details when discussing technology and policing.

A second limitation of this study includes the lack of diversity among my participants. This is in part because officers at Middletown Police Department are predominately white males. Nonetheless, it would have been fruitful to gain the perspective of female officers in this department. Diversity among the participants in terms of race and gender would strengthen the findings of this study.

A third limitation of this study is the lack of senior officers interviewed. Although a couple of senior officers were interviewed, more discussion with senior officers could add to the body of evidence that there has been an increase in constraints placed on officer discretion over the past 30 years due to advanced information processing technologies. Officers who have worked in policing before and after the presence of advanced information processing technologies are more able to discuss the role these technologies have played in affecting police discretion.

In future studies on the role advanced information processing technologies play in modern policing, I would recommend obtaining data from several police departments. This would help increase diversity among research participants. It would also be beneficial to make sure these departments differ in size and geographical location. Large departments may use advanced information processing technologies that are not used in medium-sized departments. One example of this would be global positioning systems. These devices are not used by the Middletown Police Department but are used by

departments in major US cities. Furthermore, there are smaller departments that still do not even use mobile data terminals. The size of the department affects the role advanced information processing technologies play in modern policing.

I would also recommend that future studies include former police officers. My findings revealed that perspectives of the role advanced information processing technologies play in modern policing differ between participants of different ages. Former officers who have worked in the field for 25 or more years would be able to discuss policing before and after advanced information processing technologies became standard equipment. It is important to obtain the perspective of former officers because it is likely to differ greatly from the perspective of young officers currently in the field. Junior officers, just out of high school and college, are generally more familiar with technology and are more likely to embrace it.

My findings revealed that patrol officers at Middletown Police Department have experienced a loss of discretion. Future studies could analyze the advantages and disadvantages of a loss of discretion in modern policing. To assert whether a loss of discretion in modern policing is beneficial or harmful goes beyond the scope of this research.

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