AN INTELLECTUAL HISTORY OF THE COMPSTAT MODEL OF POLICE MANAGEMENT

by

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ABSTRACT

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Paul E. O'Connell

Advisor: Professor Warren Benton

In 1994, during the tenure of former New York City Police Commissioner William Bratton, the New York City Police Department (NYPD) developed a new model for managing and controlling its myriad crime fighting strategies and operations. This model, known as Compstat, is based upon four essential principles: accurate and timely information; rapid deployment; effective tactics; and relentless follow-up and assessment. Compstat is generally perceived as one of the more significant and successful recent innovations in the field of policing and is largely credited with contributing to the dramatic reduction in the rate of reported violent crimes in New York City during the 1990's. This study is an intellectual history of Compstat. That is, this study utilizes the methods of oral and intellectual history to trace the *idea* of Compstat from its inception, through a period of wider acceptance, to the point of its successful implementation.

This study describes the essential characteristics of the Compstat model and attempts to identify predecessor concepts and practices that might have directly or indirectly influenced Compstat's development within the NYPD. Several such concepts

and practices are identified and discussed. The study utilizes a unique medium, video. to capture and present the rich narratives of those individuals who were chiefly responsible for Compstat's design and implementation.

The present research concludes that a variety of Compstat-like processes and programs were operating in other police agencies prior to 1994, but that none employed a central forum for the open exchange and use of crime fighting information in the manner that Compstat does. Indeed, the author suggests that this is actually the defining characteristic of the Compstat model.

This study concludes that Compstat did materially alter the NYPD's decision-making, communication and information management processes, as well as its organizational culture. It further concludes that Compstat is a viable and sustainable strategy for performance assessment and the strategic management of police agencies.

This paper is accompanied by a compact disc which includes additional video footage.

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CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM UNDER STUDY

The purpose of the present study is to document and analyze the: 1) development; 2) implementation; and 3) organizational impact of one particular public sector innovation, known as the Compstat model of police management (hereinafter referred to as "Compstat"). By utilizing the methods of intellectual and oral history, this study will identify those individuals responsible for Compstat's development within the New York City Police Department (hereinafter "NYPD" or the "Department") and provide an historical account of the growth and spread of this idea within that organization. It will also attempt to identify specific changes to that organization's culture and operational processes that resulted from the adoption of Compstat (and its related practices).

As an intellectual history, this study will utilize the methods of oral history in order to obtain a rich and clear description of the more qualitative aspects of this innovation (i.e., in-depth structured personal interviews of individuals intimately connected with Compstat's development and introduction). This intellectual history will also avail itself of a particularly effective medium, video, in order to fully capture and lend meaning to the various texts being studied.

In order to provide a more meaningful historical context to this analysis, this study will also identify several significant preexisting practices, relationships and ideas that coalesced in the minds of senior administrators of the NYPD in the early 1990's (during the tenure of former Police Commissioner William J. Bratton) and contributed either directly or indirectly to Compstat's development. It will specifically focus upon

how these ideas germinated, gained wide acceptance (i.e., "buy-in") and became a reality that profoundly changed the organization.

The fundamental concept behind Compstat is rather straightforward. It is based upon a more "business-like" approach to crime fighting, with ever decreasing rates of reported crime as its "bottom line" (Bratton, 1998). It entails the systematic review of statistical crime summaries, which enable the organization to develop unique crime fighting strategies that are tailored specifically to each of New York City's seventy-six (76) precincts (Kelling & Sousa, 2001; Silverman, 1999). Compstat is the forum in which these data are compiled, analyzed and shared throughout the entire organization. It provides a basis for constant reflection, analysis and improvement. It serves as an effective tool of supervision, communication and training, and has been characterized by the its originators as "a revolution in the way police agencies are managed." (The Compstat Process, 1998, p.14)

Kelling and Sousa (2001) suggest that Compstat is one of the more significant innovations in the evolution and history of American policing. It is therefore imperative to document this event/phenomenon as fully as possible. Although there is a body of academic literature which describes the NYPD's overall re-engineering efforts since 1994 and the implementation of the Compstat model (see, e.g., Silverman, 1999), no historical studies have been focused *solely* upon Compstat's development, or have attempted to examine this particular management device as an organizational 'innovation' (i.e., a new idea which crystallized in the minds of several key personnel, was tested, implemented, altered, and widely accepted by the entire organization). By viewing the Compstat model as an innovation, one can begin to examine how and why it developed and spread

throughout the organization and, more importantly, how it ultimately transformed many of the most fundamental operations and processes of this particular agency. A detailed and thoughtful study of the genesis and implementation of this particular innovation can do much to inform our overall understanding of how planned change occurs in large bureaucratic organizations generally.

This issue merits study as the adoption of a "performance measurement orientation" by a large bureaucracy of this type has broader implications. Much can be learned by examining how a hierarchical and inward-looking organization like the New York City Police Department succeeded in moving itself towards the ideal of the "learning organization" (Argyris, 1999). Such a study would further our understanding of public sector change efforts, and add to the collective body of knowledge in the field of planned organizational change and intra-organizational knowledge management and transfer.

REVIEW OF LITERATURE

The Compstat Process.

There are few scholarly works that trace the development and implementation of Compstat. The initial literature that was published on this topic appeared in trade journals and the popular press (see, e.g., Andrews, 1996; Bratton, 1996; Horowitz, 1995) and in the form of autobiographies published by the primary participants (see Maple, 1999; Bratton, 1998). The academic utility of the SE sources is, however, questionable as they mostly convey a similar (sympathetic) viewpoint that cannot fairly be characterized as "objective." The first non-participant scholar to adequately examine this phenomenon was Silverman (1999).

Several other more scholarly works appeared through the present date (see Silverman & O'Connell, 1999; Kelling & Bratton, 1998). Several other published works have been generated by participants, or individuals possessing intimate knowledge of surrounding events (see, e.g., McDonald, 2002; McGuire, 1999; Gorta, 1998). The most recent attempt at a scholarly treatment of (inter alia) this subject is Henry (2002), which is ambitious in scope, but is duplicative in nature in that a majority of it is derivative of prior work.

The existing body of literature about Compstat's development and implementation portrays the following story:

Beginning in 1994, the NYPD began a carefully planned and well-executed redesign of its entire organizational structure (Bratton, 1994). Under the leadership of newly-appointed Commissioner William Bratton, the Department employed a variety of management strategies designed to re-engineer its business processes and create a "flatter" organizational structure based on geographic decentralization, teamwork, information sharing and managerial accountability (Silverman & O'Connell, 1999). This rapid redesign of the Department's organizational architecture was based upon the concept of continuous improvement of performance (benchmarking and the sharing of "best practices") and the ability to utilize timely and accurate information to manage and control change. In other words, the Department attempted to correct its "knowledge-inhibiting activities" (Snyder & Cummings, 1998) and to institutionalize the organizational learning process described by Argyris (1999).

The overall rate of reported violent crime in New York City declined dramatically and far outpaced reported crime drops across the nation (Horowitz, 1995). From 1993-

1998, New York experienced a precipitous drop in the burglary rate (53%), a 54% drop in reported robberies and an incredible 67% drop in the murder rate (Silverman, 1999). McGuire (1999) contends that, "No other major American city has recorded as significant or sustained a reduction in crime during so short a period, or any comparable period, in the modern crime-reporting era." (p. 11) These extraordinary achievements were attributed in large part to the Department's innovative model of police management, known as Compstat (Kelling & Sousa, 2001: NYPD, Office of Management Analysis and Planning, 1998; Bratton, 1997).

Silverman (1999) explains that, prior to 1994, the NYPD, like most police organizations, was addicted to formal rules and procedures and subject to an occupational culture that had proven itself to be particularly resistant to change (see also Maguire, 1997). It was characterized by strict hierarchical structures, organizational rigidity, and a culture that was generally unreceptive to change (Silverman, 1999). Such organizational constraints are common within police organizations. As Maurice Punch explains:

> There is an overwhelming preference for regulatory supervision in policing – it is a natural and unavoidable consequence of some deeply ingrained assumptions regarding the nature of police work that are shared by the overwhelming majority of people inside and outside the police establishment (1983 p.124).

In accordance with classic bureaucratic structure, the overall orientation of managers within the Department was "downward", rather than outward (towards the external environment) or upward. Precinct commanders "did not see crime reduction as their foremost responsibility" and were "essentially on their own in combating crime" (Silverman, 1999, p.98). Commissioner Bratton quickly altered this mindset by making a

variety of high-level personnel changes and by redefining the Department's overall purpose and mission (Bratton, 1998).

An emphasis was placed upon the realignment of organizational resources. An ambitious re-engineering effort shifted the Department from being a centralized, functional organization to a decentralized, geographic organization (NYPD, Report of the Re-Engineering Committee, Geographic v. Functional, 1994). A number of centralized, functional units were broken up and their functions (and personnel) were redistributed to new geographically decentralized units (precincts). An entire level of the Department's organizational chart was removed (i.e., the "divisions," which were dismantled during this time period) in the belief that decisions should be made at the lowest operational level. Precinct commanders were given unprecedented authority and responsibility. Nevertheless, as Silverman (1999) describes, top-level administrators still retained control. Despite the operational latitude granted to precinct commanders, "[a]uthority [was] still exercised at the top, but [ ] a more informed version of control based on results..." (p. 194).

Functional specialists were now placed the under the command of newly defined geographic managers, thereby moving decision-making down the organizational hierarchy (Silverman & O'Connell, 1999). This resulted in greater empowerment and participation in decision-making, and more open, less hierarchical communications within the organization. The "information silos" through which managers had been able to hoard information and thereby suboptimize organizational performance were dismantled.

Bratton clearly described the direction in which he intended to move the organization, and highlighted with specificity, the more particular pieces of managerial work that were strategically most important to achieve. To accomplish these goals, a variety of intelligent crime-reduction strategies were developed and implemented. The instrument used to implement and monitor these strategies was "Compstat."

Upon taking office, Bratton immediately shocked his subordinates by establishing new, exacting standards of operational performance (Bratton, 1998). He and his top aides recognized that data needed to be gathered and analyzed in a timely manner if effective crime-reduction strategies were to be implemented. Therefore, periodic meetings were scheduled at headquarters whereby precinct commanders were required to report and react to crime data generated from their areas of responsibility (i.e., their commands) Over time, these data-based informal discussions between Department executives and field commanders developed into formal bi-weekly strategy meetings (known as Compstat meetings) whereby *all* levels of the Department participate to identify precinct and city-wide crime trends, deploy resources and assess crime control strategies.

Utilizing real-time crime data and sophisticated computer mapping technology as basic crime fighting tools, Compstat enables senior level administrators to engage in face-to-face discussion of issues and proactive practices that draw upon the collective expertise of the entire organization. It has developed as an interactive management device that enables the organization to learn, teach, supervise, and evaluate personnel in one central forum. According to Mayor Rudolph Giuliani, Compstat has, "transformed the N.Y.P.D. from an organization that reacted to crime to a police department that actively works to deter offenses" (Giuliani, 1997, p. 6).

Bratton has credited Compstat with moving the Department "from a micro-managed organization with very little strategic direction to a decentralized management style with strong strategic guidance at the top" (Bratton, 1998). By utilizing a system of internal benchmarking and the open transfer of best practices, Compstat has moved the Department in the direction of the 'learning organization' described by Argyris; that is, one that is able to analyze, reflect, learn and change based on experience (Argyris, 1999; O'Dell & Grayson, 1998).

Today, Compstat has become synonymous with a more intelligent and proactive style of police management. It is founded upon four (4) core principles: 1) accurate and timely intelligence; 2) effective tactics; 3) rapid deployment of personnel and resources; and 4) relentless follow-up and assessment (NYPD, Managing for Results, 1996). Visitors from around the world have traveled to New York to participate in "Compstat conferences," or to sit in on the Department's Compstat meetings (Dodenhoff, 1996). Many police agencies have successfully implemented this style of management and it has been successfully adopted in a variety of other public service agencies (for example, the New York City Department of Correction's version known as "TEAMS"; New York City's Traffic Stat; Jobstat; etc.)(Straub & O'Connell, 1999a, 1999b; Marzulli, 1998) (see generally DiMaggio & Powell, 1983). Public managers and academics alike have recognized Compstat's utility as a public management device. In 1996, Compstat was awarded the prestigious *Innovations in American Government Award* from the Ford Foundation and the John F. Kennedy School of Government at Harvard University.

Police Management.

An abundant body of literature exists concerning the management and operation of police organizations. Much of it is focused upon the unique mission and methods of police organizations, and the myriad efforts that have been undertaken to enhance efficiency and the overall quality of performance.

In 1983, Maurice Punch identified a number of internal and external constraints that hinder police organizations. Indeed, he noted that the "greatest guarantee of civil rights is the inefficiency and creative incompetence of the police organization" (p.xii). He described a deeply entrenched informal culture that exists among police officers, and serves to limit productivity. He referred to this innate propensity for the avoidance of work as "easing behavior."

- Punch observed that:

> Police organizations all too frequently reflect the classic deficiencies of public, "not for profit" bureaucraciesin the sense of producing leaders with low managerial competence, lacking vision and administrative skills, largely incapable of formulating and implementing policies, and addicted to formal rules and procedures (Punch, 1983, p.xiv).

Punch nevertheless recognized the need for accurate assessments of police performance. He identified crime control as the core measure of analysis:

> The pre-eminent purpose of the police is to enhance public safety – crime control is what police themselves say they do – therefore, even though police do other things, it is not unfair to demand that evidence be produced that shows how well the crime control responsibility is being met.
>
> ***
>
> Failing to evaluate the crime-related results of police action is like not determining whether schools teach children to read (1983, p.22).

Punch laments that police organizations have traditionally, "grown like an elemental force of nature, according to half understood forces, rather than as a rationally

planned instrument of social effect" (1983, p.26). He also notes the aversion police organizations naturally have to revolutionary change, tending to work to improve efficiency, rather than true innovation (p.42). He cites a number of structural forces that enable these organizations to resist change, such as hierarchical chain of command, a unique police culture and police unions. Speaking for the administrator who is committed to improving the police, he claims that "the likelihood of achieving significant change seems remote" (Punch, 1983, p.99). Guyot (1978) concurs, noting that:

> There is an impressive list of management problems which are exacerbated by the prevailing rank structure of police departments. Lack of flexibility and lack of incentives . . . are the problems most frequently recognized by police managers. More subtle problems of insularity, blockage of communication and militarism are rarely addressed. In the last decade a few police managers have attempted to bend or chip away at the edge of the granite rank structure of their departments with no marked success. The support for the traditional rank structure is so strong within the police subculture that new departments founded with less hierarchic structure undergo metamorphosis to the traditional form (p. 1).

Nevertheless, attempts at change have been undertaken. Toch and Grant (1982) describe the various programs associated with the organization development (OD) movement that were designed to enhance American policing in the 1970's. As a result of the President's Commission on Law Enforcement and Criminal Justice (1967), a job enrichment model known as "Team Policing" was designed, primarily to instill a sense of, "pride and of self importance in doing police work" (Toch & Grant, 1982, p.191). It was generally believed that such efforts would result in enhanced productivity (Sherman et al., 1973) (see also French & Bell, 1978; Argyris, 1957). Weisbord et al. (1974) describe a similar program which was implemented by the N.Y.P.D., but is generally thought to have had little success. Other attempts to enhance productivity and increase job satisfaction were stymied by one fundamental factor; the structure of police

organizations. In a paper entitled *Bending Granite: Attempts to Change the Rank Structure of American Police Departments* (1978), Dr. Dorothy Guyot argued that, "hierarchical structures are particularly ill-suited to police work" (p.28). By the early 1980's, it appeared that any effort to improve the quality of American policing would necessarily entail reconsideration of such fundamental issues as "how should police departments be structured?" and "how should the police go about their business?"

In 1982, Wilson and Kelling's *Broken Windows* article struck at the heart of modern policing's mission and encouraged the police to re-connect with the community. Sparrow et al. (1990) describe a subtle but clear shift in management style that swept American policing in the 1980's, as administrators sought a "closer, more productive relationship with the cities they serve[d]" (p.114). They recognize this to be a dramatic shift, from operational autonomy to reliance on the community. Such a shift is difficult due to the fact that, "police departments are typically rigid bureaucracies, fiercely defensive of the status quo. Their considerable institutional momentum stands as a major barrier to change or development" (Sparrow et al., 1990, p.121).

Sparrow and his colleagues championed the movement towards a more open-minded and innovative form of policing. They provided a rather straightforward rationale for their beliefs by identifying:

> The long denied but inescapable fact that the centralized style of policing relies on a fictitious and entirely inappropriate picture of the operational realities of police work. Police work is not rote: it is varied, unpredictable and full of surprises that cannot be covered by precise rules (Sparrow et al., 1990, p.121).

Herman Goldstein's *Problem-Oriented Policing* (1990) was perhaps the single most important work with regard to American policing's changing organizational culture

in the 1990's. It championed an entirely new approach; one which recognized the "extraordinarily complex" nature of policing and the "myriad conflicts and incongruities built into the police function" (p.xii). Goldstein similarly criticized the simplistic concern for operating efficiency (i.e., simply responding to incidents and processing cases more quickly). He advocated a more thoughtful and pro-active form of inquiry, one which identified underlying "problems" and systematically drew connections between them (p. 33) (see also Eck & Spelman, 1987).

Building upon the "Broken Windows" theory of policing, and previous literature regarding "community policing" techniques (Skolnick & Bayley, 1986; Skogan & Maxfield, 1981), Goldstein recognized that "the objective in attempting to bring about change is not simply to improve the police, but rather to solve community problems" (Goldstein, 1990, p.179). To do so, he called for "increased regulation, through statutes and ordinances, of conditions that contribute to problems" and "using civil law to control public nuisances, offensive behavior and conditions contributing to crime" (p.139). By attacking underlying (i.e., criminogenic) conditions, he believed that police officials could achieve significant and long-lasting reductions in the overall crime rate.

In sum, Goldstein called for a revolutionary new management style for police administrators. He proposed that:

1) Police leaders must articulate the basic values with which they approach the police task and which influence their management techniques;

2) They must have a strong commitment to problem-solving as the core of policing – with all that it entails; and

3) They must make fundamental changes in the most common type of relationship that exists between leadership and the rank and file in a police agency (Goldstein, 1990, p.152).

He called for a "flexible management style" that would provide a greater degree of freedom to administrators.

Goldstein's recommendations necessarily extended through to the entire police organization. He believed that it was necessary to create an entirely new management structure for police organizations, one that was able to detect and respond to subtle changes in the internal and external work environments. He suggested that:

> A whole new dimension must be added to prior research and planning activities. *In a rough equivalent to the private sector*, it calls for going beyond perational research concerned with efficient ways to produce a product. It extends to developing the ability to access and control the quality of the product, to engage in market research, and to design new products. A centralized planning and research unit could contribute a great deal by providing training to field personnel (in problem-solving) and by monitoring department-wide problem-solving efforts, alert to additional ways in which it might support these efforts (Goldstein, 1990, p.162) (emphasis supplied).

Goldstein was not alone in his opinions. By the early 1990's, a number of other leading scholars had advocated the adoption of "corporate strategies" and an "entrepreneurial" approach by more progressive police agencies (see, e.g., Bruns, 1989; Moore & Trojanowicz, 1988).

Planned Change/Strategic Management.

There exists an abundant body of scholarly literature in the field of strategic management and planned change (for both the public and private sectors). Indeed, many authors of leading works in the field of management suggest that their recommended techniques and approaches could be as easily applied in the public sector as they could in the private sector (see, e.g., Robertson & Seneviratne, (1995) for a meta-analytic comparison of planned change efforts in both the public and private sectors).

Bennis (1966) described the general need for all organizations to have an orderly response to changing environments. He identified three (3) essential steps in the change process: 1) the act of "unfreezing"; 2) "changing"; and 3) "re-freezing" (p.98). He believed that management systems generally needed to be far more responsive, and that they needed to move from a "mechanistic" to a more "organic" approach to changing environmental conditions. Burns (1961) explained this fundamental shift in mindset and suggested that a planned change approach is necessary, "when novelty and unfamiliarity in both market situation and technical information become the accepted order of things" (p. vii).

Bennis suggested that successful organizations operate as "open systems" which engage in mutual goal-setting and incorporate "the spirit of inquiry as a model for organization" (1966, p. 46)(Gluckstein, 1977). He viewed planned change efforts as, "the critical link between theory and practice, between knowledge and action" (p. 81).

Building upon this concept, Senge (1990) suggests that successful organizations engage in "systems thinking" (that is, a non-linear approach that focuses upon the connected pattern and mutual influence of apparently isolated events). By recognizing the complexity of issues, Senge states that organizations can avoid myopic and short-term decision-making. Systems thinking enables the organization to alter its structure, utilize modern information technologies to learn and adapt to changing conditions (Fritz, 1996; Drucker, 1995; Davenport, 1993). Moore (1995) explained that such changes would transform public managers from "technicians" to "strategists" and create "public value" as a result (p. 21).

During the 1990's, a new interest developed in the design and implementation of valid, legitimate and functional performance measures for the public sector (Kravchuk & Schack, 1996; Wholey and Hatry, 1992). This movement was fueled in large part by the Government Performance and Results Act of 1993 (GPRA) and the publication of Reinventing Government (Osborne & Gaebler, 1992). The "re-inventing government movement" (as it became known) developed as the public sector analogue to the corporate "business process engineering" movement, which has been described as, "one of the most influential management ideas of the 'nineties'" (Case, 1999, p. 419).

Two essential concepts associated with the re-engineering process are "benchmarking" and the sharing of internal "best practices." Both relate to goal-setting and the on-going quest for continuous improvement in performance and both recognize that valuable lessons can be learned from other organizations and shared throughout the organization (Coe, 1999). These skills, combined with an entrepreneurial mindset, enable the organization to exploit opportunities for success (Morris & Jones, 1999).

By 1994, there was a clear trend within government and throughout the business world, for organizations to attempt to "reinvent" themselves by dramatically altering administrative structures and operational processes in order to enhance efficiency and the overall quality of performance.

This was the atmosphere within which the Compstat model was developed.

Bureaucratic Organizations.

The bureaucratic model, described by Weber (1960) incorporates the concepts of hierarchy, span of control, "[p]recision, speed, unambiguity, knowledge of files, continuity, discretion, strict subordination, reduction of friction and of material and

personal costs" (Presthus, 1965, p. 5). Weber spells out in considerable detail a "highly rational structure" with numerous advantages that make it, in his view, technically superior to any other form of organization (Etzioni, 1964, p. 53)(Weber, 1960). For many years, Weber's model has been extremely useful for administrators and students of large organizations. However, many of his most basic concepts have been challenged for failing to incorporate the more emotional and psychological dimensions of human work organizations. As Perrow (1970) states, "organizations are, after all, made up of people" (p. 2).

Weber's ideal model has not gone unchallenged. Presthus (1965) states that, "Weber's analysis provides a good beginning, but it has serious limitations...Weber deals almost exclusively with the formal, manifest functions of bureaucracy and gives little attention to their unanticipated consequences, both functional and dysfunctional" (p. 6).

Many specific dysfunctions associated with the model have been well documented in academic literature. Gawthrop (1971) describes the process whereby individuals who are subjected to bureaucratic administration (i.e., citizens) begin to feel disenfranchised, and become disillusioned with bureaucratic processes:

> These individuals have rejected the image of public bureaucracy as an effective, equitable, and responsive problem-solving mechanism. In long-range terms, the application of the rigid, impersonal side of the [ ] bureaucracy has resulted in a steady compilation of perceived losses by an expanding segment of the body politic; such losses can never be offset by any subsequent incremental gains as long as the allocation and control processes are maintained within the same structural framework (p. 89).

Gawthrop similarly challenges the bureaucratic model's ability to provide for the emotional welfare of employees. He uses the term 'synergy' to describe the process of interpersonal relationship whereby an individual, in pursuit of his/her own self-interests,

enhances the self-interests of others. He suggests that bureaucracies stifle the development of synergy and identifies the suppressive nature of the traditional hierarchical model as the primary factor inhibiting the development of a psychologically healthy individual (p. 103). Many more general (and far less constructive) criticisms have been leveled, for example:

> Bureaucracies have been described as systems designed by a genius to be run by idiots....In the soul of the bureaucratic machine there lurks a control freak (Osborne & Plastrik, 1997, p. 17).

Bozeman (1993) has detailed particular problems associated with "red tape," which he describes as "rules, regulations, and procedures that remain in force and entail a compliance burden for the organization but have no efficacy for the rules' functional object" (p. 283). He posits that there are two distinct manifestations of red tape: rules that are "born bad" (i.e., red tape from their very inception); and rules that have "gone bad" over time (Bozeman, 2000). Red tape is identified as a significant barrier to innovation and responsiveness.

According to Perrow (1972), the criticisms of bureaucracy generally fall into two categories:

> First, they are said to be inflexible, inefficient, and in a time of rapid change, uncreative and unresponsive . . . The second criticism is that bureaucracies are said to stifle the spontaneity, freedom, and self-realization of their employees (p. 6).

Interestingly, he suggests that, "the sins generally attributed to bureaucracy are either not sins at all or are consequences of the failure to bureaucratize sufficiently" (1972, p. 6).

Perrow does however identify several "bureaupathologies" and explains that the bureaucratic model generally fails "when rapid changes in some of the organizational

tasks are required" (1972, p. 7). He contends that bureaucracies are established to primarily deal with stable and routine tasks, and that the division of labor is established accordingly. Once unforeseen events occur, the pre-existing structures fail to react quickly enough: "Where the environment changes too rapidly to be controlled or compensated for, and where tasks are too ill-defined or too variable to permit maximum specialization, a high degree of bureaucracy or structure is not possible" (Perrow, 1970, p. 178-179). Osborne and Plastrik (1997) obviously concur:

> Bureaucracies often have multiple, sometimes conflicting, missions; few face direct competition or experience the consequences of poor or mediocre performance; in fact, few actually measure their performance; and fewer still are accountable to their customers (Osborne & Plastrik, 1997, p. 12).

Perrow also notes "tendencies among workers towards conservatism and self-protective behavior" (1979, p. 39) (see also Osborne & Plastrik, 1997; Kuhn, 1993; Medina, 1982). Additionally, both he and Weber agree that, once fully established, "bureaucracy is among those social structures which are the hardest to destroy" (Weber, 1960, p. 177) (see also Perrow, 1972).

Despite the foregoing criticisms, a growing body of research and literature has developed with regard to the more positive efforts of large bureaucratic organizations to engage in planned change (i.e., to substantially adapt or innovate). Recent literature suggests that decentralized decision-making can increase the effectiveness of bureaucratic organizations that face constantly changing circumstances. A decentralized organization can, according to Maltz, et al. (1991):

> Take [ ] advantage of the knowledge of its workers, enabling it to adjust quickly to local circumstances. It is most effective when circumstances vary in different areas of organizational responsibility and over time, as is the case in most urban police departments (p.144).

Perrow speaks of the "viability of the bureaucratic model" and suggests that it will continue to "remain the dominant mode of organization" due to its obvious utility (1972, p. 171). He suggests that the bureaucratic model will survive – in one form or another – and explains that 'bureaucratization' is not a dichotomous variable, but rather a continuum:

> Actually, of course, the terms bureaucratic and non-bureaucratic are only crude extremes. Not only might there be many shades of gray between the two, but . . . there may be alternative forms which are not even on that continuum or line running from bureaucracy to non-bureaucracy. More important . . . is the possibility of using both types of structure in the same organization (Perrow, 1970, p. 68).

Therefore, organizations may become more or less bureaucratic, depending upon their goals, functions, etc. Perrow's concept of a "mixed model" raises several obvious problems related to coordination, but it has the potential to inform administrators and students of organizations of the possibilities of successful planned change efforts within large bureaucratic organizations. Perrow speaks of the continued "viability of the bureaucratic model" and suggests that it will "remain the dominant mode of organization" (1972, p. 171). He explains: "Every organization of any significant size is bureaucraticized to some degree or, to put it differently, exhibits more or less stable patterns of behavior based upon a structure of roles and specialized tasks. Bureaucracy, in this sense, is another word for structure" (Perrow, 1970, p.50).

Perrow suggests that bureaucracies can indeed change, improve quality, and react. He explains that, "Many [positive]...changes can be readily incorporated into the bureaucratic organization – such an organization is not inflexible...[a] bureaucracy can accommodate much superficial change without altering its structure" (1970, p. 60, 64). In

sum, he claims that the skeletal framework of bureaucracy can continue to exist within a modern organization, provided internal processes are developed to plan for, and react to, unforeseen events and circumstances.

Others agree that the bureaucratic model will continue to exist, provided internal mechanisms exist which allow these organizations to detect changes in their environments and to react accordingly:

> Some arguments for continued forms of bureaucracy in the public sector exist, primarily in response for appropriate needs for control and efficiency. However,...organizations are moving toward forms of flatter hierarchies, decentralized decision making, permeable boundaries, empowerment, self-organizing units, and so forth (Battalino & Beutler, 1996, p. 26).

As Perrow notes, "[T]he solution is not to do away with rules and specialists and routinization and mechanization. The answer is to continuously make these tendencies serve the ends you value most" (Perrow, 1970, p. 59).

Perhaps the most provocative argument for the continued viability of the bureaucratic model relates to the possibility of incorporating more responsive management processes directly into, and along side of, the pre-existing bureaucratic structure. Bushe and Shani (1991) theorize that organizational change interventions based on a 'sociotechnological-systems-theory-based-design' can be used to operate parallel to formal structure and permit the advantages of a learning-, values-, and/or process-based change while retaining the original form. Parallel structures also "permit change at different rates, allowing for evaluative and corrective components" (Battalino & Beutler, 1996, p. 26).

In sum, it is possible to make necessary alterations, yet maintain the traditional structure of many bureaucratic organizations. Such alterations, however, necessarily have

a significant impact on individuals working within these organizations. Reform efforts of this type typically encounter resistance from an entrenched bureaucratic culture; one that colors the world view of its members and develops naturally. As Osborne and Plastrik (1997) explain:

> No one set out intentionally to create a bureaucratic culture; it grew up because people experienced bureaucratic government realities. These experiences produced a set of unspoken, often unconscious emotional commitments, expectations, fears, hopes and dreams. Together, these experiences and emotional commitments shaped a set of ideas, assumptions, and attitudes – mental models of reality (1997, p. 268).

They assert that, in order to effect significant change in the operating procedures of a traditionally bureaucratic organization, it is necessary to address and change the existing organizational culture:

> To change a culture, you have to change people's paradigms. You will need to change [ ] the [following] assumptions: That rank rules; that risk is to be avoided at all costs; that every mistake will be punished; that decisions must be kicked upstairs. This is extremely difficult, because people cling ferociously to their paradigms (Osborne & Plastrik, 1997, p. 265).

They present what they describe as "guidelines for leading paradigm shifts":

1) Introduce anomalies and help people perceive them.
2) Provide a clearly defined new paradigm.
3) Build faith in the new paradigm.
4) Help people let go of their old paradigm.
5) Give people time in the neutral zone.
6) Give people touchstones.
7) Provide a safety net (Osborne & Plastrik, 1997, p. 267).

In addition to organizational culture, other factors may serve as impediments to change, including: organizational culture; organizational design; and external factors, such as regulatory, political, or social factors (Kuhn 1996; Kuhn 1993). These impediments are not however insurmountable. A well-designed and executed program of

change should be able to shift organizational focus (from an inward-looking, to an outward perspective) and create innovative mechanisms that will allow a traditional bureaucratic organization to anticipate and react to changing conditions (both internal, and external to the organization) As Kuhn (1993) notes: "Large organizations are traditionally non-innovative. Yet there is nothing in largeness that prohibits creativity and innovation. It is possible to balance both creativity and productivity in a large organization" (p. 111).

When the development and implementation of the Compstat process is viewed from this perspective, one can appreciate how it has enabled the Department to establish a permanent internal mechanism for change, while retaining its traditional (hierarchical) form.

The Sociology of Ideas/Knowledge.

The sociology of knowledge deals, at least initially, "with the theoretical specification of how knowledge and society interpenetrate" (Hamilton, 1974, p. 148). De Gre (1970) explains that the sociology of knowledge is a field of sociological inquiry which is used to arrive at "an adequate sociological explanation" by focusing upon the interpretation of social actions in order to make them understandable and meaningful, and to facilitate a "causal, functional and structural investigation of the socio-historical situations in which social actions occur and the subjective orientations of the individuals arise" (p. 663). It is a necessary compliment to a study of innovation and planned change, as all such studies necessarily entail the development and movement of a collective body of human knowledge. Weber saw such socio-historical change as working inexorably towards a greater rationalization of human activity, not all at once or in the same

direction, but generally moving towards a situation of greater technical-purposive control over nature, society, and culture...[he observed] an increasing rationalization" (Hamilton, 1974, p. 88).

An essential principle of this field of study is the belief that knowledge does not develop or evolve in a vacuum:

> The sociology of knowledge argues that scientific thought, and especially thought on social and political matters, does not proceed in a vacuum, but in a socially conditioned atmosphere. It is influenced largely by unconscious or subconscious elements. These elements remain hidden from the thinker's observing eye because they form, as it were, the very place which he inhabits, his social habitat. The social habitat of the thinker determines a whole system of opinions and theories which appear to him as unquestionably true or self-evident (Popper, 1970, p. 650).

Hamilton (1974) asserts that any sociological theory relating to change and innovation in human organizations necessarily touches upon this field. He claims that, "[T]hough we cannot see any sense in which the sociology of knowledge can provide the basis of sociological theory, its relevance to theory is singularly important. Any general sociological theory worthy of the name must take important account of the ways in which knowledge, both mundane and intellectual, commonsense and technical, exoteric and esoteric, gets produced, distributed and forms a basis of social action" (Hamilton, 1974, p. 48). In other words, Hamilton views the sociology of knowledge as a useful tool for researchers engaged in most sociological investigations.

Additionally, an historical study of this type, which deals with organizational ideas and innovation, should avail itself of the methods of the field of the sociology of knowledge for a variety of reasons. First, the sociology of knowledge will identify and explain the myriad social, political, and economic factors which influence/explain how organizational ideas are generated. It can also explain how knowledge is communicated

and acted upon in large organizations (see, e.g., Lim, et al., 1999). In other words, it can address how knowledge 'moves' among individuals and through organizations.

Secondly, the sociology of knowledge can inform an historical study of this type insofar as it identifies the researcher's frame of reference (i.e., unspoken or unacknowledged biases, assumptions, or similar threats to objectivity) and speaks to the assessment of meaning. Stark (1991) explains:

> Even where complete candor prevails and perfect objectivity is guaranteed, the apprehension of meaning will be an act of the whole personality including the specifically social sector of the mind; indeed, it is not absurd to claim that the specifically social sector of the mind will have a larger say in the matter than either the sensual apparatus or the formal intellect. Philosophically speaking, it is not a transcendental consciousness which takes in the meaning, i.e., the essence, of a social fact, but an immanent consciousness, a socially determined, socially specified, socially filled consciousness, the consciousness of a man who lives within certain social order and apprehends all social events in terms of it. Of course, it will be objected here that a *judgment* concerning meaning is not *knowledge* at all but something different, namely *valuation*" (p. 15) (emphasis in original).

Stark suggests that valuation does not follow upon but precedes the act of cognition. He explains that:

> Out of the welter and boundless variety of social facts we only study – indeed, we only notice – those which have significance according to the system of values with which we approach them. We see the broad and deep acres of history through a mental grid as it were – through a system of values which is established in our minds before we look out on to it – and it is this grid which decided on the one hand what will fall into our field of perception, and on the other will make it possible for us to co-ordinate our cognitions and form them into a coherent image, comparable, in its unity and clarity, to the picture which our categories or our senses enable our minds to form of the subhuman, material universe. If it be said that we must get rid of that grid, that we should approach the study of the human, social universe simply with our minds' eyes open but nothing before them, then we shall indeed get a quasi-scientific picture of social happenings, we shall see their physical characteristics and formal dimensions, but we shall be forever unable to discover their human implications, i.e., their social characteristics and historical dimensions.

> This is an inescapable truth, as inescapable as the cogencies of logic" (Stark, 1991, p. 16).

Stark asserts that researchers who believe that it is possible to "perceive the facts of history without any antecedently formed system of valuations established in their minds" are quite mistaken. He claims that such individuals "have invariably been simply unaware of that system of valuations. And, indeed, such a system of valuations has all through the ages been beneath the threshold of consciousness for the student of social facts" (1991, p. 16). Stark concedes that the formation of such values is natural and inevitable. He states that:

> Without such prior judgments, without. in other words, a system of values, we should never be able even to focus any social fact: our attention would roam helplessly and hopelessly over the boundless plains of history and human geography, coming to rest nowhere, receiving no tangible or definite impressions anywhere (p. 16).

Accordingly, Stark contends that, without a prior notion of what is more of less significant, a student of social history, "could at best become aware of certain social facts, but [ ] could not *know* any" (p. 17) (emphasis in original).

With regard to the 'movement' of knowledge, this field of study is particularly useful in explaining how innovative ideas are received and relayed by individuals within an organization. Curtis and Petras (1970) contend that, "[P]eople are more likely to become aware of ideas which seem relevant to their problems than of ideas which seem irrelevant, and they tend to adopt those which seem helpful in solving their problems" (p. 435). They assert that," [A] person's receptivity to an idea varies, among other things, with his prior evaluation of its source" (p. 443). Additionally, they suggest that individuals working within bureaucracies might be restrained in another way. They explain, "Bureaucrats tend to see social reality in terms of a few fixed categories under

which recurrent events and permanent situations are subsumed" (p. 435). Tausky (1970) and Pavalko (1971) similarly have identified other factors, particularly social networks, which may either advance or retard the movement of knowledge. Social networks and social roles which develop and are sustained within a profession such as policing, play a particularly significant role in the process of innovation and planned change (Reuss-Ianni, 1983; Pavalko, 1971).

The field of the sociology of knowledge is particularly necessary for the thorough understanding of organizational "planning" and change, as many actions and activities associated with these processes are symbolic in nature. As Strati (1998) explains:

> The first and most apparent aspect of planning is what actually exists on paper: the plan itself, with its schedules, objectives, the sequence of actions foreseen, the list of the organization's members affected, and so on....[T]he plan itself is a symbolic artifact: what meaning and what value does it have for the subjects who have been and will be involved? What are the intuitive processes underlying its creation? How attached are the subjects to the plan and what sense of ownership do they express in its regard (p. 1383)?

It should be noted that the methods and practices associated with the sociology of knowledge are oftentimes difficult to distinguish from the methods of history. Erikson (1973) contends:

> This distinction, if it ever meant anything, is almost surely loosing force, partly because it is no longer so clear that historians and sociologists rely upon different sources of information. Historians are beginning to generate their own data by procedures developed in the social sciences; and sociologists, in turn, are frequently deriving their material from documents of precisely the sort employed by historians (1973, p. 15).

By incorporating the methods of intellectual and oral history, a researcher may utilize the sociology of knowledge to critically examine the collective mindset of the organization under study.

Hamilton (1974) explains that a phenomenologically based sociology of knowledge, as described by Schutz and Husserl, emphasizes the commonsense construction of everyday reality, rather than the analysis of specifically intellectual consciousnesses as entities separate from mundane everyday knowledge. Consequently:

> [It] explicitly rejects the implicit dichotomy in classical approaches between generalized social knowledge and the knowledge of an elite social group. It sees a precise connection between the social relationships of individual and the meanings those relationships have to the extent that the nature of those relationships and the structure of their intersubjective meaning defines the structure and content of all knowledge. Our perceptions of reality are formed by the activity of social interaction, but not in some abstracted sense in which reality is external to the individual: interaction is the mechanism by which reality itself is constructed by social actors (Hamilton, 1974, p. 135).

Hamilton (1974) describes the process whereby the thoughts and behaviors of individuals within an organization become institutionalized and are ultimately transformed into the thoughts and behaviors of the organization itself. He states that:

> Although initially the behaviors that are habitualized are subject to modification, once they get transmitted to a new generation they assume 'objectivity' which allows them to function as Durkheimian social facts – as both external and coercive to the individual. . . . The reproduction of any social reality requires then that certain actor-relevant behaviors are objectified into institutions which have some externality to individuals, and which can be internalized as the natural way of doing things by the socialization of a new generation. The mechanism of transmission requires...a legitimation of the institutional world. This takes the form.... of explanation and justification of the institutions at the levels of meaning. The fact that institutions do empirically cohere without some internal logic means that an understanding of their integration involves some comprehension of the knowledge that its members have of it. Analysis of such knowledge is a prerequisite of any analysis of the institutional order (p. 140).

Such a thoughtful treatment of the relationship between individual and collective thought and behavior demonstrates the utility of the sociology of knowledge for a study of this type. In order to understand how and why the New York City Police Department

engaged in a comprehensive process of change, and to understand the purpose and impact of Compstat, it is first necessary to examine the existing mindset of the agency's top administrators, and its rank and file. In that way, it will be possible to demonstrate, with an acceptable degree of particularity, exactly how the thoughts and behaviors of these individuals were altered by the advent of Compstat.

The Methods of Intellectual History.

Scholars and practitioners alike agree that the modern world is marked by a frenetic pace of rapid and dramatic change. Indeed, an entire body of management literature has developed with regard to the methods of anticipating and responding to internal and external change. Unfortunately, organizations often react and adapt to their changing environments so quickly that there is often very little opportunity to properly analyze or reflect upon these events in order to understand exactly *why* this process of change and response occurred. Traditional social science research methods can identify particular innovations and responses that are adopted and implemented by organizations, but they fail to address the qualitative aspects of these actions. In sum, many of these social science methods fail to capture the human side of these events.

The methods of intellectual history can serve as a provocative tool for the student of organizational change. Intellectual history, otherwise referred to as the "history of ideas," is a process of inquiry that tracks to growth and spread of ideas. By identifying and tracking a particular idea or concept (such as the Compstat model of police management) through an organization, intellectual historians can "restore the subjectivity and the individuality of the men and women they stud[y]...reject[ing] the preoccupations of the social sciences with anonymous structures and processes" (Todd, 1972, p. 118).

Detailed personal narratives of this type can add much to our analysis of the development and spread of organizational innovation.

Despite its obvious utility, intellectual history should not be viewed as an alternative to the quantitative analysis of organizational behavior. Rather, it should be viewed as a necessary supplement. The advantages of the historical method were explained by Highet (1954):

> History in the broadest sense is the study of the past, and in the most usual sense it is the study of the past activities of human beings. In recent years, we have become more and more aware of the importance of history and of its enormous scope; we have been realizing almost involuntarily how much of our destinies it vitally affects. Our political decisions, our arts and crafts, our industrial and agricultural development, our private lives, our religion are all conditioned by history and are not to be understood without the understanding of history (p. 5).

Intellectual history is a sub-discipline of history. It is primarily concerned with the development and movement of ideas between individuals and among groups (Mayhew, 1994; Highet, 1954). Intellectual histories have been written concerning such diverse topics as "urban planning" (Hall, 1996), "free trade" (Irwin, 1975), "psychology" (Robinson, 1995), "tort law" (White, 1989), and "liberalism" (Manent & Balinski, 1996). Collingwood (1946) contends that in fact - *all* history is the history of thought (p. 215).

Boas (1972) explains that there are three (3) essential tasks of the intellectual historian. They are, to determine: 1) What is an idea?; 2) What does it mean?; and 3) What were the author's original intentions (p. 10)? Boas describes an idea as an assertion of belief, or a declarative statement. He contends that the truth or falsity of ideas does not concern the historian, but the meaning does. To determine true meaning and intent, Boas warns that the historian of ideas should not merely be occupied with what proponents of an idea are aware of, but also "what is involved in the idea by logic" (1972, p.10). By

utilizing "methods which are not greatly different from those techniques employed by the detective" (Winks, 1968, p. xiii), the intellectual historian can amass a sufficient body of authentic and credible evidence (i.e., other primary and secondary sources) to explain or provide context to the thoughts and actions of the subject.

Boas warns that intellectual history should be distinguished from psychology, in that the historian of ideas must refrain from engaging in "mind reading." He asserts that "it is against the rules to insist that a man must have been logically sound and that contradictions in his ideas can and must be explained away" (Boas, 1972, p.13). Thus, *post hoc* explanations developed solely by the impressions and conclusions of the researcher do not constitute intellectual history. Rather, the primary aim of intellectual history is to "understand what it was those making statements thought themselves to be doing...to think as they [historical actors] thought and to see things in their way...[to] recover the concepts they possessed, the distinctions they drew and the chains of reasoning they followed in their attempts to make sense of the world" (Mayhew, 1994, p. 324). As Irwin explains (1996):

> Ideas are the beliefs of people, what they assert. They are not, as we use the term, what they would have asserted had they known what we know, or what they should have asserted had they been consistent, or had they drawn the conclusions from their premises which we would draw (p.15).

The key to writing an accurate history, however, is for the historian to maintain (at all times) a "critical distance" (LaCapra, 1983, p.337). Erikson (1973) concurs and explains how this can be accomplished. He believes that the historian must interpret the data by continually asking a series of critical questions:

> Because [the historian's] evidence is second-hand and his subject matter remote, he is more or less forced to be more thoughtful about the evidence at his disposal and more skeptical about his relationship to it. To begin

> with, he is fated to work with documents of uncertain ancestry and must ask several questions about the material before he examines it. Why were these particular scraps of information recorded?....How accurate an observer was the writer (p. 23)?

Historians also stress the use of "context" for purposes of explanation. It is viewed not as mere background, but as "an attempt to 'explain' the position taken by an individual by means of a full account of the possible positions available" (Mayhew, 1994, p. 324; Darnton, 1980; Ward, 1971). Irwin explains that the methods of intellectual history rely, "extensively on quotations from primary sources to provide a flavor of the reasoning and argumentation originally employed by the participants themselves" (1996, p. 7). By accurately reconstructing context, we hope to "get as close an approximation of the truth as possible" (Gottschalk, 1969, p.47).

The primary unit of analysis for the historian of ideas is the text (both written and spoken). LaCapra explains that texts are significant due to the fact that they, "supplement existing reality" (1983, p. 48). By examining documents generated in the normal course of an organization's business, or obtaining detailed narratives from individuals who acted on behalf of the organization, we obtain texts that reproduce the context of these underlying ideas and actions, providing us with further insight into the past.

The constant interplay between text and context is quite dynamic and draws the historian into the process in subtle and challenging ways. LaCapra notes that "texts should be carried into the present - with implications for the future - in a dialogical fashion" (1983, p.63). He advises intellectual historians to "have a dialogue with the past" and to attempt to "situate texts with respect to their multiple, interacting contexts of creation and reception" (1983, p. 344). This concept of a dialogue or two-way conversation with the past is further explained by LaCapra:

> [I]t is only by investigating what a thinker did not explicitly or intentionally think but what constitutes his still question-worthy 'unthought' that a conversation with the past enters into dimensions of his thinking which bear most forcefully on the present and future.
>
> ***
>
> A dialogue involves the interpreter's attempt to think further what is at issue in a text or a past 'reality'; and in the process the questioner is himself questioned by the other (1983, p. 32).

The writing of intellectual history is certainly not an exact science. It is unlikely that we shall ever have a totally satisfactory explanation of the cause and effects of particular ideas, particularly when they are being transmitted and received in a complex, modern organization (such as the NYPD). Boas explains, "we cannot then say that no man draws the logical consequences out of the ideas of his predecessors, nor that all men do" (1953, p.19). He notes a further complication; the fact that ideas typically evolve, or take on new meanings over time.

Nevertheless, if we carefully craft our study of ideas, we should be able to "trace their rise and spread and their mutations in some detail (Boas, 1953, p.19). Gottschalk (1969) suggests that we continually seek to establish causation in order to prove the influence of particular ideas or events. He draws a distinction between an immediate cause or occasion and remote or underlying causes, but advises us to actively seek both in the course of our research. He notes that an immediate cause "is not really a cause: it is merely the point in a chain of events, trends, influences, and forces at which the effect begins to become visible" (Gottschalk, 1969, p.221). He views them as:

> [T]he precipitating event that serves as the dropping of a match in a combustible pile, or the tripping of a hammer on an explosive. As such, it is a good lead toward the antecedents that may be more satisfactorily described as "causes" (p.222).

If we succeed in identifying such events, we will gain much in our search for causation.

Gottschalk (1969) recognizes the difficulty of establishing causation or influence. This is so because causation, "is not a uniform thing. Sometimes various kinds of influence are incomparable and immeasurable" (1969, p.251). Nevertheless, he recommends particular methods of research that should yield positive results in this regard. For example, he states that:

> If A had an influence upon B, A must have been antecedent to -- or concurrent with B....Acknowledgement by B as to A's influence, may also be helpful in establishing it (p.261).

Such techniques serve as a check upon the more interpretive aspects of writing a history of this type and lead to a more progressive understanding of the past.

Oral History.

Oral history is another sub-discipline of history which has the potential to inform our study of the genesis and implementation of the Compstat process. By capturing and analyzing the thoughts and recollections of the actors who actually participated in this process, we can create a polyvocal and intertextual representation that will supplement all previous accounts.

The legitimacy of oral history as a research methodology has been well established (Fox, 1998). The methods associated with this process are quite similar to the methods of organizational ethnography (Fong & Kahn, 1998; Hodson, 1998; Bate, 1997). Both methods can be used to gain insight into the inner workings of human organizations. The oral historian, however, focuses exclusively on information obtained via in-depth interviews. The essential purpose is to accumulate and analyze information that cannot otherwise be gleaned from a review of the official records of the organization. As Henige

(1982) describes, oral historians are primarily concerned with, "accumulating data effectively, testing them thoroughly and meshing them with other evidence so that they can be widely regarded as reliable" (p. 6) Oral histories can therefore serve as a valuable supplement to written materials.

Henige describes a number of preliminary tasks that must be performed by the oral historian before asking any questions of informants. They are:

> 1. Secure research clearance....;
> 2. become aware of potentially useful documentary materials, since archival research is usually a part of the process generally called fieldwork;
> 3. develop a research schedule that, at least at this early stage, seems best adapted to make the most efficient use of the allotted time as it may need to be divided among archival research, on-site preparations, interviewing, and transcribing; and develop a preliminary list of topics to explore and questions to ask in what seem effective ways (1982, p. 25).

Once the historian is prepared to proceed with the interviews, the critical question that will be posed is, "What did these people see themselves as doing?" (Bate, 1997, p. 160). Interviews enable subjects to explain their actions and impressions in their own words. Interviews are interactive and are constructed as conversations whereby reality is continually "under construction" by both interviewer and interviewee. The interviewer's objective, "is not to dictate interpretation through a predetermined agenda but to provide a conducive environment for the production of meanings that address relevant issues" (Ritchie, 1997, p. 167).

Wilmsen (2001) describes oral history interviews as complex social interactions. He contends that they:

> are substantially more than an exchange of information in a conversation between two or more people. They are carefully staged communicative events, which follow specific protocols for the purpose of eventually

> communicating through some use of print or audio/visual media to a wider, undetermined audience. Indeed, the protocols of oral history transform a personal exchange between the interviewer and narrator into a public statement (p. 66).

Wilmsen however cautions against an "overemphasis on the interview as the magical moment when meaning is produced" (p. 65). He explains that oral history is not just what transpires during the interview itself; "Rather, it is comprised of the lengthy process of researching, interviewing, transcribing, editing, and preparing the transcript" (p. 65). Therefore, it is important to bear in mind the fact that, "transcribing and editing are integral parts of the interview process and the same social forces which shape meaning in the interview come to bear on the editing process, albeit in different ways" (Wilmsen, 2001, p. 66).

Oral history is obviously not an exact science. The present study is obviously limited to the extent that the recollections of informants/subjects might be erroneous. Polishuk (1998) notes that such errors are common and take place for various reasons:

> Sometimes narrators have secrets they want to keep from us; sometimes they deliberately lie. They can also be simply mistaken, that is, misremembering. They could have been misinformed themselves (p. 15).

Henige (1982) considers this, but notes that erroneous or deliberately false statements can actually prove to be quite useful to the oral historian. He contends that intentional misstatements of fact, or patterns of lying "that are discovered can at least help the historian learn about which aspects of the past (or present) there is dispute or a sense of avoidance or defensiveness" (1982, p. 58). Polishuk concurs, noting that such discrepancies, "enhance [ ] the value of the oral sources as historical documents" and that they "can be windows into values, dreams, self-image, and changes in attitude over time" (1998, p. 14) (see also Salamone, 1977).

The key issue appears to be discovery, as the undetected lie can cause great disruption. Henige advises that the problem can be adequately addressed by thoroughly cross-checking the accounts of each informant, and by cross-referencing this material with other texts (both oral and written materials).

Also, the process of recording and actually writing historical narratives is, "steeped in selectivity and subjectivity, starting with the selection of facts to the integration of these facts to form a story" (Wishert, 1997). There are a variety of factors that complicate this process, not the least of which are the dynamics associated with interviewer-interviewee interaction (Yow, 1997). The oral historian plays a unique role, first as interviewer, then as transcriber. It is therefore understandable that there will be some "intrusion of the interviewer's assumptions and of the interviewer's self-schema into the interviewing and interpretive processes" (Yow, 1997, p.56). The historian/researcher must also acknowledge the potential for inaccuracies by accounting for personal experience and narrative impositions on investigation.

Williams (2001) emphasizes the need to capture far more than the spoken word. She advises oral historians to search for, "the various articulations and performative aspects of the interview that we may marginalize, but which add richness and may reveal multiple levels of information in the oral interview encounter" (p. 42). She suggests that we note the subtle nuances of 'voice.' She explains that voice:

> represents much more than the traditional definition, [it] necessarily embraces different types of articulation: the utterances as well as non-vocal expressions such as a gesticulating body or a silent moment. These varied types of articulations expressed in a social setting comprise Voice, and render Voice inherently performative...The interviewee reconstitutes the past, creating a 'dramatic and contingent' rendition that reveals or masks (depending on the audience and the circumstances) levels of information. The stories are told with intent and purpose. The very nature

> of history telling, in which it is accepted that the narrator's words are consciously sought by the interviewer, results in performance (p. 42).

By being aware of voice as we conduct and transcribe interviews, we can identify the performative elements of the interview and unveil additional layers of knowing.

The key is to recognize this inherent lack of objectivity. As Yow states, "every historian knows that he manipulates the evidence to some extent simply because of who he is (or is not), of what he selects (or omits), of how well (or badly) he empathizes and communicates" (1997, p.57). These "fallibilities" can be addressed if the historian is vigilant and is prepared to address them. Since oral history is inherently subjective, the proper approach is to "use subjectivity – both for narrator and for interviewer – in understanding social history because both invest events with meaning (Yow, 1997, p. 58). Yow characterizes this as, "an objective relation to one's own subjectivity" (p. 61).

Topolski (1999) notes that both aesthetics and logic are required to bind together the various elements of basic information which will be obtained. While the creative aspects of this type of research remain somewhat intangible, there are a variety of instruments and methods available to the historian that can ensure logical analysis (such as Atlas ti, a software package designed for qualitative research purposes).

If a wide array of oral and written materials are obtained and reviewed in this manner, it should be possible to gain new insights into an historical event, such as the development and implementation of Compstat.

METHODOLOGY

Inquiry paradigm.

This study adopts the naturalistic, constructivist approach described by Schwandt (1994) and Denzin and Lincoln (1998a; 1998c). This research paradigm suggests that

there are multiple constructed realities that can be studied only holistically. This approach is distinguishable from the positivist approach in that "inquiry into these multiple realities will inevitably diverge (each inquiry raises more questions than it answers) so that prediction and control are unlikely outcomes although some level of understanding can be achieved" (Lincoln & Guba, 1985, p. 37). The aim of this type of inquiry is, "to develop an idiographic body of knowledge in the form of 'working hypotheses' that describe the individual case" (p. 37). It utilizes inductive data analysis and, "prefers to have the guiding substantive theory emerge from (be grounded in) the data because no *a priori* theory could possibly encompass the multiple realities that are likely to be encountered" (Lincoln & Guba, 1985, p. 41; Denzin & Lincoln, 1994).

This method is intended to yield a grounded theory, i.e., "one that is inductively derived from the study of the phenomenon it represents...[one that] is discovered, developed, and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon" (Strauss & Corbin, 1990, p.23; Denzin & Lincoln, 1998a; 1998b).

Research strategy.

This study utilizes the case study method, "because it is more adapted to a description of the multiple realities encountered" (Lincoln & Guba, 1985, p. 41). And "because it can picture the value positions of investigator, substantive theory, methodological paradigm, and local contextual values" (pps. 41-42). Yin (1994) has specifically recommended the use of case study as a research strategy for public policy and public administration research (p. 1) because it "investigates a contemporary phenomenon within its real-life context, especially when the boundaries between

phenomenon and context are not clearly evident" (p. 13). Yin explains that this method, "relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and...benefits from the prior development of theoretical propositions to guide data collection and analysis" (1994, p. 13) (see also Yin 1993). Denzin and Lincoln recommend the case study method for interpretive research projects since "individual constructions can be elicited and refined only through interaction between and among investigator and respondents" (Denzin & Lincoln, 1994, p.111).

Method(s) of data collection.

The primary sources of data for this study are: 1) a series of in-depth semi-structured interviews; and 2) a variety of internal Departmental documents that bear upon the issue(s) under study (discussed above). The methods of intellectual and oral history are utilized (discussed above). These tools are relied upon to present local and specific constructed realities and to display the "contextual, taken-for-granted, tacit knowledge" of the various informants (Denzin & Lincoln, 1998a, p. 297).

These methods of intellectual history appear to be particularly well suited to a research project that seeks to trace the introduction and movement of a management innovation into and through the various administrative levels of a large public organization (such as the NYPD). This project entails the examination of primary sources (texts) such as:

1) internal departmental documents (memoranda and correspondence) relating to Compstat;
2) published accounts describing Compstat's development and processes;
3) a review of internal documents relating to changes made to the organizational architecture of the New York City Police Department; and
4) a series of personal interviews of key personnel who participated in the Department's overall re-engineering efforts and/or the development of the Compstat management model.

Personal interviews were audio and/or videotaped and all exceeded approximately one (1) hour in duration.

Subjects/informants were initially contacted via standard correspondence. Telephone contacts were made as necessary, but solely for scheduling purposes. Informants/subjects were not provided with a list of specific questions prior to the date of interview.

It should be noted, however, that as a former member of the NYPD, the author was undoubtedly granted access to informants, or a body of information, that might otherwise be unobtainable to another scholar researching this issue. Although the NYPD did grant permission for the undertaking of this study, a series of preliminary, informal personal contacts with subjects that were made by intermediaries speaking on behalf of the author clearly facilitated access and ensured that rich narratives would be forthcoming. In this regard, it is also noteworthy that the author possessed somewhat of an intimate knowledge of many of the persons and practices described herein. While this familiarity might appear at first blush to be problematic, it is believed that it was actually useful in verifying much of the information gathered.

Methods of data analysis.

This study utilizes qualitative methods of analysis since, "they are more adaptable to dealing with multiple (and less aggregatable) realities...and because qualitative methods are more sensitive to and adaptable to the many mutually shaping influences and value patterns that may be encountered" (Lincoln & Guba, 1985, p. 40).

Data were recorded, coded and categorized via the "open" coding system described by Strauss and Corbin (1990) and analyzed via the "constant comparative

method" which has been described by Lincoln and Guba (1985, chapter 12). Axial and selective coding was utilized as necessary. Transcribed records were converted into text files and imported into a computerized qualitative data analysis package known as *Atlas/ti* (Denzin & Lincoln, 1998a, pps. 238-242; Coffey & Atkinson, 1996). It is this process which is intended to generate new theory about the phenomena observed.

Research question(s).

The overriding purpose of this research is to: 1) identify which ideas influenced the development and implementation of Compstat; 2) examine how those ideas were translated into policy; and 3) to critically assess whether, and to what extent, this innovation altered the communication and decision-making capacities, or the organizational culture of the New York City Police Department.

Specifically, this study will explore how those ideas were understood and acted upon by the participants and will attempt to identify distinct stakeholder groups who supported and/or were influenced by those ideas. It will document how those ideas reached the policy makers and were implemented into practice. In recounting this process, it is hoped that this study will identify how the implementation process itself helped to shape these ideas as they were understood in professional and academic literature and as they were informally and subjectively understood by the participants.

The temporal scope of the study is from 1990-1998. Subjects include only those individuals who had a professional relationship with the Department during this period; that is an employee or paid consultant of the Department. All informants were identified via a process of multiple-nomination. In other words, each was identified by several

sources as an 'insider' (i.e., an individual who had intimate knowledge of, or involvement with, the phenomenon under study).

For purposes of this study, the term "*policy*," is limited to any action, direction, or practice of the Department, its agents and employees, which was or is officially sanctioned or mandated by the Department.

The term "*practice*" includes any routine or common activity of the Department, its agents and employees, which may or may not have been officially sanctioned or mandated by the Department.

The term "*idea*" refers to any thought, mental conception, plan or intention that has been manifested as text (either oral or written). The "idea as text" approach enables the historian to use ideas as "concrete entities that can be traced through time and across space" (Kammen, 1980, p.327).

Theoretical framework.

Systematic inquiry into the understanding of innovation and change in organizations is found in the disciplines of sociology, organization theory, psychology and information science. This study therefore utilizes several theoretical models derived from these fields in order to describe and give meaning to the phenomena observed. In order to evaluate the robustness of these models, a series of propositions about the development and implementation of Compstat has been generated.

Evaluation is intended to reveal the degree to which these models account for (i.e., support directly, relate to, or contradict) the concepts represented by these propositions.

Proposition One: Compstat altered the information processing capabilities of the Department (i.e., the manner in which it responds to its external environment).

Theoretical model: There is an abundant body of scholarly literature which describes the unique nature of police organizations, and their overall intransigence with regard to reform efforts (see section Police Management). However, as Sparrow et al. (1990) explain, "policing is at a turning point, about to move . . . to a new understanding of what its ends, means, and form should be" (p. 31).

In order to examine and explain how the means and ends of the Department shifted during this period, this study will utilize the competing values framework/approach ("CVA") which was first developed by R. E. Quinn and J. Rohrbaugh in the early 1980's (1981). This method of analysis is based on theories of individual perception and information processing and it has been used as a method of conceptualizing organizational effectiveness and change (Van Wart, 1998). This approach assumes that environmental conditions (both internal and external) influence organizational effectiveness, culture and action. It suggests that individuals and organizations consider two primary factors about the information they receive: 1) the relative amount of certainty or predictability of the (work) environment; and 2) the necessity for action. Quinn and Rohrbaugh contend that, "[t]hrough physiological and social psychological development, organizations through their members become disposed toward particular responses to environmental cues" (Van Wart, 1998, p. 82). These responses develop as differing styles of information processing and they fall into four (4) general categories:

> The *rational style* (with an environment of immediate action but relatively high market certainty) analyzes patterns and selects the best strategy that it

> has used before. The rational style tends to value independent action and achievement.
>
> The *hierarchical style* (with an environment of high certainty and little need of immediate action) tries to maintain present behavior. It tends to value predictability and security. [Van Wart (1998) notes that the hierarchical style "has been the clear and overwhelmingly dominant strategy in public sector organizations for most of this century" (p. 82)].
>
> The *consensual style* (with an environment of low market certainty but only indirect competition) prefers to reduce uncertainty through interaction. It tends to value affiliation and mutual dependency.
>
> The *adaptive* style (with an environment of both high uncertainty and direst competition) plays the best hunch and uses a learn-and-adapt-as-you-go philosophy. It values flexibility and change (Van Wart, 1998, p. 82).

The present study will apply this model in order to describe and explain any changes that occurred to the information processing style of the New York City Police Department as a result of the development and implementation of the Compstat process.

Proposition two: Compstat dramatically altered the communication and decision-making processes of the Department.

Theoretical model: CVA has also been used to develop 'effectiveness' models. The framework of competing values is used to describe and explore three competing value dimensions relating to: organizational structure; organizational focus; and time. A graphic model employs a vertical axis which represents overall organizational structure, ranging from "stable" to "flexible." The horizontal axis represents organizational focus, ranging from "internal" to "external" (Van Wart, 1998, p. 85). A third dimension reflects time perspectives by differentiating between an overall concern for "means" (i.e., process) or "ends" (outcomes).

This model creates the following four quadrants: the *rational goal model* (with an emphasis on planning, goal-setting and efficiency); the *human relations model* (which emphasizes group cohesion and focuses on the development of human resources); the *open systems model* (which reflects a preference for flexible structure and rapid transformation); and the *internal process model* (which stresses stability through information management and control). It will be applied to the case at hand to identify and explain the predominant value sets of the Department before, during and after Compstat's development and implementation.

Proposition three: Compstat resulted in a fundamental shift in organizational culture.

Theoretical model: CVA will be used to describe the Department's changing organizational culture during this period. Van Wart (1998) has utilized CVA to display the universe of organizational cultures. He distinguishes four distinct types:

1. *rational cultures* (which focus on "achievement, logic and action.");
2. *hierarchical cultures* (which are characterized by "security, stability, order, and routine.");
3. *group* or *team cultures* (which "focus on the feelings of individuals and groups."); and
4. *adaptive cultures* (which are "characterized by creativity, risk, and flexibility.").

This model is an appropriate and effective tool for determining whether, and to what extent, the Department experienced a shift in organizational culture during this period.

Proposition four: Compstat developed as a logical consequence of the Department's overall re-engineering efforts.

Theoretical model: A model will be developed to explore the key dimensions of the re-engineering process, as described by Hammer and Champy (1992), et al. An abundant body of literature concerning this topic describes the necessity for a fundamental re-examination and re-design of *all* operations and work processes, particularly those related to information technology (Kettle & DiIullio, 1992). This study will therefore consider whether the development of Compstat was inevitable or expected, in light of the dramatic changes made during the overall re-engineering program instituted by the Bratton administration.

Proposition five: Compstat developed as a sustainable strategy for police management.

Theoretical model: In order to understand and appreciate Compstat's utility as a management model, it will be examined in light of Moore's theoretical framework known as the "strategic triangle" (1995, p. 70-73). This tool is used to examine specific public strategies and provides an analysis of "the external demands and of the internal capabilities" of a public organization (p. 72). Its three (3) criteria: whether the strategy is substantively valuable; whether it is legitimate and politically sustainable; and whether it can be considered operationally and administratively feasible, will be applied to Compstat.

CHAPTER 2

"PREDECESSOR" CONCEPTS AND PRACTICES

In order to orient this study, and to properly evaluate the "innovativeness" of the Compstat mechanism, it is first necessary to identify significant concepts and practices that predate its use and might have contributed to its development. The following section, therefore, presents an array of "predecessor concepts and practices" that might have made such a contribution (either directly or indirectly). Each of them has been either referred to directly or suggested by the informants providing their oral histories. This list is obviously not exhaustive. Nevertheless, by examining preexisting ideas in American policing, one can analyze whether, and if so, to what extent, these ideas influenced or contributed in any way to the development of Compstat within the NYPD.

It is important to remain cognizant of the fact that, "when organizations [such as the Department] initiate change, other forces are simultaneously working to maintain the existing situation, causing the organization to oscillate back to the status quo" (Coe, 1999, p. 168). Similarly, in an historical case study of this type, it is quite possible that several change agents are operating at the same time. As Lindbloom (1997) notes:

> Change is not initiated on an inert society. It is not like shaping a piece of marble into a sculpture, not like building a house on an empty lot, and certainly not like mobilizing an otherwise passive set of people into a movement. More than one sculptor is chiseling the marble. Some other builder is trying to build on the same lot or at least to alter the structure you want to create. In short, initiating change is a competitive, often hostile, activity (p. 264).

Keeping that in mind, this study makes every effort to identify and analyze the actions of the *primary* change agents in this story.

It is important to also keep in mind the fact that the practice of crime analysis and deployment is not new. This study shall make no such claim. Rather, it will suggest that the Compstat mechanism and philosophy it is a significant innovation and a considerable improvement upon these prior ideas and practices.

The Development of Crime Analysis Practices in American Police Agencies.

Maltz et al. (1991) contend that information, "is the lifeblood of the police" (p.12). Reed (1980) agrees, noting that:

> Every organization whether it is a private corporation or a government agency must operate on the basis of information - accurate, up-to-date information that it can get quickly on a need basis for day-to-day management and day-to-day operations. It must be in a form that can also be used at both the management level and at the planning level. The police are no exception (p. 43) (citation omitted).

For this reason, police agencies have been mapping crime with push pins and paper maps virtually since the time that they were first established (Groff & La Vigne. 2001, p.257). Simple pin mapping appears to be the earliest documented method of crime analysis. The process is described by Maltz, et al. as follows:

> Typically, an analyst puts a pin representing a crime on a map to note how the crime clusters around other crimes (distinguished, perhaps, by different colored pins), the land use characteristics of the location (i.e., near a park or school), and so on. The mechanical task of plotting the crimes is independent of any other data management or analytic task and must be kept up-to-date to be of any use (Maltz, et al., 1991, p.24).

However, pin maps have numerous shortcomings. As the characteristics of the crime or the location multiply, or as crimes proliferate, the density and complexity of the map can become unmanageable (Maltz, et al., 1991, p.24). Sometimes, even if properly prepared and maintained, "the amount of information on a pin map can be so extensive that it defies easy analysis" (Illinois Criminal Justice Authority, 1987, p. 1). Pin maps

also take time to prepare, are difficult to maintain, very labor intensive, and are static (i.e., cannot be queried) (Harries, 1999).

Automated recording and tabulation systems.

Crime recording methods progressed rapidly throughout the early twentieth century. By 1930, the International Association of Chiefs of Police initiated the Uniform Crime Reporting System, standardizing the classification and reporting of crimes (Rainier, et al., 1977, p. 1-2). Improvements in the field of automation also facilitated crime-recording efforts. By the end of the 1950's, "California police agencies were making substantial use of machine data processing. Los Angeles, as far back as 1923, had been using electrical powered statistical machines" (Martensen, 1966, p. 7-1).

The first electronic computer, named ENIAC (electronic numerical integrator and computer), was developed in 1946 at the University of Pennsylvania (Cawley, 1966, A-2). First commercially mass produced computer was the Univac 1, designed by the Sperry-Rand Corporation, in 1951 (A-4).

Reed (1980) notes that:

> [I]nitial police use of computer applications began in the traffic area, closely followed by development of crime related files that facilitated local, state, and national crime reporting . . .By 1967, . . . almost half (46.4 percent) of all police related computer applications were devoted to either traffic or crime related files (p.37).

During this period, however, the majority of computerized systems merely tracked the occurrence of past incidents; whether they be traffic accidents or criminal complaints. Few were being utilized for more proactive purposes, such as forecasting, planning, and resource deployment.

Many police departments initially turned to automation in an effort merely to achieve input data timeliness and overcome manpower limitations. According to Chang, et al. (1979), most often, the net result of automation was the accumulation of vast amounts of computerized data with no rapid and simple means of accessing that data (p. xxi). Perhaps for that reason, many departments were slow to adopt automation. Indeed, in 1979, Chang, et al. cautioned that *manual* crime analysis systems (such as the use of push-pins and handwritten or typed tabulations) could still be, "quite effective where staff levels [could] adequately cope with the crime volume and respond to the various demands characteristic of Crime Analysis Units within the proper time frame...automation is not always advisable for every department" (p. 2). Dissemination of information obtained from manual systems was accomplished through the preparation of periodic crime recapitulations, crime summaries, and bulletins that were distributed, "through the chain of command to personnel at the lowest level having the authority to take necessary action" (Grassie, et al., 1977, p. 3-4).

Despite the relatively slow movement away from manual systems of some departments, others used semi- or fully automated systems, whereby crime information, that was usually stored in manual filing systems, was instead stored in a computer, where it could be more easily retrieved. Through the early 1970's, several police departments (e.g., Los Angeles, San Diego, Dallas and others) had on-line access to their computerized crime record files (Chang, et al., 1979, p. 36).

The true potential of the computer, however, was not its utility as a more efficient means of recording and retrieving information. Its true value was its ability to *use* that information more effectively. As Grassie, et al., explain:

> The automated crime analysis system differs from the semi-automated [or manual] system in that the computer not only stores, sorts, and retrieves crime data but it also *performs some of the actual analysis* process In an automated system, the computer is *programmed to make certain decisions* regarding the data elements, *perform correlations*, and search for matches of offenses and suspects (1977, pps. 3-7) (emphasis supplied).

Thus, fully automated systems could, "provide decision-making capabilities as well as data storage, search, and retrieval facilities," and could be designed "to automatically search for crime patterns or make crime/suspect correlations" (Chang, et al., 1979, p. 4). Such a system, "allows a Crime Analysis Unit to adopt a more proactive posture than is usually possible with manual or semi-automated systems" (p.5).

One study conducted during the 1970's indicated that American police administrators recognized this potential. It indicated that the primary automation need expressed by the majority of the departments surveyed was for:

> the development of a data retrieval and report formatting system that could be utilized by any police department with automated data base files (i.e., a machine independent data management system). Such a system could support...the seven crime analysis functions by providing at least the basic data required by the analyst to pursue further analysis. In other cases, the complete reports could be generated *indicating correlations, patterns, problem areas, etc. The utility of such a device would be limited only by the kind of data available and the ingenuity of the analyst* (Chang, et al., 1979 p. xxi.) (emphasis supplied).

Forecasting and strategic applications.

The term 'crime analysis.' entails far more than mere graphical representation of past historical events. It also involves a prospective or inferential component that enables analysts to make reasonable conclusions about the probability and location of future occurrences.

Accordingly, Rainier, et al. (1977) define crime analysis as:

> [A] set of systematic, analytical processes directed at providing timely and pertinent information relative to crime patterns and trend correlations, *to assist operational and administrative personnel in planning and deployment of resources* for prevention and suppression of criminal activities, aiding the investigative process, and increasing apprehensions and clearance of cases (pps. 1-3) (emphasis supplied).

A critical component of the crime analysis function, therefore. is the process of planning and resource deployment. This is perhaps the most significant aspect of the development of crime analysis capabilities over the past century.

Historically, police officers spent most of their time on patrol in responding to calls for service. Over time, the productivity measure known as "response time" developed." While incremental improvement in response times were obtained. this form of "incident-driven policing" failed to recognize the full potential of accurate and effective crime analysis and fostered a reactive orientation and strategy towards crime (Maltz, et al., 1991).

Simmons and Kenney (1995) describe five (5) specific stages of crime analysis: data collection; data collation; analysis; dissemination; and feedback (p. 7). The dissemination and feedback components relate to the process whereby analyzed data are provided to operational units for tactical use. Field units would utilize such information and provide additional feedback to analysts for future operations.

Shortly after the turn of the century, August Vollmer, in an essay entitled, "*The Police Beat*," stated:

> On the assumption of regularity of crime and similar occurrences, it is possible to tabulate these occurrences by areas within a city and thus determine the points which have the greatest danger of such crimes and what points have the least danger (1972, p. 121).

Vollmer first introduced into the United States the English technique of systematic classification of known-offender modus operandi. He is also credited with being the "originator of the modern police records system, beat analysis based upon the examination of recorded calls for service, and the concept of pin or spot mapping to visually identify areas where crime and service calls are concentrated" (Rainier, et al., 1977, p. 1-2).

During the early 1960's, O.W. Wilson furthered the development of crime analysis by expanding Vollmer's beat analysis techniques to include hazard formulas or assignment of weighting factors to various categories of crimes and service calls. This was done in an effort to provide a systematic approach to the allocation of patrol resources. These efforts gradually led to the development of processes designed to determine how to allocate patrol resources among districts and among beats within districts, when and where to patrol, who the likely suspects of a crime are, which offenses are likely to be solved, and in general how to serve and protect the community. Wilson described crime analysis as a function of a police planning division, "with the purpose of examining daily reports of serious crime to determine locations, times, particular characteristics, similarities to other criminal incidents, and various other characteristics that might assist in identifying specific suspects or patterns of criminal activity" (Rainier, et al., 1977, p. 1-2, 1-3).

Such capabilities developed within American police agencies during the 1970's. According to Chang, et al. (1979), programs were designed to perform the statistical analysis of criminal incidents by type, area, and/or time. This would identify trends and ultimately support long-term police action. It was used primarily for strategic,

administrative, and long-range applications in crime analysis (Chang et al., 1979, p. xix.). The ability to predict the exact time and location of future criminal events for short-range purposes proved to be somewhat more difficult. While the prediction of crime potentials for specific targets was viewed as "the ultimate goal of crime analysis," the achievement of such predictions with any degree of accuracy was thought to be virtually impossible (Chang et al., 1979, p. xviii.).

There was thus the concurrent development during this period of: 1) crime recording capabilities; and 2) investigation and crime prediction capabilities. It was the advent of the computer in the latter half of the twentieth century that advanced these two functions and introduced a new era in modern crime analysis.

The rapid development of computer technology through the 1960's greatly enhanced analysis capabilities and motivated American police departments to explore more advanced investigation and forecasting methods. In 1967, the President's Commission on Law Enforcement and the Administration of Justice noted the labor-intensive nature of police work and called for experimentation and modern technology to help improve deployment procedures. The report indicated that, "[c]riminal justice could benefit dramatically from computer-based information systems" and called for the immediate "development of a network designed specifically for its operation" (*Challenge of Crime in a Free Society*, 1968, p.599).

However, during the 1960's, while continuing the development of automated crime files, police departments began developing real time computer systems to provide rapid feedback to queries on stolen cars, wants and warrants, and gun ownership. In 1964,

the St. Louis Police Department "became the first police group to establish on-line information retrieval capabilities" (Reed, 1980, p. 39).

This system employed "the power and versatility of a modern electronic computer [system], an IBM 7040/7740 combination" and was "one of the first police information systems in the world" (Reed, 1980, p. 40). Remote terminals were located in district stations. By channeling field inquiries to analysts at base commands, a link between patrol officers and the information was immediately made, by means of the computer.

Morris (1982) describes the process known as "visual investigative analysis" (VIA), which was developed by members of the Los Angeles Police Department during the mid-1960's. Via utilized a "picture chart" that "define[d] activities and graphically link[ed] them together in the order of occurrence" (Morris, 1982, p. 2). In other words, VIA enabled investigators to produce a 'flow chart' to direct and track all aspects of a criminal investigation. This process utilized computers to document particular steps and enhance information retrieval capabilities. By the early 1970's, the California Department of Justice formed a statewide VIA unit, and began to provide VIA services to local law enforcement agencies and district attorney's offices (Morris, 1982, p. iv). By the early 1980's the concept had spread throughout law enforcement agencies across the country.

Once police agencies were able to rapidly retrieve statistical information, it was obvious that computers could perform a broader function, and possibly support the patrol function.

By 1966, the Chicago Police Department was utilizing computer technology for the, "gathering and reporting of information which [was] required for the proper evaluation of field work. Included are the analyses of patrol and detective operations..."

(Gorgol, 1966, p. 4-3). Gorgol (1966) describes a number of statistical reports that were prepared and distributed semi-annually, such as the beat workload report, which was a series of seven computer reports analyzing police service for geographical segments of the city. Beat configurations and patrol patterns were then established based upon these reports, to conform to the identified need(s) (i.e., hot spots). The Chicago Police Department utilized this technology to provide, "a thick blanket of patrolmen scientifically employed to area of need" (Cawley, 1966, A-9).

Gorgol, who was Executive Assistant to O.W. Wilson, then Superintendent of the Chicago Police Department, stated:

> I feel that we have only scratched the surface in using the capability of electronic computation. To date, the primary interest of police agencies has been in the relief of manual effort involved in the storage and accessibility of large volumes of records and information. In most cases, we have failed to recognize the real power and analytic capability of the computer in accomplishing technical and scientific analysis. Our mental and physical ability to utilize electronic computation to its capacity has lagged far behind computer development...Computers are capable of analyzing crime patterns and of predicting the most probable location of future crimes...we can evaluate the probable results of applying new police practices before they are accepted for operational use" (1966, p. 4-6).

The establishment and funding of the Law Enforcement assistance Administration ("LEAA") was critical to the further development and implementation of such computerized crime analysis systems in the United States. The LEAA Crime Analysis Operations Manual (of the ICAP program) called for a "comprehensive effort to plan and evaluate the delivery of patrol services as efficiently as possible" (Rainier, et al., p. 2-1). The computer was a key component of this type of analysis. LEAA's, "insistence on the use of analysis in support and evaluation of its grant aid programs [ ] stimulated the now-

rapid growth of crime analysis" and furthered the practice of computer analysis (Rainier, et al., 1977, p. 1-3).

During the 1970's the LEAA also contributed by surveying 3,400 law enforcement agencies throughout the United States and found that very few of the surveyed agencies, "could be described as being comprehensive or current, or having an effective operational program [of crime analysis]" (Chang et al., 1979 p. xv.). Many of the responding agencies were not utilizing computers "to any significant degree" at the time of the survey (Chang et al., 1979 p. xv). That is not to say that no agencies had progressed in this regard. By the early 1970's, the Los Angeles Police Department had pioneered this process, through the use of a system called Pattern Recognition for Investigating Crime (PATRIC) (Maltz, et al., 1991, p.25). PATRIC derived its data from offense/incident and field interrogation reports. Through a series of programmed sort routines, a PATRIC analyst would compare new offenses, investigator requests or arrest descriptions against the information in the computer files for possible matches. PATRIC also utilized a flexible data management system for ad-hoc information retrieval (Chang, et al., 1979 p. 38).

The LEAA worked to develop crime analysis capabilities on a national scale. In 1973, it developed a '*Prescriptive Package*,' entitled Police Crime Analysis Unit Handbook (grant #73-TA-99-1000). It described the benefits then available to law enforcement agencies through the establishment and operation of Crime Analysis Units. It also illustrated how such a unit could be developed.

The overall purpose of the LEAA was "to help analyze problems encountered by police departments in their day-to-day operations and to provide assistance to police

departments to help them 'modernize' their operations to reduce the rising crime rates" (Reed, 1980, p. 24). As such, a considerable effort was expended in developing crime analysis systems that could support and ultimately help direct both patrol and specific tactical operations.

A series of manuals was prepared by the LEAA on behalf of the Integrated Criminal Apprehension Program (IACP). These manuals were published specifically to facilitate the establishment and operation of crime analysis units in municipal police departments, "for the purpose of improving patrol deployment" (Rainier, et al., 1977, p. iii.). In other words, an effort was made to encourage departments to utilize computers for deployment purposes, as well as mere record keeping and computation purposes.

The overall objective of the IACP was to increase the "efficiency and effectiveness of field services by using crime analysis data in a systematic way for directing deployment and tactical operations" (Rainier, et al., p.1-1). The specific manuals comprising the series were the: 1) Crime Analysis Executive Manual; 2) Crime Analysis Systems Manual; 3) Crime Analysis Operations Manual; and 4) Model Records System Manual and Reporting Guides (Rainier, et al., pps. iii-iv). The ICAP program helped LEAA support projects in local police departments, establishing a formal crime analysis function to aid patrol supervisors in a more structured method of managing the work of officers on the street (Rainier, et al., p. 5-2).

Chang, et al. (1979) described the manner in which the Santa Cruz, California, police department allocated patrol forces based on the recommendation of an automated manpower allocation system, Police On Spot System of Enforcement (POSSE). It was designed to provide field commanders with, "an information/decision matrix to enable

manpower deployment decisions, specifically when and where to deploy available resources" and to "provide a feedback capability for evaluating what effect, if any, these decisions had on calls for service" (p. 122). This information that was yielded was provided to watch commanders prior to each 28 day report period for manpower scheduling purposes. The results of previous scheduling and beat assignments were fed back to the commanders to allow them to evaluate their effectiveness (Chang, et al., p. 123). Watch commanders were instructed to work with analysts to develop the, "master manpower schedule for the 28 day report period" (Chang, et al., p. 123).

The POSSE system:

> generate[d] feedback information to the decision makers. Two feedback reports [were] generated. The first report graphically display[ed] the percent of patrolmen available by hour against the percent of actual calls-for-service by hour for the preceding report period. The report [was then] reproduced for each day of the week. The patrol commander [could] get an immediate assessment on how well he allocated his personnel and if they were under or over staffed during their particular shifts. The second feedback report show[ed] how well the POSSE system forecasted calls-for-service (Chang, et al., 1979, p. 126).

The tactical application of such systems within American police agencies appears to have developed initially within their various 'specialty' units, for the purposes of recording, monitoring and controlling cases referred to, or initiated by them (Chang, et al., 1979, p. 181). The POSSE system is noteworthy, therefore, due to its availability to patrol services and a more generalized application.

By the early 1970's, analysis of patterns of crime and non-crime calls for service was being used extensively by American police departments, for allocating manpower across shifts and patrol cars across beats. These programs, funded by NIJ and other agencies, resulted in the Hypercube model and patrol car allocation model (PCAM), and

others" (Maltz, et al., 1991, p.24). These models, however, focused "on departmental administrative and resource allocation matters – such as drawing beat boundaries for equalizing workloads – rather than on offense patterns for investigating, preventing, or deterring crimes" (Maltz, et al., 1991, p.24) (citations omitted). During the 1970's, the Portland, Oregon Police department utilized a computerized system for tactical resource deployment (Chang et al., 1979 pps. 90-93)(Richardson & Stout, 1975). The St. Louis Police also developed an automatic means of depicting crime graphically during this period. By using an IBM mainframe computer and SYMAP, a line printer mapping program, the St. Louis Police developed a system that helped "this use of computers [to] spread to police departments throughout the United States" (Maltz, et al., 1991, p.25).

Through the 1970's, crime analysis units proliferated to support the deployment of patrol, investigative, crime prevention, and special tactical units. The basic function of the crime analysis unit was to identify, describe, and disseminate information concerning crime patterns and problems. The patrol supervisor would then use this information in developing a tactical response and coordinating the efforts of his/her personnel with those of other units in the department (Rainier, et al., 1977, p. 1-9). Rainier, et al. (1977) note that:

> As the primary user of crime analysis products, the patrol supervisor is the key connecting link back to the crime analysis unit. The patrol supervisor can improve the products of the crime analysis unit by explaining the types of information he requires and the form in which it will be most useful to him (p. 1-13).

Rainier, et al. (1977) also noted that, at the time, many departments "use[d] the information only to support the operations of a special tactical unit targeting a specific

crime (i.e., residential burglary). Other departments use[d] the information to support proactive (in contrast to reactive) patrol deployment" (p. 1-9).

By the early 1970's, scholars and police administrators alike were questioning the efficacy of the police tactic known as "random" patrol. This was due largely to the somewhat unexpected results of the Kansas City Preventive Patrol Experiment. Nevertheless, the relative effectiveness of this method of enforcement was a distinct question from whether the computer could be of assistance in terms of overall police productivity. Clearly, the potential was there for computerization and analysis to assist in the patrol planning function. As Rainier, et al. (1977) noted at the time:

> The recent attention given to patrol has increased an overall understanding of the realities and potential of this vital police function. The detection and deterrent values of random, as distinct from directed, preventive patrol have been recently questioned. Random, non-directed patrol is now seen as a costly strategy with very little benefit to either the department or the community. As a result, police agencies are focusing closer scrutiny on the large amount of unstructured patrol time purportedly dedicated to preventive patrol. Consistently, departments are having great difficulty in defining how this segment of time is expended and for what purposes (p. 2-2).
>
> ***
>
> [B]ecause patrol has the largest portion of department resources and because it contributes by far the most to meeting department objectives, *small increases in patrol efficiency and effectiveness promise to provide the most significant operational gains* for the police department (p. 2-2) (emphasis in original).

The architects of the IACP program recognized that patrol was both the, "chief user and principal supplier of crime analysis information" and envisioned a process whereby, "Crime analysis unit interaction with patrol [was] a constant, ongoing process" (Rainier, et al., p. 3-1). They directed patrol supervisors to take a "key role" in the program and to "be alert to take full advantage of the decision-making latitude he has

available for initiating or influencing change and innovation. This involves constant recognition of opportunities to improve patrol decision making" (Rainier, et al., 1977, p. 2-8). They warn that, in order for a crime analysis unit to be effective, it must, "establish credibility with all patrol users, especially the patrol supervisor. This is accomplished through the analysis unit's provision of timely and accurate crime bulletins to all patrol users, and through the unit's solicitation of feedback from patrol supervisors and line officers on the crime analysis products (Rainier, et al., 1977, p. 2-8)."

Crime analysis information could therefore support decision making on two levels: strategic (policy-oriented decisions made at the highest command levels of the department); and tactical (action-oriented decisions made close to the service delivery level) (Rainier,.et al., p. 1-6). Specific deployment decisions could be made for an entire patrol force, or have a more short-term focus, such as the particular location and activity of a special tactical unit. Allocation decisions could similarly be made by, "determining the necessity for such a unit, its objectives, its size, and its organizational placement – factors that provide the structural framework for the deployment decisions" (Rainier, et al., 1977 p. 1-7).

Despite the significant progress in tactical applications, the computer was not viewed as a panacea. As Reed (1980) noted:

> During the 1960's and 1970's the police [automated] many of their data management, patrol allocation, and patrol dispatching functions. Large amounts of data are [now] in machine readable form. It would seem that the gloomy crime data picture has improved. This is not entirely true. First, the development of these police systems has been haphazard. This type of development produces different formats for the data over time, different types of data over time, and different data archival techniques over time. This becomes a researcher's nightmare to untangle (p.3).

Thus, further research and development was required if the police were going to be able to utilize computers for more intelligent and effective deployment strategies. These capabilities gradually came about due, in large part, to the development of mapping science.

The development of mapping science and the development of real-time deployment capabilities.

The discipline known as 'geography "has been defined as, "the science of distributions, [ ] its basic tool is the map and its prime function is to express facts on maps – in other words the cartographical interpretation of data" (Stamp, 1965, p.14). Geographers have, for centuries, utilized maps, "for the analysis of data in a spatial context" (Carter, 1984, p.3). The skills and practices associated with geography can be used to add insight to patterns of distribution, gradients, densities, and associations, among physical or social phenomena. Social scientists have used geography to study, "social patterns, frequency of arrests, population density, resource potential or consumption, ...[etc.]" (Carter, 1984, p.3).

The geographical distribution of disease has been monitored for quite some time. Indeed, as Elliot, et al. (1996) suggest, "It is not surprising that this method of descriptive analysis was first used for communicable diseases in an attempt to identify the sources of infection, and to describe the rate of spread. Mapping of chronic diseases probably started with the recognition that environmental factors play an essential role in their aetiology" (Elliot, et al., 1996, p.235). Density maps were developed and used by medical practitioners and public health officials alike, to track and perhaps prevent disease. On such a map, "an attempt [was] made to indicate by gradation in colour or shading relative intensities of disease incidence" (Stamp, 1965, p.21). By the early 1900's, the use of

density maps by medical geographers (i.e., epidemiologists) was quite common. Today, the representation and analysis of maps of disease incidence data is "established as a basic tool in the analysis of regional public health" Lawson, et al., 1999, p.3).

According to Lawson, et al. (1999):

> [O]ne of the earliest examples of the important role of geographical analysis of disease was the analysis of cholera outbreaks in the east end of London by John Snow in 1854. Snow constructed maps of the locations of cholera deaths and noted the particular elevated incidence around the broad Street water pump, a source of water supply for the local area (p. xiii).

The major aim in studying geographical variation in disease rates is, "to formulate hypotheses about the aetiology of disease by taking into account spatial variation in environmental factors" (Elliot, et al., 1996, p.3). Maps of disease incidence can also be used to assess the need for geographical variation in health resource allocation, or could be useful in research studies of the relation of incidence to explanatory variables.

According to Elliot, et al. (1996), epidemiologists utilize various types of geographical studies:

> The first category includes studies where the aim is simply to describe the distribution of disease with respect to place of occurrence. The results of these studies are often presented in maps. The second category includes ecological studies (sometimes known as geographical correlation studies) in which the aim is to describe the relationship between geographical variation in disease and concomitant variation in degree of exposure to a particular factor (usually an environmental agent or a life-style-related characteristic, such as diet) (p.4).
>
> Maps provide the most succinct summary of descriptive geographical data since they display the spatial distribution of the characteristic of interest. On a map, the geographical distribution of disease is readily visible to the eye" (Elliot, et al., 1996, p.5).
>
> Statistical tables, while able to present more data than maps, cannot easily convey these spatial patterns and so are a less comprehensible or accessible means of presenting geographical data. Subtle patterns may be

> missed in tables . . . [However,] it is difficult to present more than one variable on a single map so that important features of the data (e.g., the number of cases on which a rate is based) may not be portrayed. Ideally, supporting tabular data should be presented alongside the maps" (Elliot, et al., 1996, p.5).

A thorough examination (i.e., survey) of mental hygiene services in New York City was conducted by the New York City Committee on Mental Hygiene of the State Charities Aid Association during the Spring of 1927. (Greene, et al., 1929, p. xi) In an effort to determine the adequacy of treatment provided by out-patient clinics throughout the city, the committee engaged in a, "careful analysis of the records of 350 clinic patients, showing the type of patient examined and treated in these clinics in respect to age, sex and race; the diagnosis made and the method of examination which led to it and the treatment given through psychiatric, medical and social procedures" (Greene, et al., 1929, p.18). While the survey did not study all psychiatric cases that were treated in the city, it did examine case records from all major mental hygiene clinics operating within the city at the time (a total of 350 cases). A special examination of geographical distribution was made for these cases and twenty-five (25) cases from each clinic were randomly selected and examined in depth. Committee members recognized the inherent limitations of their study methods, but noted the following:

> While twenty-five cases alone hardly give an adequate picture of an individual clinic, yet where supplemented by personal visits and by other reliable data it is not improper to assume that this information when evaluated as a whole indicates rather clearly the types of clinic patients and clinic methods (p.19).

Epidemiologists continued to utilize mapping science throughout the twentieth century, often with great success. For example, the incidence of asbestos-related lung cancer among shipyard workers in Georgia was established during this period by "large-

scale comparative mapping of the geographical distribution of the disease" (Greene, et al., 1929, p. xiii). In 1965, the Laboratory for Computer Graphics and Spatial Analysis, Graduate School of Design, was established at Harvard University (Carter, 1984, p. 42).

Mapping science was also critical in defining the nature of the threat of AIDS (Acquired Immune Deficiency Syndrome) to the population of New York City, when the epidemic was first publicly recognized in 1981 (see generally Bayer, 1995). Similarly, mapping science has greatly assisted epidemiologists in tracking and responding to the "return" of tuberculosis to certain populations and communities within New York City (Bayer, 1995, p.147).

The various methods used in connection with disease mapping are clearly analogous to the mapping of crime. Indeed, as Bierne (1993) notes, "concept formation in positivist criminology was closely tied to the movements in public health" (p. 111). Perhaps the most striking similarity is the degree to which the search for a disease "cluster," resembles the attempts to identify and react to crime "hot spots."[1] Since there are both spatial and temporal characteristics to crime, specific areas of crime occurrence can be studied in detail. As Reed (1980) notes, "When a crime is committed, both the location of the crime and the general time the crime occurred are known" (p.1). Thus, while mapping science led to considerable advancements in the field of medicine, sociologists similarly began to utilize its various techniques in the field of criminology.

The ecology of crime/crime mapping.

Geography is not only a science: it is also a point of view, an orientation or a perspective. As Taaffe and Gauthier state, "One must consider geography more as a point of view than as a field dealing with particular types of phenomena" (1973). As the field

of criminology first developed, many of its earliest practitioners did adopt a geographic point of view. In other words, criminologists have, from earliest times, been fascinated with the ecology of crime and have sought out specific techniques and methods for the spatial and temporal expression of crime data.

According to Maltz, et al. (1991) early attempts to understand, "Geographical and chronological variations in crime and criminal justice first underwent scientific scrutiny by Poisson. In a study of crime in 19th century France, Poisson found a significant difference between the conviction rate in Paris and that in the rest of France" (p.41)(citation omitted). Bierne (1993) notes that the first example of the use of shaded maps to portray crime rates was produced jointly in Paris by Guerry and...Balbi" (p. 114). Guerry's maps included:

> The type and the number of crimes (against persons and against property) committed annually in France between 1825 and 1830, with variations in their commission associated with sex, age, and season; the underlying motive behind capital crimes such as poisoning, murder, and assassination; and the geographical distribution of personal and property crimes (p. 115).

Bierne notes that Guerry's cartography of crime was erected on the positivist belief that, "the observation and study of facts are the basis of our knowledge" (1993, p. 115). His maps were based on data from the French national census of 1822 and were utilized to identify correlates of criminality, such as poverty or lack of education. Guerry's maps were also believed to a more effective means of representing otherwise abstract concepts and phenomena to policy makers and administrators. Citing another early social cartographer, William Playfair, Guerry noted that:

> Men of great rank or active business, can only pay attention to general outlines; nor is the attention to particulars of use any farther than as they give a general information. And it is hoped, that with the assistance of

> these charts, such information will be got without the fatigue and trouble of studying the particulars of which it is composed (Bierne, 1993, p. 113).

This early movement in social (i.e., criminal) cartography did much to influence concept formation in the relatively new field of criminology. According to Harries (1999), "hundreds of spatially oriented studies of crime and delinquency have been written by sociologists and criminologists since about 1830" (p.16).

The skills associated with cartography reemerged again during the 1930's and 1940's, when the search for the root causes of crime led to the development of "opportunity theories" that purported that, "offenders are influenced by situational and environmental features that provide desirable – or undesirable – offending opportunities" (Groff and LaVigne, 2001, p. 258). According to Maltz, et al. (1991), "The most well-known and sustained study of the ecology of crime was conducted by the sociologists of the Chicago School of Sociology" (p.41) (see Shaw and McKay (1969). They detailed variation in delinquency rates among different communities, and attributed the differences to poverty, poor housing, etc. Shaw and McKay are generally credited with producing, "the landmark piece of research involving crime mapping in the first half of the twentieth century" (Harries, 1999, p. 16).

A critical component of these studies was the use of shaded density maps of Chicago neighborhoods (see, e.g., Shaw, 1966, pp. 34-44). However, many of these maps depicted the movements of offenders, and not necessarily their crimes (see also Reed, 1980, p.10). Reed (1980) explains, that if one could summarize this early research in intraurban crime variation, "one would find that instead of inquiring into the nature of these spatial variations, workers from many different disciplines have been...pre-occupied with the ecology of so-called delinquent and criminal areas within the cities" (p.

11). The information that was available at the time, and these mapping skills could similarly have been used in a more tactical fashion; that is, to study and perhaps predict or prevent crime occurrence. As Taaffe and Gauthier (1973) explain, this process "begins with the analysis of patterns, then moves to the processes that have brought these patterns about" (p.1).

Thus, despite the fact that these criminologists were considering environmental issues as possible criminogenic factors, few had focused solely upon the issue of crime and place. According to Reed (1980), "It was not until the late 1960's that geographers began to have an interest in the spatio-temporal structure of crime" (p.2). Most likely, "the first use of computerized crime mapping in applied crime analysis occurred in the mid-1960's in St. Louis" (Harries, p. 18) (see Pauly, et al., 1967). Most of the earliest crime maps were produced using, "the SYMAP program developed at Harvard"(Harries, 1999, p. 92).

In the 1960's and 1970's, scholars further studied the relationship between physical environment and crime, Oscar Newman (1972) was a leader in the identification and correction of criminogenic features of the physical environment. The principal idea is that, "physical features that offer better surveillance, delineation between public and private space, segmentation of outdoor space into locations controlled by smaller groups, and proximity of sites to well-used locations, enable stronger resident-based informal control of outdoor, near-home spaces" (Taylor & Harrell. 1996). Studies testing these theories were conducted throughout the 1970's and 1980's (see, e.g., Taylor & Covington, 1988).

The Report of the President's Commission on Law Enforcement and Administration of Justice (1968) paid particular attention to the spatial distribution of reported crime (as evidenced by the Uniform Crime Reports). The Commission was "able to isolate the prevalence of crime and found it to be concentrated in the inner city areas" (Newman, 1972, p.35). As part of their analysis, the Commission utilized simple density maps that were drawn to represent the "variation in index offense rates by police district" (President's Commission, 1968, pps. 66-67).

Throughout the 1970's and 1980's, an array of scholarly works was devoted to studying the ecological variation of crime (see generally Figlio et al., 1986; Harries, 1980; Pyle 1974; Newman, 1972). These studies described the role that community characteristics play in the generation or prevention of crime. Slowly, researchers began to avail themselves of available geographic data (primarily made available through the national census and sophisticated crime reporting instruments, such as the Uniform Crime Reports and the National Crime Victimization Survey) and began to create computerized mapping systems to be used by American police departments.

The Geographic Base Files for Law Enforcement project ("GBF") [LEAA grants # 74-SS-99-3305 & #76-SS-99-6064] represents one of the earliest and most ambitious programs for the use of computerized geographic data by American police agencies. This project was funded by the LEAA to the International Association of Chiefs of Police ("IACP") in 1974-1978, and studied the requirements and feasibility of implementing GBF in law enforcement agencies. With the support of the United States Census Bureau and the United States Department of Commerce, the project provided technical assistance

in developing computer mapping systems and implementing geocoding (Chang, et al., 1979, p. 18).

Initially, it was intended that geographic base files would be used to assist the dispatching component of police command and control operations. In other words, these computerized files would be used to determine which patrol unit was geographically nearest to the reported incident (Geographic Base Files, p. vii). In its 1973 report entitled, *Police: Command and Control Operations,* the National Advisory Commission on Criminal Justice Standards and Goals promulgated Standard 23.2 which stated that:

> Every police agency should acknowledge that the speed with which it can communicate with field units is critical: that it affects the success of agency efforts to preserve life and property; and that it increases the potential for immediate apprehension of criminal suspects. Therefore, a rapid and accurate communications capability should be developed (cited in Geographic Base Files, p. 29).

The creators of the project did however anticipate additional uses, including a more proactive crime analysis function, "to detect crime trends and patterns, ... and identify areas for patrol unit concentration" (Geographic Base Files, p. vii) The National Advisory Commission on Criminal Justice Standards and Goals, Standard 4.2, recommends that: "Every police department should improve its crime analysis capability...[which] may include utilization of the following: ... 2. Pattern recognition" (Geographic Base Files, p. 39). The Commission also recommended that departments avail themselves of the new geocoding technology by:

> [the] collect[ion] for use at the local, regional, and state levels of all incidents considered to be crimes and that these data should be identified according to "geographical location and type of location. . . It is important to know where crimes occur. Data should be available for small geographic areas such as police beats or even by block. Data by precinct or police district is the minimum acceptable for reasonable planning (Geographic Base Files, p. 39).

Standard 4.8 recommended that, "where practical, police should establish a geographical coding system...geographic base files, with the appropriate computer and ancillary equipment, can draw maps with crime rate information or spot maps recording specific incidents" (Geographic Base Files, p. 40; see also p. 47). Interestingly, GBF projects were established during the 1970's in Dallas, San Francisco and Kansas City, Missouri, but not in New York.

The defining feature of these early systems was the use of the geocode; that is, a location or geographic reference variable such as a "census tract identifier, police patrol beat, or a unique X/Y coordinate" (Reed, 1980, p. 34). These systems required x-y coordinate geocodes associated with the data, or data reference files (geographic base files) correlated with nominal area geocodes (names of a geographic location, such as census tracts, census blocks, police sectors, etc.) All information would be geocoded so that data could then be displayed geographically (i.e., on computer-generated maps).

The GBF process was an effective and powerful tool for information management that contributed to the development of several sophisticated computerized crime analysis and deployment systems during the 1970's and 1980's (Chang, et al., 1979). They include:

The Kansas City Police Department Resource Allocation System.

During the 1970's, the Kansas City, Missouri Police Department developed a computerized information system with a particularly expansive scope. Known as the Kansas City Police Resource Allocation System (KCPRAS), it served as a manpower utilization analysis and forecasting system. Its most significant feature was its forecasting package. It used a weighted exponential smoothing technique to forecast (1)

manhours of workload and (2) man events (at the option of the user) for a one week projection period. The forecasting reports would then be expressed by census tracts and blocks or patrol beats, whichever was desired. This information would be displayed on computer-generated maps, which were distributed for further analysis.

Interestingly, the Kansas City system did not forecast crime. It did however forecast the number of calls-for-service, and the number of self-initiated activities (on-view events). It served as an administrative tool which provided information regarding the availability of patrol units; where they were needed; the time of need; and why. The information was used to assist police administrators in defining workload prior to the occurrence of crime, by showing the distribution and volume of patrol service requirements with respect to: hour of day; day of week; geographic area; week of year; and class of activity. The system utilized an on-line census file, developed in 1968, which had street address information. By utilizing geographic based census files, its developers and users were:

> able to produce reports on as little as one block of the city or as much as is desired. If, for instance, we wanted crime information on a controlled area, we can extract that data by selecting the census tracts and blocks that encompass that area and report the crime that has occurred there (Geographic Base Files, p. 44).

The source of data for this system was police dispatch cards and the data base had one full year's supply of these patrol dispatch-workload records (Chang, et al., 1979, p. 118).

Throughout the 1970's, police departments in other cities began to experiment with similar resource allocation programs. These cities include St. Louis, Boston and Los Angeles (Colton (1978).

The Dallas Texas Police Department's Real-Time Tactical Deployment System.

Computer mapping therefore had a number of applications in the field of policing. Information contained in crime reports could be converted into "X/Y" coordinates on a map and a computer could then be used to relate the coordinates of an offense to a given neighborhood, block, patrol beat, or patrol sector. Alternatively, some departments used a system of geocoding based on census tract information (Grassie, et al., 1977). This meant that the input data had to include at least the address of the crime location, the date of occurrence and the crime type. The data typically needed to be captured, geocoded and produced in the computer-plotted format at the beginning of each working day (Chang, et al. 1979, p. 18).

Computer mapping played an integral role in the development and application of the Dallas Texas, Police Department's Real-time Tactical Deployment ("RTD") System, which was developed during the early 1970's. RTD was, "a three-year effort designed to develop the necessary software system for impact crime problem identification, analysis, and prediction on as near a real-time basis as possible" (Geographic Base Files, p. 41). RTD was a computerized system that, "select[ed] geographic-based crime problems for the deployment of the tactical units of the department (Grassie, et al., 1977, p. 3-8). The unit of analysis was "the high crime areas, called "hot" adjacency clusters, [that were] detected by comparing the current day's crime count for each adjacency cluster with the corresponding daily count for a selected time cycle. The time cycle selected [would] be some representative time period which [would] yield a good estimate of crime activity in the adjacency cluster" (p. 3-8).

When the daily crime for the adjacency cluster exceeded the expected level of crime by some threshold amount, the adjacency cluster would be considered a "hot" area

and detailed crime occurrence reports would be generated describing activity in the cluster" (Geographic Base Files, p. 41). Grassie, et al. (1977) described how RTD, "provide[d] detailed geographical crime information quickly enough to allow tactical assignment areas to be selected daily, if necessary, without the use of spot maps or manually prepared analysis reports. Tactical planners need[ed] only to review the information provided to decide where to make deployments (and where to conclude previous deployments)" (p. 3-8). The RTD system was operated by the Dallas Police Department's Crime Analysis Section to identify and analyze hot crime areas in the city. They concentrated the use of the system on residential burglaries during the week, and business burglaries on the weekends.

The particular methods and practices associated with RTD are notable due to their uniqueness. Each of the 158 patrol beats in Dallas was evaluated each morning for burglary problems through examination of summary reports provided by the RTD system. The information provided in these reports identified hot areas by evaluating the daily burglary occurrence frequency for beats experiencing an abnormally high number of crimes during a fourteen-day period (Chang, et al., 1979, p.19). The report was output separately in two sort orders, one by number of crimes and one by beat to provide the crime analysts with two independent perspectives of viewing current crime patterns (p.20). If an increasing trend was indicated (e.g., more burglaries during the last seven days), that area would then be designated "hot" and analyzed further.

For such further analysis, detailed reports were provided daily in a format that could be disseminated to tactical and patrol personnel. These reports included a fourteen-day burglary review of each hot beat, all suspect descriptions, and all suspect vehicle

descriptions for the preceding fourteen days. Other information provided on an as-needed basis included people arrested in hot areas, partial license plate checks against traffic citation and wanted vehicle files, known offenders living in hot area[s], and reviews of other repressible crime types. Utilizing this process, the RTD system provided tactical forces with the information necessary for deployment within three to twenty-four hours of crime problem occurrence (Chang, et al. 1979, p.20; Reed, 1980).

Under the RTD system, data entry for all files was required within 24 hours of reporting the related crime. This system included the capability to display the crime occurrence frequency for the geocoded area type (i.e., beat, reporting area) used on a daily basis and the ability to automatically generate crime occurrence reports for each patrol area in the city (Chang, et al., 1979, p. 28). The Dallas RTD system was maintained on ITEL AS-4 OS equipment (IBM system 370-148 equivalent). Chang, et al. (1979) noted that smaller cities, that is, those "where the crime volume is not as great as in Dallas (approximately 85,000 index crimes per year), could adapt a system such as RTD to a smaller computer-perhaps even a mini-computer" (p. 14). The major advantage of such a system transfer would be to shorten the time delay between pattern detection and report dissemination which may take up to three days in a manual mode. In Dallas, this three-day time lag was reduced to just a few hours with the RTD system.

The success of the RTD was apparently based on fast turnaround time. Through the Dallas Police Department's Direct Entry Field Reporting System, all major Offense Reports were called in and entered into the computer within two hours of crime occurrence. The RTD reports were batch processed between two and four in the morning and delivered to the Crime Analysis Section by 6:00 a.m.; this crime information could

therefore be as current as only a few hours old. The reports were then separated, analyzed and distributed by 8:00 a.m., each morning (Chang, et al., 1979, p. 28).

Although the Summary and Detail Reports were ideally designed for tactical applications, they were also distributed to patrol. The Summary Reports allowed patrol planners to identify problem areas while the detail reports provided convenient summaries for individual patrol elements. For such purposes, a ten-day Summary Report of all major crime was provided daily by the RTD system (Chang, et al., 1979, p. 28).

Chang, et al. (1979) noted that a possible problem could develop with a system such as RTD; that is, the overlooking of similar offense crime patterns. Since the RTD system eliminated the analyst's dependence upon the Offense/Incident report as a source for geographical data or further analysis information, the analyst may have been tempted to avoid reading daily Offense reports altogether. If this were to occur, an important technique of identifying related crimes would be lost (Chang, et al., 1979, p. 28).

The successful implementation of the Dallas and Kansas City analysis systems influenced the further development of crime geographic information systems ("CRGIS) and "open[ed] many new doors for the use of crime information by police management and researchers" (Reed, 1980, p. 23).

Reed (1980) recognized the vast potential of these systems and explained the positive effect that they could have on American policing techniques:

> The addition of a well conceptualized CRGIS, may solve many of the problems in police information flow while at the same time adding a new dimension to the police decision process that is extremely potent.
>
> ***
>
> Geographically referenced crime data can provide effective information for the decision-maker in many ways such as computer generated maps

> that depict self-explanatory patterns of crime. Maps of crimes for different time periods can be used effectively to portray changes in crime patterns over time.
>
> ***
>
> CRGIS can give information on crime that can greatly facilitate the timeliness and accuracy of decisions in the police department (Reed, 1980, p. 44).

Reed (1980) identified four specific goals for computer based geographic applications: 1) to make more effective use of individual patrol units; 2) to provide better service; 3) to make best use of the budget dollar; and 4) to provide better information for patrol and for management (Reed, 1980, p. 73).

As computer technology advanced, so did American police agencies in their attempt to create more efficient systems of crime analysis. Reed (1980) conducted a survey of 88 police departments in the United States and Canada; "The focus of the survey was on computer applications with special emphasis on geographic applications, such as computerized mapping and geographic base files" (1980, p. 50). He found that ninety-three point nine (93.9) percent of the reporting departments utilized computer processing in some aspect of their operations. Prior research (conducted by Colton (1973) found that only thirty-eight point eight (38.8) percent were doing so during 1971. According to Harries (1999), crime mapping applications, "took off in the late 1980's and early 1990's as desktop computing became cheaper and software became more accessible and user friendly" (pps. 92-94). Examples of such early systems include:

<u>"Mapping Crime in Its Community Setting": The Chicago Crime-Mapping Project.</u>

A sophisticated crime-mapping project was funded by NIJ in November of 1986 (Maltz, et al., 1991). The goal of this project was to, "improve the crime analysis

capabilities of police and community organizations by developing a computer-based mapping system" (Maltz, et al., 1991, p.14). It was funded under the 1988 *NIJ Public Safety and Security Program*, and its primary focus was to "improve relations between the police and the communities they protect, and to [provide] information useful to the police in developing new patrol and crime prevention strategies" (Maltz, et al., 1991, p.18).

According to Maltz, et al. (1991), the project contributed to a philosophical shift towards "proactive management" in the agencies that participated. They explain:

> Rather than having to rely on central headquarters capabilities and wait for a cumbersome mainframe computer operation to eventually provide the requisite analysis, the district [precinct] commander can now delegate the crime analysis officer to do the work, receive the results that day, and make management decisions as indicated (p.107).

However, they also describe an interesting phenomenon that severely limited the overall effectiveness of this project:

> One of the difficulties we had was our naïve assumption that simply providing good intelligence to beat officers would result in their using it effectively. Our interviews with and observations of patrol officers indicated a lack of understanding of what to do with the maps. Many patrol officers were as likely to use the maps as scrap paper as to keep them in their beat books for later referral. The assumption of these beat officers appeared to be that any paperwork that came down from the commander was just additional busywork (p. 110).

The project was, however, generally viewed as a success. As Maltz, et al. describe, these systems provided the ability to, "see only burglaries, only crimes committed after dark, only those committed in September, only those committed by juveniles, or all of these" (Maltz, et al., 1991, p.45). The maps that were generated, "serve[d] as more than a mere reminder of the geography of the incidents: *They serve[d] as the beat's institutional memory*" (Maltz, et al., 1991, p.76) (emphasis in original). This

was apparently an unprecedented but welcome change to normal methods of police crime analysis and planning in the Chicago metropolitan area.

Maltz, et al. (1991) found that this project's use of computerized mapping, "greatly facilitated communication between groups that were not especially known for communicating in the past," such as patrol officers and detectives (p.144). Administrators "identified those officers who were in fact using the maps" and convened a series of meetings, which were also attended by the District [precinct] Commander, the Crime Analysis Officer, and representatives of three other specialty units within each command (Maltz, et al., p. 110). It should, however, be noted that these meetings were not designed to either plan tactical operations, or to allocate resources. Rather, they were intended to encourage a "frank discussion of the use of the maps, why they were not being used by many officers, and what steps might be taken to encourage their use" (p. 110).

The Illinois Criminal Justice Information Authority (ICJIA) Project.

Another crime analysis project that utilized computer graphics, was developed in Illinois during the late 1980's. Under a grant from the U.S. Bureau of Justice Statistics, a system called the Spatial and Temporal Analysis of Crime (STAC), was developed. It was focused on, "the use of maps to locate concentrations of criminal activity in Chicago suburbs, using cluster analysis algorithms" (Maltz, et al., 1991, p.26). It was based on ICJIA's Police Information Management System (PIMS), a centralized system that served a number of suburbs in greater Chicago. Its purpose was to, "develop clearer, more efficient ways of analyzing and representing the kind of data traditionally shown on pin maps" (Illinois Criminal Justice Information Authority, 1987, p. 1).

STAC was designed, "for detecting patterns of crime in a community, using both geographic *and* time data" (Illinois Criminal Justice Information Authority, 1987, p. 1) (emphasis in original). It was not, however, "a mapping package in itself but an analytical package to be used in conjunction with a mapping software" (Craglia, et al., 2000, p. 712). It was described as, "an exploratory process to investigate the feasibility of analyzing space and time data" (Illinois Criminal Justice Information Authority, 1987, p. 1).

STAC's primary function was to, "condense large amounts of crime information into a manageable form. The analytical methods could be used in resource allocation, crime analysis, beat definition, and other applications" (Illinois Criminal Justice Information Authority, 1987, p. 1). Thirty months of data were obtained for each crime and town, spanning the period between January 1983 and June 1985. The spatial analysis program examined, "the geographic distribution of incidents and display[ed] information about those crimes that law enforcement officials [could] use for strategic and tactical crime analysis" (Illinois Criminal Justice Information Authority, 1987, p. 1). Under the system, "Areas ranging from a city block to an entire town [could] be examined using the radial search and scanning procedure" (Illinois Criminal Justice Information Authority, 1987, p. 9).

This information was also apparently used to define beat structure and to determine the best times to change shifts. Its creators explain that,

> "The hot spot procedure could be used to find the principal centers of crime, and the beats could [then] be defined or re-defined to take these centers into account" (Illinois Criminal Justice Information Authority, 1987, p. 1).

STAC did however suffer from certain technical limitations. Computer technology during this time period simply did not allow for the simultaneous performance of temporal and spatial analysis (i.e., on one map). In other words, STAC did not produce usable crime maps that displayed both the time and location of occurrence for reported crimes. Although this capability was not available to them at the time, STAC's developers understood the utility of such an application and actually predicted a time when it would become generally available:

> One direction for further analysis is the combination of temporal and spatial analysis. This is already possible to a certain extent, since the results of one type of analysis can be used as the data for the other. . . . The ultimate goal of the project is to produce a package of computer programs that applies them simultaneously (Illinois Criminal Justice Information Authority, 1987, p. 1).

Table: 1.

Agency/ Project	Computer-ized Tabulation & Analyses	Use of Geocoded Data	Analysis of All Major Crimes	Distribu-tion of Analyzed Data to Field Command/ Units	Real-time Deployment	Department -wide Meetings Held to Discuss/ Utilize the Generated Data
Kansas City Resource Allocation System (1970's)	Yes	Yes	No	Yes	No	No
Dallas Real-time Deploy-ment System (1970's)	Yes	Yes	No	Yes	Yes	No
Chicago Crime Mapping Project (1986)	Yes	Yes	Yes	Yes	No	No
Illinois Criminal Justice Informa-tion Authority Project (STAC) (1987)	Yes	Yes	Yes	Yes	No	No

As the foregoing table illustrates, each of these projects utilized a computerized system for data analysis and distribution. The exact type of information that was analyzed differed, as did the overall purpose for analysis (whether for overall strategic purposes, or real-time tactical deployment). Each of them, however, shared an *essential* characteristic:

none had been designed to include a forum for the open discussion and *use* of the data. Such a development would not occur in an American police agency until the advent of Compstat in 1994.

By the mid-1980's, computer technology had advanced considerably. Perhaps the most significant cause of this rapid development was the advent of the microcomputer and its general availability to American police agencies (Harries, 1999; Rich, 1995). As Carter (1984) noted at the time:

> Now we are witnessing the invasion of the microcomputer. For under $5,000 it is possible to configure a micro with a digitizer, disk, color monitor, and software that can do some of the same things the large turnkey systems can do....True, the resolution is not as high, the processing speeds are much slower and users must train themselves, but such microcomputer systems cost only one-tenth to one-one-hundredth of what it costs to buy the powerful turnkey system (p. 39).

Turnkey systems generally included the delivery of "everything needed to produce maps" including:

> a complete setup of hardware with appropriate peripherals, an integrated package of software including an operating system and application software, plus training staff and customer engineers to make sure the system is used to its full advantage. Such systems are usually configured to the purchaser's particular needs and desires. Purchases are usually made only after the organization carries out analyses of what it wants to do and how it is going to finance, maintain, and use it. Initial investments of half a million dollars or more for such systems are not uncommon...(Carter, 1984, p.27).

While the turnkey system represented the ultimate in capability and convenience, it also represented the ultimate in price. For many police agencies at the time, it was neither possible nor practical to have large turnkey systems available for all possible applications. Many agencies instead relied on mainframe computers with software packages that could give reasonable service to a great number of users trying to perform a

variety of tasks. Cartographic software packages on the mainframes were used to perform some of the functions that were otherwise available on turnkey mapping systems. Unfortunately, since the user (i.e., crime analyst) had to share the larger computer with many others, and since the software packages were seldom integrated like they were on the dedicated turnkey systems, some police agencies did look to microcomputers as the most efficient means of processing large amounts of crime data (Carter, 1984).

Reed (1980) cautioned that advances in mapping technology were not, in and of themselves, a panacea. He suggested that the use of geographically referenced crime data could be hampered by, "[the] lack of crime data in automated form that is collected in a consistent manner over time and that is accurately and usefully geocoded" (p. 21). Such difficulties would severely limit the potential usefulness of even the most sophisticated crime analysis packages.

Crime analysis could be hampered by an even more fundamental problem. A threshold question for any agency interested in implementing such a system is, "How exactly will the crime analysis function affect the agency's organizational architecture?" As Simmons and Kenney (1995) explain:

> A fundamental organizational issue in many departments is whether to establish a centralized crime analysis unit or have analysts dispersed throughout the agency. The advantage of a centralized unit may be in the simplicity of supervising the unit and setting consistent priorities and goals....The advantage of decentralizing analysts appears to be an increased access to crime data in all areas of the department, which permits individuals to customize reports and analysis strategies to their own needs. Conversely, supervision of the analysts is difficult when they are spread out and answer to different supervisors, and a coherent approach to analyzing crime data may be lost (p. 4).

They propose that there may be a compromise position, however, that is consistent with a community policing philosophy. That approach, "involves having a

centralized analysis staff that essentially decentralizes the information they collate and analyze by routinely sharing it with the individual units" (Simmons & Kenney, 1995, p. 4).

A key issue is therefore the dissemination and *use* of the information. Clearly, analysts must provide crime information to field-level and executive staff on a timely and regular basis. The format of such reports:

> can be simple, such as a small chart showing the status of crime for the previous week or month, or more complex, involving elaborate maps and statistical analysis indicating possible future trends. As for the content of these reports, they may include comparisons of each geographic area over time, both with itself and with other areas. This information can also be compared with a similar time frame from the previous year (Reuland, 1995, p. 72).

Rainier, et al. (1977) recommend the use of a "daily information bulletin," that would be prepared by the crime analysis unit for dissemination, "down to each line officer" (p. 3-16). They suggest that the patrol supervisor would, "find the contents particularly useful as the basis for instructions and discussion during roll calls" (Rainier, et al., 1977, p. 3-16, 3-22). Such a report would contain summary information concerning significant events that occurred over the previous 24 hours and would serve as the "most current information source available" to the patrol supervisor and patrol officers. In this way, the flow of information would be continuous, rather than a one-time function (i.e., from the crime analysis unit to senior administrators).

Rainier, et al. note the critical role played by the patrol supervisor who must, "pass on to his subordinates all of the information he has that can be useful to them" (Rainier, et al., p. 3-44). They describe an inter-personal transfer of information, rather than a distribution of computer-generated maps or data:

> The patrol supervisor should encourage face-to-face informal contact between the crime analysis unit personnel and all users of analysis information under his supervision. In addition, the patrol supervisor should make every effort to meet with the crime analyst to discuss general problems within his area of responsibility (p. 3-50).

They even suggest that a well-designed system would also allow, "the patrol supervisor to select out particular problem areas or types for further analysis by the crime analysis unit" (p. 3-33). Their proposal, in effect, would therefore create a feedback loop whereby data prepared by the crime analysis unit would be regularly fed to field units, who in turn would provide them with feedback for further analysis.

Unfortunately, few of the early computerized crime analysis systems effectively *used* the information that was prepared. Very often, maps or data that were prepared by crime analysts were forwarded only to senior administrators or members of 'specialized' tactical units. As Maltz, et al. (1991) suggest, "Although a computer-aided approach to crime analysis was promoted as a means of using computers to fight crime, the actual results fell far short of the promises made" (Maltz, et al., 1991, p.25). Apparently, vast amounts of computerized crime data were produced and stored as part of these programs, but the information was not effectively utilized by the field commands. Often, very limited methods existed whereby field personnel could search and retrieve this data. Information retrieval was either limited to a few administratively applicable summary reports (e.g., UCR or other such summary reports) or to requests for special programming that often had to be performed by another city department or agency at its priority judgment. As a result, "often no efficient method of accessing stored crime data in a manner suitable for every unique application exist[ed]" (Chang, et al., 1979, p. 53).

By the early 1990's, numerous advances in computer software, hardware, and networking capabilities made mapping more generally available to American police departments and encouraged a more open flow of information. According to Groff and LaVigne (2001), by the mid-1990's, such use had "grown tremendously" (p.257). By 1995, "115 agencies including 69 police departments were using STAC in the U.S" (Craglia, et al., 2000, p. 712). By 1997, NIJ had provided $15 million for the establishment of the Crime Mapping Research Center to, "coordinate research, disseminate information on mapping, and [to] provide training to spur development of new spatial analysis methods and software" (Rich, 1999, p. 3). A survey conducted in 1999 found that an estimated thirty-six (36%) percent of American law enforcement agencies with more than one hundred sworn officers were using computer-mapping programs.

The rapid development in crime mapping technology coincided with several significant movements in American policing: 1) problem-oriented policing; 2) "hot-spot" policing; and 3) community policing. Each movement had certain technological prerequisites. It is therefore not surprising that a certain synergy developed, whereby more advanced systems and programs were developed for more ambitious forms of analysis and deployment strategies. Indeed, when the Community Oriented Policing Services (COPS) Office of the United States Department of Justice was created in 1994, its mission was to, "provide[ ] grants and support to police departments and sheriffs' offices in their efforts to hire officers and engage in community policing," as well as to, "fund technology improvements" (Reuland, 1995, p. v). According to Reuland (1995):

> PERF [the Police Executive Research Forum] and the COPS Office have long realized that in order for community policing to be effective, citizens'

> and police personnel's access to information is essential . . .These efforts have included the creation of a crime analysis software package (p. v).

By the mid-1990's, therefore, sophisticated crime mapping systems were becoming well integrated into overall police operations. Field commands produced and accessed a wealth of information that could support virtually all phases of police operations (e.g., patrol, narcotics enforcement, internal affairs, etc.). Sherman (1998) suggests the emergence of a new paradigm for law enforcement during this period; one that he referred to as, "evidence-based crime prevention." He supported the intelligent use of, "the best available research on the outcomes of police work to implement guidelines and evaluate agencies, units, and officers" (p. 2). He called upon modern police agencies to, "use [ ] research to guide practice and evaluate practitioners. [To use] the best evidence to shape the best practice. It is a systematic effort to parse out and codify unsystematic "experience" as the basis for police work, refining it by ongoing systematic testing of hypotheses" (p. 2). He suggested that "policing should be more like medicine...[by using] evidence to guide practice" (1998, p. 2). He believed that this new approach could be institutionalized and would have the potential to entirely transform the modern police organization.

THE DEVELOPMENT OF CRIME ANALYSIS PRACTICES IN THE NYPD

The NYPD's documented use of crime maps dates from 1900 but, quite possibly, this practice began well before then (Harries, 1999). Hand-made pin maps were used in many police commands within the city, but their use was apparently not institutionalized until the turn of the century. With the advent of the computer, the NYPD's crime analysis methods began to gradually modernize.

On February 1, 1966, the NYPD hosted a seminar at the New York City Police Academy, at which the Department's top administrators met with managers from other police agencies and executives from the UNIVAC Division of Sperry Rand Corporation and the Westinghouse Electric Corporation. The overall purpose of this meeting was to discuss the various benefits and associated challenges of "real-time" computing (p. 1-1). NYPD speakers at the meeting included the Police Commissioner, the Department's Chief of Planning, and the Commanding Officer of the Statistical and records Bureau.

In his opening address, then-police commissioner, Vincent L. Broderick, provided a particularly detailed (and insightful) explanation of why the seminar was convened:

> [T]here's a very good reason for all of you to be here today. It is not or you to learn how to operate a computer, but it is for you to learn, in a very general way, the computer's capability. How the computer is to be used, then, is something you, as well as the computer experts, will have to work out together. It is merely the law enforcement role to make demands. We have to spell out where the problems are. We have to spell out the areas in which we are losing manpower and in which we are leaking out information, in which we are failing to commit all our resources, because somehow the effort of pulling information together is too burdensome an effort....We are here today, and you particularly, as professional law enforcement commanders in the field, to learn what the capabilities of the computer are, what the potentials of the computer are. Then we expect you to use your imagination to determine just what we should be demanding of the computer, what we should be asking it, how we should be applying it in ways that may never have occurred to [the computer "experts"].
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> We have, in this room, the greatest collection of imaginative police administrators in the world. I would think that we have in this room, a group of men who would challenge any organization such as Sperry Rand or IBM, or Westinghouse, to move into areas that have never occurred to them before. I hope that what stems from today's session will stimulate your imagination, individually and collectively. I would hope that after seeing what the computer can do, that you will be continually thinking of how we in police work can use the computer to help us do our job (NYPD p. 2-1).

During this meeting, Deputy Inspector Joseph M. McCabe, who was then serving as Commanding Officer of the NYPD's Statistical and Records Bureau, provided a clear and detailed history of his agency's efforts at automated and computerized information management. McCabe explained that a "punch card tabulating system" was first introduced into the Department in 1915. He explained:

> Even at this early date, automation proved itself a valuable adjunct to law enforcement. With its help, the Department in 1918 published a detailed statistical report of crime complaints. This was the first such report on a municipal level in the history of the country. However, this innovation was soon to succumb to an economy wave and the machines were removed from the department. As a result, police statistics once again reverted to guesswork (NYPD 3-1).

By 1930, some of the problems associated with the lack of uniformity of crime reporting were overcome when the International Association of Police Chiefs established the uniform crime reports. This set up a standard set of crime categories which minimized the statistical effects of existing differences in state penal laws. For the first time, comparative crime analysis could be made between different jurisdictions. As a result, police statistics took on a new importance. However, as McCabe explained:

> At this time, the Department was confronted with the monumental task of maintaining controls and of manually sorting and tabulating each individual complaint, each individual arrest, to arrive at the statistical summaries that were required. This task proved impossible and by the late 1940's, our record system collapsed under its own weight (NYPD 3-1).

McCabe explained that, in the meantime, the science of automation, although still in the punch card area, had advanced rapidly. The department again turned to this information-handling tool for help. In 1952, the department rented a configuration of electric accounting machines. This equipment met the needs of that day and was among the best available for the purpose of statistical tabulation (NYPD, 3-1). The demand for

information, however, continued to increase. It therefore became necessary for the NYPD's data processing system to change in order to keep pace with these demands (NYPD, 3-1).

By the mid-1950's, electronic data processing became commercially available. On January 1, 1963, an electronic data processing capability was made available to the NYPD by means of its acquisition of its first computer, the IBM 1401 (NYPD, 3-1).

In 1966, Deputy Inspector McCabe explained the functions of this computer, and the overall mission of the department's Statistical and Records Bureau:

> Source documents are received from various commands. These documents are manually verified for accuracy of classification and completeness and then coded. The documents are forwarded to the data processing section where the coded information is key-punched, verified and then machine-edited for accuracy. The data is processed. Controls are compiled to guarantee receipt of every document, and as far as is humanly possible, the accuracy of every report we produce. The documents then go to the designated filing section and the machine-produced reports are distributed throughout the department to other agencies or to file for reference (3-2).

Arrest reports, which were prepared at the field commands, served as source documents. He explained that every item of original information needed to be key-punched before it was entered into the computer system. He cited this as a problematic area:

> The machines cannot perform without the operators. Not all operators are equal in production, or equal in accuracy. Yet, the flow of documents never seems to cease. We have, in addition to the key-punch machines. other electric accounting machines which are used to sort, collate, interpret and reproduce punch cards (p. 3-2).

The Department's computer's capabilities were described as "moderately fast;" capable of reading 800 cards per minute or punching 250 cards per minute (p. 3-2). McCabe explained that, "Four reels of tape can store one entire year's worth of UF-61

complaint reports. These reports can be retrieved from the tapes at the rate of 15,000 records per minute. Our printer can print 600 lines per minute. Reports are prepared by the computer for the Federal Bureau of Investigation, [and] the State Department of Corrections (which is the collection agency for crime complaints for New York State)" (p. 3-2).

The Department's Statistical and Records Bureau utilized this technology to, "prepare a post-analysis report, precinct clearance report, a listing of taxi robberies, hourly and tour report, a weapons and location report. All of these reports and others [were] matched with the arrest activity to guarantee accuracy" (3-3). The Department assigned approximately ten people from within the Statistical Records Bureau to design the system, which was, "geared to prepare reports on a monthly basis" (3-3). Other applications included, "arrest summaries, complaint summaries, and certain types of summonses and youth referrals, listings of hack drivers, personnel skills inventories, and fingerprint searches" (Cawley, 1966, A-10). McCabe provides additional detail regarding the nature of these reports:

> The reports that come off the machine at month's end include arrest registers, reports again for the Federal Bureau of Investigation and the State Department of Corrections, reports as to age and sex, reports by police department code, day, tour, and hour arrest reports, arresting officer reports, reports for the Youth Division. All of this information is used to answer three basic questions. What has happened? Where has it happened? And who was doing it? (p. 3-3).

It is interesting to note McCabe's use of past tense; his explanation refers to retrospective crime analysis, rather than any form of forecasting or predictive modeling. That is not to say, however, that the department officials did not envision such a 'proactive' system. As McCabe noted at the time, "The system which we visualize for the

future will not be geared to monthly reporting but to almost instantaneous response" (p. 3-4).

Indeed, McCabe's comments reveal his department's interest in developing an organization-wide information system that could obtain information from the field, analyze it, then redirect it to the field for appropriate 'use.' He explains:

> Perhaps the best approach to the problem of the Department would be the development of a management information system. This has been designed as a total complex in which data are generated , recorded, processed and refined to produce the information needed at all levels of organization for planning, directing, coordinating and controlling an enterprise (3-4).
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> A system which will permit useful information to be gathered and a communication network to disseminate that information man to man is a must. Information received too late for action is virtually useless and only adds to the frustration which we face every day....The creation of purely functional files, the existence of which are unknown or little known and hence unused is a condition which we can no longer tolerate. Redundant record keeping functions must be consolidated. Paper work has to be reduced. We in the department have been forerunners in the use of electronic data processing. We intend to remain forerunners. In the near future, a system design group will be established within the Department. This will be the first step towards the implementation of a law enforcement network second to none (3-4).

Cawley (1966) concurred, predicting that a time would come when, "[T]he police executive [would] become [ ] directly involved in the growing E.D.P. (electronic data processing) field in order to carry out his mandate to provide the greatest possible service and protection at the lowest possible cost" (1966, A-1). He envisioned a day when information generated from other public agencies would be made available to the police, in order to support their overall operations:

> It is not in the public interest to deny the police any informational assistance in their search for a murderer, child molester, or rapist,

> especially since such information is already public property. A home address furnished by the Board of Elections or a physical description of a suspect supplied by the Department of Hospitals could be obtained merely by initiating a computer search of all city agencies' files. It is in these areas, that is, rapid and comprehensive file searches, that computers appear to offer the greatest potential for practical police applications (A-2).

Indeed, Cawley (1966) proved himself to be remarkably prescient in his description of a process that closely resembles that of the Compstat system developed some thirty years later:

> What comes next? . . . [T]o sum up without being guilty of prophesying, perhaps the following hypothetical narrative best illustrates what future possibilities the computer may hold in store for us. 'As Lieutenant Jones began his tour of desk duty in the 11th precinct, he picked up the roll call from the remote printer next to the desk. The computer in Police Headquarters had just finished transmitting the duty assignments to him as it had to the other 100 odd commands in the Department. Since the printer operated at 600 lines per minute, Jones' roll call was finished in ten seconds. The individual roll calls for the entire department were completed during this same ten seconds. Last minute sick reports, post changes, and post assignments were teletyped back to the computer and Jones made corresponding corrections on his copy.... posts 3, 4, and 9...had recently been assigned a higher hazard rating because of a significant rise in the crime rate. The computer program had calculated that these posts had a high priority and re-assigned three officers from the posts with the lowest hazard ratings.
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> More instructions were being received on the remote printer, such as notifications from operations Bureau on out-of-command assignments, court appearances and a synopsis of crime complaints, arrests, and traffic accidents since the precinct commander's last tour of duty. Captain Smith had just arrived for duty and quickly noted the contents of the last three reports. Using the concise report, he was able to brief the outgoing platoon within moments of his arrival (Cawley, 1966, A-11).

Despite his futuristic speculations, Cawley recognized that such a system would still need to be closely connected to the field:

> Many persons believe that the old time foot patrolman, with his broad experience and intimate knowledge of persons living or doing business on his post, was the best deterrent to crime. The development of a police

> computer concept does not necessarily change that image. In many respects, the effectiveness of the foot patrolman will now be enhanced by placing at his disposal a vast pool of information that should result in fewer crimes and a higher clearance rate. Information and intelligence can be disseminated to foot patrolman on a periodic basis so that there may take preventive action or follow-up possible leads when alerted to new crimes or possible violations....The inevitable result of a computerized mass of police information will be a synthesis of data that will both facilitate and make more meaningful the job of the foot patrolman. The possibility of increasing efficiency by the application of computers and electronic systems to police operations and tactics is most promising (Cawley, 1966, p. A-13).

Interestingly, although the Department had created a centralized crime analysis unit (known as the 'Crime Analysis Section') years earlier, it was not until 1978 when the Department developed a coordinated, *precinct-level* system of analysis. During the early 1970's, some precincts were performing their own analysis, but many were not. As Assistant Commissioner Philip McGuire explains:

> When I came in [to the crime analysis section] in the mid-seventies, I sent people around to all the precincts and found out what people were doing, and what they thought was important to do at the crime analysis level . . . And a lot of the precincts did, they did pin maps, and spot maps, and things like that. Some of them did that for show, more than analysis.
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> We used to have people who would go out and visit with precinct commanders. You know when they were going to train new people, they would always stop by with the precinct commander and get a sense of, see where he was on the spectrum here of interest in this stuff, or whether it was just like he was going, "Handle it, handle it! " to his staff. And I remember Jerry Simpson one of the sergeants that worked for me saying, "I'm sitting in the guy's office, he's got a robbery pin map behind him, and he's telling me that there's no patterns in robbery, and there's a whole clump of robberies like over in one area of the precinct [Laughing] (P. McGuire, personal communication, February 21, 2001).
>
> Mealia explains: (Mealia #5, Mealia #6).

Those precincts that did perform an adequate degree of analysis did so on an as-needed basis and rarely if ever shared their information. Perhaps more importantly, their analysis was performed manually. As McGuire notes, "When I came here [the crime analysis section] in 73', I remember there weren't any computers even in our office. We had mechanical calculators" (Personal Communication, February 21, 2001).

In 1977, the Department developed the *26/30 Automated Crime Analysis Experiment*, which "tested the feasibility of automating precinct crime analysis" (NYPD memorandum, March 17, 1978, p. 1). The project was successful, insofar as it: 1) demonstrated the feasibility of an automated basic crime analysis system (by developing a working prototype); 2) demonstrated that precinct personnel could be trained to use such a system effectively; 3) identified a small number of computer techniques that were "extremely valuable for manipulating crime data"; 4) recorded the most common types of errors made in entering and analyzing data; and 5) indicated that a data base manager (software system) would be the most effective way of providing similar capabilities through the department-wide ("FATN") computer system. Perhaps its mostsignificant contribution was in, "provid[ing] the first steps toward the development of procedures for evaluating deployment" (NYPD memorandum, March 17, 1978, p. 2).

By 1978, the Department had implemented a formalized precinct-level crime analysis program for the entire city. That is not to say that prior to that, the precincts had failed to perform analysis. On the contrary, as Gorta states, "the commands kept track of their robbery stats. The commands always did....They knew every day, they had to call robbery stats into the boro" (W. Gorta, personal communication, July 6, 2000). Robbery was identified as a key indicator for overall crime rates, "mostly it was robbery, it was the

big, the bell weather as we called it" (W. Gorta, personal communication, July 6, 2000) (see also McGuire & Simpson, 1982, p. 16, which details the finding that, "robbery accounted for 98.7% of the increase in crimes against the person" from 1973 to 1981) .

As Timoney (2001) notes, the amount of analysis that was performed in the precincts often depended upon the orientation and personal preferences of the commanding officers:

> Here, use me as a perfect example. When I was the CO of the 5th precinct, my background was, I was a street cop, I worked in narcotics,...that's what I liked, so I liked dealing with crime...it was up to the individual commander what you stressed. So I would have been a perfect example, I was in the 5th focusing on crime only because that's what I liked...right next to me in the 1st, [its commanding officer] came from internal affairs....His whole thing was integrity. Two station houses up, the guy went through the academy, he was big into training...So you had, you did whatever your strength was. It had nothing to do with, there was no involvement whatsoever from headquarters, that's the big...there was a huge disconnect (J. Timoney, personal communication, December 12, 2001).
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> (Mealia #7, Mealia #8, Mealia #9, Mealia #10).

Prior to 1978, the centralized crime analysis section only obtained information from the field that was necessary for reporting purposes and for a nominal amount of analysis. Precinct and boro commanders often possessed a great deal of information that was simply not forwarded to headquarters, primarily because no mechanism existed for such information transfer (Mealia #11).

The procedures established for precinct-level crime analysis attempted to standardize the type of analysis that was performed in the field by establishing, "minimal baseline bookkeeping procedures which [needed to be] performed by each precinct" (NYPD, 1980, p. i). The Department recognized that, in order for crime analysis efforts to truly succeed:

> It must be viewed as a *system*. Data is collected and collated. It is then analyzed in terms of accessing operationally useful information, and deployment and tactical decisions are then made and evaluated in terms of their relative effectiveness. In short, crime analysis represents a rational system of data analysis for enhancing and validating decision making relative to crime reduction efforts (NYPD, 1980, p. ii) (emphasis in original).

The new procedures noted that the crime analysis function:

> is a cyclical process (self-improving. As the analyst gains experience and familiarity with the data and system (including feedback), problem recognition and monitoring capabilities are increased. This in turn increases the quality of the data, resulting in an increase in the effectiveness and efficiency of the operational use of the information (NYPD, 1980, p. 3).

Noting that the 'UF60 sheet" (a summary listing of all complaints recorded by a precinct each tour) was insufficient as a primary source for crime analysis, the new procedures called for the creation and use of on-going chronological lists of certain crimes (burglary, robbery and 'purse snatch') (NYPD, 1980, p. 9). They also required the preparation of 'spot maps,' and cross-tabulations (i.e., tables)for these crimes and encouraged the use of others on an as-needed basis. The guidelines suggest that, "Any chronologies [or maps or cross-tabs] above and beyond those mandated should be reviewed from time to time" (NYPD, 1980, p. 22). It was thought that, "through the examination (analysis) of comparative statistics relating current to prior crime complaint incidence, a supervisor, with the assistance of crime analysis personnel, should be able to identify the precinct's current crime situation (problems)" (NYPD, 1980, p. 1). Police Commissioner Raymond Kelly recalls that he was personally charged with performing this type of analysis during the 1970's: "in 1971, I was a planning sergeant in a precinct, when we first established that position, specifically to do just that, to chart crime" (R. Kelly personal communication, August 29, 2000).

The new procedures also called for the use of a variety of computerized crime analysis techniques (that would typically be performed by the centralized crime analysis section). These included the preparation of computerized incident maps for each precinct. This was a rather laborious task that involved the preparation of 'base character maps' that were, "constructed using alphabetic, numeric and punctuation characters after redrawing standard NYCPD precinct maps on graph paper." These base maps were then, "punched on computer cards and entered into the computer where they [were] stored on a file" (McGuire 1978a, p. 5). According to McGuire, these were the very first computer generated crime maps ever prepared or used by the NYPD (P. McGuire, personal communication, February 21, 2001).

At the time, the NYPD was aware of mapping efforts that were taking place in other agencies. McGuire recalls:

> After the President's, that report that was done in 68', the President's report of the crime Commission, there was some attempt in the early 70's of departments to get involved in mapping, pattern analysis . . . like reviewing of case information to find patterns, there was a system that was from that era called PATRIC developed by the LAPD, but it was in some of the bigger departments like Chicago, Philadelphia, LA, St. Louis.
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> I remember going out for a meeting and it was down, it was a meeting in Washington, DC at the central police foundation, and the people who came in to do a presentation were people who were doing mapping in a suburb of St. Louis, and they were doing like chloropleph maps, like shadings with a printer by sector, shading of that particular police department's area (P. McGuire, personal communication, February 21, 2001).

Interestingly, although Commissioner McGuire and other members of the NYPD were aware of early mapping projects elsewhere in the country, the NYPD's early attempts at crime mapping took place independently. Indeed, McGuire contends that

LEAA failed to support the Department's research regarding its very first attempts at crime mapping:

> When I did that mapping stuff, I sent in a proposal to LEAA back in 78' or so, and I got it back with a very, a "thank you." I'm sure they didn't understand what the hell I was talking about. I was talking about cluster analysis and pattern analysis and all this stuff, it was just off their radar screen completely....most of the work during that era of policing [the 1970's] was done mostly in the CAD area, computer aided dispatching, and queuing theory, response time. Because that was the, that was like the first thing that people latched onto (P. McGuire, personal communication, February 21, 2001).

Nevertheless, by 1978 the NYPD did develop a computerized, precinct-level crime analysis program that utilized mapping techniques.

Due to the continued interest in tracking the rate of robbery within New York City, the Department developed the *1981 Robbery Suppression Program*. This entailed expanded investigative and intelligence gathering efforts, proactive and reactive enforcement activities in targeted areas and "the maintenance of an overall department environment supportive of strategic and tactical innovation" (McGuire & Simpson, 1982, p. E-1). The Office of Management Analysis and the Crime Analysis prepared an extremely thorough analysis of the program, which included detailed comparisons of (*inter alia*) felony complaint arrests, crime rates, prison admissions, etc. from 1973 to 1981. This two hundred and sixty-three page report represented the most ambitious and wide-ranging study of this type that had ever been conducted within the Department (P. McGuire, personal communication, February 21, 2001).

(Mealia #12).

It is interesting to note that the creation of the Central Robbery Division ("CRD") in 1981 represented a departure from the NYPD's previous methods of operations. While

tactical intelligence and control systems had previously supported both patrol and investigative operations, the CRD's, "mandate" was to:

> Cut across both patrol and investigative functions for the first time. The CRD was the mechanism through which these resources would respond to both the continuous fluctuations in observed robbery patterns and feedback detailing the impact of department operations on those patterns. The inherent structure of the Central Robbery Division provided a management control system spanning two distinct law enforcement functions (McGuire & Simpson, 1982, p. 24).

The program involved both the implementation of, "new communication links and the reinforcement of existing links for the *transmission of robbery incident intelligence throughout the city*" (emphasis supplied). It was intended to work in conjunction with the guidelines set forth for the performance of precinct crime analysis. The monitoring of incidence patterns was thought to be crucial to both tactical patrol efforts and investigative efforts. The 1981 Anti-Robbery program:

> Reinforced the existing efforts [of the Department] by establishing a pattern review within the Central Robbery Division which concentrated upon investigative pattern development with particular emphasis on patterns which crossed borough, area command and precinct boundaries. Formal dialogue was instituted between the central Robbery Division and the Patrol Area Commands both relying upon local precinct crime pattern data and central Robbery data to monitor and adjust the foot post target areas (McGuire & Simpson, 1982, p. 234)[2].

THE (NYC) TRANSIT POLICE DEPARTMENT 1990-1992

Four years before Compstat developed within the NYPD, William Bratton was appointed as Chief of the New York City Transit Police Department ("TPD"; an agency with approximately 4,000 uniformed personnel, as compared to the NYPD with 40,000). The TPD had three main objectives in 1990. They were to: 1) reduce the number of robberies committed in and around the transit system; 2) prevent, or significantly reduce, the daily rate of fare evasion; and 3) eliminate 'disorder' within the system, by addressing

problems related to the homeless, such as panhandling, etc. (McDonald, 2002). Interestingly, all three of these issues have a direct and significant relationship to ridership. The Metropolitan Transit Authority ("MTA") was apparently quite aware that, because of the high rate of reported crime, or the perception of crime, ridership went down (W. Andrews, personal communication, January 30, 2001). They perceived a clear cause and effect relationship. Also, the direct losses from fare evasion were estimated to be approximately $80,000-$120,000 a day (P. McDonald, personal communication, October 2, 2001; Bratton, 1998). Therefore, these three major 'objectives' of the organization were directly related to fiscal concerns.

Nelson (1999) explains the relationship between transit crime and revenue:

> Unlike neighborhood patrol, perception plays a far greater role in law enforcement's efforts to foster a safe transit system. Numerous studies and rider surveys have noted a direct correlation between the number of riders and the perceived safety of a mass transit system. A system perceived as being unsafe, whether it is or not, is a system in peril of losing riders. Passenger confidence and indeed public transportation usage are strongly related to the perception of safety in public transportation (Nelson, 1999, p. 11) (citation omitted).
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> A system that is perceived as crime plagued or unsafe will have a limited appeal to the general public. If the general public perceives a system as unsafe, alternate means of transportation will be sought whenever possible. The results of this is a continuing spiral of diminishing ridership until the core element of transit customers is reached: Passengers who are completely dependent on public transit as their sole means of transportation. Having reached that level, a more affluent ridership perceives that core as crime-prone and undesirable. The goal is to create a system with wide customer appeal. A system perceived as unsafe fails in achieving that goal (Nelson, 1999, p. 25).

According to Phyllis McDonald, who served as Director of Planning at the time, these problems, "gave the appearance that there was no official social control on the

subway" (McDonald, 2002, p.9). The new Chief was therefore given a very clear mandate, "to immediately address and correct all three of these problems" (P. McDonald, personal communication, October 2, 2001).

During the 1970's and 1980's, William Bratton had worked in Boston, with the Boston Police Department and the Metropolitan Police. In 1987, Bratton received the Hayes Award from the Police Executive Research Forum for, in his words, "turning around two different police forces and actually having an effect on crime" (Bratton, 1998, p.138). Bratton took office at the TPD in April of 1990 and immediately, "put together a planning group to set goals and reorganize the department" (p.148). The changes to the organization were extensive and dramatic, both in terms of revisions to the TPD's organizational goals and to many of its methods of daily operation. Within a relatively short time, Bratton was able to improve the department's communications system, equipment, training and morale (Bratton, 1996; 1992). He streamlined the arrest process and, "put the broken-windows theory to work underground" (Horowitz, 1995). George Kelling, co-author of "*The Broken Windows*" article which appeared in the March 1982 issue of Atlantic Monthly, met Bratton in 1982. Kelling had been hired by MTA as a consultant and apparently had some influence on Bratton's crime reduction strategies.

Consistent with the broken windows philosophy, Bratton "made graffiti, panhandling, fare evasion and other signs of disorder a priority" (Horowitz, 1995, p. 23). Bratton explains that his relationship with Kelling was particularly fruitful during his "first several weeks of evaluation and transition" (Bratton, 1998, p.148). He notes that Kelling and others assisted him to "cook up strategies" and were, "feeding [him] ideas and reading material" (p.148). Interestingly, Bratton describes PERF as "a unique

professional organization" and credits it and other "advanced centers of police thinking" such as the Police Foundation and the Kennedy School of Government, with exposing him to many of the "most notable names in the business [policing]" (Bratton, 1998, p.138).

Bratton was not only appointed chief, but also as vice president of the transit authority. McDonald notes that, "he had negotiated for that" and that he "wanted responsibility for planning, strategy development and other resources, he was very effective" (P. McDonald, personal communication, October 2, 2001). By July of 1990, Bratton had commenced a "major organizational restructuring" (Bratton, 1998, p.149). As part of the re-organization, the department's crime analysis unit was moved to the Office of Budget and Management. McDonald, the Director of Planning notes, "[Bratton] took crime analysis out of investigations put it in a separate unit, so that it would not just be tied to investigations or patrol. We [the Office of Budget and Management] were now responsible for budgeting, crime analysis and planning" (P. McDonald, personal communication, October 2, 2001).

The TPD also began to experiment with "sector team policing," which McDonald describes as, "their form of community policing; they wanted it to work" (P. McDonald. personal communication, October 2, 2001). She explains:

> Due to the structure of the subway lines, you can't do traditional community policing in a subway, but transit developed their own version. [Bratton] totally changed that part of the job and the environment....District based policing enabled field commanders to develop special strategies and tactics for localized problems. So many strategies were in place across to board, it gave the impression cops were everywhere, omnipresence (P. McDonald, October 2, 2001).

In order to effectively implement and monitor these strategies, it was necessary to develop a sophisticated system of data management and analysis. Bratton's predecessor, Chief Vincent Del Castillo, had been, "very impressed with computers and installed a number of computer systems to manage the organization" (Bratton, 1998, p.149). According to McDonald, "the information technology capabilities [of the TPD] had gotten way ahead [of the NYPD] during the 1980's; not that they had more money, it was just the way they chose to spend it" (P. McDonald, personal communication, October 2, 2001). McDonald recalls that Bratton was, "always looking at his stats; but that ability was already there" (P. McDonald, personal communication, October 2, 2001).

Indeed, Bratton stresses the importance of the gathering and tactical use of 'real-time' crime data, and notes that this has been a defining feature of his career as a senior police administrator:

> At Transit, with a much smaller level of crime, there was an ability at my level as chief of police to be very intimate with crime on a daily basis. I'd meet every morning with my staff sergeant Cal Mathis and with Cal we would literally go through every crime that had been reported [on the system] the day before. And there were only 60 or 70 of them, so the familiarity or usefulness or practicality of having time-sensitive information was something I had been used to in my previous commands in Boston going back to my transit police days; in Boston I only had 7-10 crimes a day that I had to review, so I could review them with great intimacy, but I had grown up having access almost instantaneously to crime information going back to my Sgt./Lt. Days in the neighborhood policing program in the BackBay...that the wall maps that I kept at that time were literally every day we'd be putting on the maps the dots indicating what types of crimes had occurred, so I had grown up all of my career having access to the timely and accurate information that we talk about....And so when I came to transit in 1990, I had come from a background of 20 years using crime information to tell me where to assign officers (W. Bratton, personal communication, August 15, 2000).

Bratton credits Jack Maple with having developed many of the crime analysis and tactical strategies at TPD, which would later be employed at the NYPD. The TPD's crime

analysts worked to produce crime data for Maple, who Bratton characterized as a, "well known eccentric within the Transit Police" (Bratton, 1998, p.165). He described Maple as an aggressive cop who was, "[a]lways on top of the statistics...his figures" (p.167). As head of the Central Robbery Squad:

> Maple had charts on his wall much like the one's I'd had on mine in District 4 [in Boston]. He was a great collector of statistics, and he recognized the tremendous potential that computerization held for the Transit Police. Maple was able to gather the information transit had in its various subsystems and, through use of the department's computers, bring it all into his office, where he analyzed it (Bratton, 1998, p.171).
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> Particularly when he moved into the Central Robbery Squad where he had the specific responsibility...once again the amount of crime he was dealing with was of a manageable nature, in terms of gathering it, assimilating it, correlating it, and collating it (W. Bratton, personal communication, August 15, 2000).
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> (Andrews #24).

Maple (2001) contends that the crime analysis system utilized by the TPD in 1990 was actually superior to the methods that the NYPD was using at the time:

> Absolutely; it was a better system; smaller, but they had the information and used it. When I was head of the Robbery Strike Force, I had about 55 feet of wall space completely covered with maps; it was color coded by tour, showed what type of crime, where it was, and when. Maps showed every station in the city. I personally put every arrest and failed attempt on the wall. It was very labor intensive. I had the detectives come in and put their cases on the map....I told them "go to the map, see how many cases up and down the line match this profile, do you see a pattern?" You see, transit crime is linear, crimes typically take place up and down and along the lines (J. Maple, personal communication, September 12, 2000).

On a weekly basis, Bratton, "gathered the department's senior leadership in [his] office. After about a month, we began meeting daily so I could intensify my knowledge of the department....These meetings created a forum for commanders to talk to each

other on a regular basis. Anecdotes, customs, methods of getting the job done, things that worked..." (Bratton, 1998, p.150). Bratton advised the District Commanders, "in no uncertain terms, 'You have to reduce these crimes!'; he focused on robbery, fare evasion, and homeless problem" (P. McDonald, personal communication, October 2, 2001).

These meetings were eventually moved to the TPD training academy (on Gold Street, in Brooklyn). McDonald (2001) describes the meetings:

> The meetings were led by a three star field commander...Patrol and criminal investigations would be there. Daily stats were prepared by the crime analysis unit, they were also looking for patterns, hot spots. They would issue bulletins and tell patrol personnel to give 'special attention' to certain areas or conditions. The crime analysts presented the problem, the pattern, the hot spot. Once we got that, there was a need for these meetings. There were no [formal] presentations by the co's. The district co's had to pay attention though, to what was happening in their commands (P. McDonald, personal communication, October 2, 2001).

Bratton created "problem solving committees"; work groups, of mixed ranks, that sought to design joint strategies and tactics to drive down the rate of reported crime. All operational branches of the agency were expected to work together (i.e. criminal investigation section, canine unit, patrol, etc.) A key goal was to "break down the information silos" that existed within the organization and to openly share and utilize crime data. Perhaps most importantly, Bratton also made the patrol commanders *accountable* for reducing these crimes; "If they didn't, they got moved out" (P. McDonald, personal communication, October 2, 2001). The patrol commanders similarly demanded accountability of all commanding officers. As McDonald describes, "The meetings had a real purpose, so did their actions....the rudiments of an accountability system were put in place" (P. McDonald, personal communication, October 2, 2001).

By late 1990, these efforts began to yield impressive results. Between August 1990 and March 1991, "arrests rose 81%, summonses were up 35%, and ejections for rules violations rose 473% from the previous year" (N.Y.C. Transit Police Department, 1992). The Transit Police soon found that by increasing enforcement of relatively minor offenses (misdemeanors and system violations, such as fare evasion), the number of felonies reported on the entire system decreased" (Nelson, 1999, p. 24) (citation omitted). As predicted, "Ridership went up as crime went down" (P. McDonald, personal communication, October 2, 2001). This trend lasted for several years.

While originally not conceived of as such, the array of organizational and tactical changes that Bratton mandated, "became the *pretest* to what happened in the city [police department]" (Kelling and Bratton, 1998) (emphasis supplied). Bratton notes that the "genesis" of Compstat, "can be directly traced to the TPD" (W. Bratton, personal communication, August 15, 2000). McDonald (2002) concurs, noting that, the crime control model that ultimately developed at the NYPD (Compstat) was, "based on a prototype developed by the Transit Police" (p. 1). She explains that, "The principles that underlie Compstat were in place and evolved in Transit – not the same way – but in terms of operating principals" (P. McDonald, personal communication, October 2, 2001).

In 1998, Kelling and Bratton reflected further on this point:

> We highlight the subway experience because it has been lost in the bigger New York City disorder and crime story, especially since the TPD was absorbed by the NYPD in 1995. Yet, it is an important story. It is probably one of the largest problem-solving exercises on record. The police tactics, organizational change, and administrative processes implemented in the TPD *foreshadowed changes in the New York City Police Department*. Still and all, the reclamation of the subway stands as a major event in public policy...(p. 1223)(emphasis supplied).

As the foregoing discussion indicates, by the early 1990's, several American police departments had become quite competent in electronically gathering, analyzing, and distributing geographically referenced crime data. It can only be presumed that senior NYPD officials were aware of many of these successful computerized crime analysis systems. Since virtually all were (at least initially) federally funded and were widely reported in professional and scholarly publications. Despite any possible awareness of these other projects or practices, the NYPD did not (prior to the 1990's) attempt any similar undertakings. From a technological standpoint, therefore, the NYPD was somewhat behind on the learning curve, in that several more sophisticated and useful systems existed elsewhere.

As head of New York City's Transit Police Department in the early 1990's. William Bratton helped develop a crime analysis and management system that surpassed prior systems, to the extent that it utilized real-time deployment capabilities for all major crimes while, at the same time, engaging in organization-wide meetings to foster the use of this information (see Table 1).

Bratton was to carry that system with him to a much larger stage (the NYPD) in 1994. As the following chapters indicate, he would implement this model in such a way as to dramatically alter the most basic operations of the world's largest police department.

CHAPTER 2

ENDNOTES.

1. The term "hot spot," denotes a location where a number of criminal incidents have taken place, the first use of the term in academic literature was by Sherman, Gartin and Buerger (1989).

2. The study also incorporated and examined data regarding the characteristics of correctional populations, demographics factors, unemployment rates and weather conditions.

CHAPTER 3

THE DEVELOPMENT AND IMPLEMENTATION OF COMPSTAT WITHIN THE NYPD

The following chapter will trace Compstat's development and implementation by relying upon official Department documents and the written and spoken words of those individuals who were most closely connected with these processes. It should be noted that every effort was made to ensure historical accuracy by a process of cross-referencing of all substantive comments of the informants. In other words, major propositions and conclusions set forth by informants were only included in this study if their contents could be "substantially verified" by information obtained from one or very often more independent sources. In this way, the present study minimizes the risk of being limited by the perspective or veracity of a primary informant. Personal opinions, on the other hand, are presented as such, whenever relevant.

The information presented herein represents a subset of a much larger body of information that was obtained for this study. It has been selected based on the belief that it most accurately reflects the facts and circumstances surrounding these events. In presenting these texts, the author recognizes the inherent subjectivity involved in this process, but nevertheless again attempts to maintain the same critical distance that was sought during the interviews and to reproduce the context of these underlying actions (see generally, La Capra, 1983).

TRANSITION

In January 1994, Rudolph Giuliani was elected as Mayor of New York City. One of his first appointments was that of William Bratton, as the city's new Police

Commissioner. Giuliani had made the reduction of crime and fear of crime a centerpiece of his campaign (Silverman, 1999; Silverman & O'Connell, 1999). Bratton was therefore charged with making these two goals a reality (Yohe, 1997a).

Gorta (1998) provides a vivid description of what he perceives to be the collective mindset and attitude of senior administrators within the NYPD prior to Bratton's arrival:

> [C]rime had been going down gradually for several years in New York City – nothing spectacular, but a modest decrease nonetheless. There wasn't an overwhelming debate as to why crime was down. Whether it was due to the huge police staffing expansion under Safe Streets/Safe City legislation, or the doubling of prison space in New York State, or the implementation of Community Policing, or demographics, or a national trend, was not a matter of great concern. Organizationally, the NYPD was in a bit of a funk. There had been recent turnovers in top personnel and a philosophy and strategy shift to a community/problem oriented policing scheme. With the 1993 mayoral election [ ] Police Headquarters [had become] a haven for the extremely cautious....no one was taking any chances.... (Gorta, 1998, p. 17).

Bratton immediately set out to assemble a dynamic executive staff. He selected Jack Maple, a Transit Police Lieutenant, to serve as the NYPD's Deputy Commissioner of Crime Control Strategies (a newly created office) and directed him to assist in the personnel selection process. Maple (1999) was asked:

> [T]o play chief headhunter during the transition period,....I was interested in identifying other characters who were serious about fighting crime....I arranged to sit down with several of them a few different nights at a beat-up old yacht club forty-five minutes away from One Police Plaza in Sheepshead Bay, Brooklyn (Maple, 1999, p. 20-21).

Maple assisted Bratton in assembling a dynamic group of individuals to lead the Department. As Gorta (1998) recalls, "He chopped through an old growth stand of chiefs and supplanted them with a young and energetic crew in the top uniformed positions" (Gorta, 1998, p. 17). Maple describes the unique relationships that developed among the Department's newly appointed top-level administrators:

> [Chief of Department John] Timoney [was] our Eisenhower to [Chief of Patrol Louis] Anemone's Patton. While it was left to Louie and me to press the field battle against crime, Timoney had the depth and breadth of vision to see that every other aspect of running the organization – budget, training, transfers, promotions, disciplinary matters – supported and contributed to the victory effort (1999, p. 178)

Timoney explains:

> I spent my whole career...no, not my whole career, but I mean, I was a pain in the ass. I was always complaining. And Anemone was always complaining, you know, about the higher ups. Well, quite literally, overnight we became the higher ups (2001).

It was Bratton's belief at the time that he was, "being brought in to breathe some life into the organization, not to manage a holding action, and I wanted the best and brightest (Bratton 1998, p. 199).

Years earlier, the Department had attempted, under a prior administration, to impact crime and the fear of crime through the implementation of the Community Policing Program. In 1984, the Department began a pilot community policing project in the 72nd precinct, called the Community Patrol Officer Program ("CPOP") (Yohe, 1997b, p. 6). This project was carefully monitored and studied for several years (Silverman, 1999). By 1990, the program was expanded to include all 75 precincts within the city (Yohe, 1997b, p. 6). From 1991 through 1994, the department attempted to build upon CPOP and previous reform attempts.

The relative success of the Department's CPOP program has generally been debated (see, e.g., Silverman, 1999; Maple, 1999; Bratton, 1998; Kelly interview, 2000). Immediately prior to the commencement of the Bratton administration, efforts were undertaken to achieve less fragmentation, more decentralization, and greater delegation

of decision-making authority (Silverman & O'Connell, 1999). In 1991, the Department proposed that:

> The police bureaucracy will be tightened, with a minimum of bureaucratic layers between top management and community police officers...resulting in a collective effort to build a management capability for direction and oversight of a highly decentralized policing effort in each of the City's neighborhoods. The Department will curtail the tendency for the bureaucracy to focus on its own needs (Brown, 1991).

These goals were apparently not completely realized. Several researchers have noted internal resistance and a perceived lack of a shared vision that hampered these efforts (e.g., Silverman, 1999). Yohe (1997b) notes that the CPOP program's attempts to transform the Department's organizational culture during this period were:

> [N]ever clearly communicated and as a result, failed to foster a sense of commitment or to motivate the organization to change. The lack of clearly defined, attainable goals and the absence of a system to gauge organizational progress created a managerial vacuum that precluded the NYPD from modifying it's unsuccessful approaches and doomed any attempts to re-invigorate the organization through new approaches (Yohe, 1997b, p 8).

Yohe (1997b) explains that, by contrast, upon taking office, Bratton immediately communicated a very clear and direct message to all members of the NYPD:

> In sharp contrast to the CPOP program, Commissioner Bratton clearly stated his goals for the NYPD: "reduce crime 10 percent in 1994." Not only was this goal clear and concise, it was directly within the sphere of influence of the precinct commanders to achieve. Thus, while appearing to some to be an unrealistically high expectation, the goal created a challenge for middle managers instead of confusion (Yohe, 1997b, p. 15).

Bratton (1998) believed that the prior reform efforts were insufficient, noting that, "the entire culture of the New York Police Department needed to be transformed" (Bratton, 1998, p. 195). He described the organization as "a centralized bureaucracy that didn't give out power even to its precinct commanders" (Bratton, 1998, p. 199). The

Department's overall structure and bureaucratic orientation significantly impaired the free flow of communication and spontaneity of its decision-making processes:

> The organization was very military oriented, with a strict chain of command, and information didn't flow easily from one bureau to another. Each bureau was like a silo: Information entered at the bottom and had to be delivered up the chain of command from one level to another until it reached the chief's office. There it would wait to be dealt with. Even when a memo finally arrived, there was a less-than-acceptable level of cooperation between bureaus. At some point, it seemed like one would call another and have to take a number, like a bakery (Bratton, 1998, p. 209).

Bratton notes the particular resistance to internal communications (i.e., those between units, divisions, bureaus, etc) and the negative effects that over-specialization had upon myriad police operations:

> Coming into the NYPD, understanding the magnitude of the place, we were shocked not only about how poorly the information was gathered in terms of timeliness and comprehensiveness, but how little use it was put to. It also highlighted how overly specialized and bureaucratized the department was, in that every time there had been a crisis or a problem, a new unit had been created; so you had gun units, drug units, and as Jack [Maple] writes about in his book, and as I've talked about, the priorities of each of these groups was on their little slice of the world, and they really didn't interact or coordinate very well (W. Bratton, personal communication, August 15, 2000).

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> [P]recinct commanders had not been allowed to work on vice conditions, to go after drug dens or houses of prostitution or automobile chop shops or any similar locations. All vice and drug-related crimes had to be handled by detectives in the OCCB or the Detective Bureau's specialized vice and narcotics squads. Precinct commanders went to community meetings and got their heads handed to them about all the crime locations in their precincts, but they didn't have the power to address those issues; they had to go through the borough chain of command and then over to the OCCB or detective Bureau chain of command to get the resources. We changed that (Bratton, 1996, p. 231) (see also Bratton, 1996; Levitt, 1994).

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> It was a turf war. All the movies ever made about New York City cops show the detectives in plain clothes on the station house's second floor and the uniformed officers on the first, with no intermingling. We were intent on breaking that barrier down (Bratton, 1998, p. 231).

Maple concurred, noting that the different units (particularly the detective bureau) were "too territorial" (Maple, 1999, p. 23) (see also Silverman, 1999).

Bratton immediately recognized that the coordination of the Department's efforts was contingent upon a clear mission and open and effective communications. Accordingly, a centerpiece of the new administration was the ambitious "reengineering" plan that was immediately implemented. The Department:

> [B]rought in an outside consultant [John Linder], financed by the Police Foundation, who set up twelve teams – made up mostly of NYPD members with a smattering of business people and public figures, many of whom were ex-cops – to examine all major aspects of the Department and to make recommendations for streamlining operations. These teams were – for the most part – rare collections of talent given not only specific mandates, but also rare permission to question why the department did things the way it did (Gorta, 1998, p. 18).

Incorporating many of the techniques common to the "reinventing government" movement (Kamensky, 1996; Van Wart, 1995) and private sector programs for planned organizational change (Pascale, et al., 1997; Drucker, 1995; Bruns, 1989; Moore & Trojanowicz, 1988), Bratton solicited feedback from all levels of the organization. To accomplish this, the Department created focus groups that supplemented the information provided by the re-engineering teams:

> Bratton immediately moved to create a sense of ownership of the changes he was proposing. Twenty-five focus groups were created to examine all aspects of the Department's responsibilities....The Department also developed written strategies to effectively interdict crime and change unresponsive department procedures. Instead of a 67 page document restricted in distribution like [former Commissioner] Brown's "Policing in the 1990's," the Department created a series of small booklets, one for each strategy, that were distributed over a reasonable period of time to

> every member of the organization. As a result, there was little confusion regarding the goals of the administration on any level, from upper and middle management to the line officers (Yohe, 1997b, p. 16).

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> The goals were clear and direct, and management actively sought the participation of all levels of the Department, creating an atmosphere of participation and commonality of purpose (Yohe, 1997b, p. 20).

Perhaps most importantly, between March and July 1994, the Department developed and promulgated a series of five (5) specific Department-wide strategies (regarding guns, drugs, youth violence, domestic violence, and the reclaiming of public spaces) that were intended to, "substitute strategic direction for micromanagement" (Silverman, 1999, p. 91). According to Kelling, these strategies, "amount[ed] to a contract between the NYPD's leadership, its officers, and the citizens of New York" (1995, p. 41). They served as a fixed standard upon which to measure the relative effectiveness of the Department's future crime-fighting efforts. Such openness was unprecedented and was apparently welcomed by the public and members of the Department. Kelling (1995) highlights the unique nature of these published strategies:

> They expose citizens to Departmental thinking while communicating directly to patrol officers what the department expects of them and what steps the Department will take to achieve its goals – steps that can be monitored by those who will be accountable for success or failure. They commit the Department to report publicly on the results of its efforts (Kelling, 1995, p. 41).

In order to carry out these directives, precinct commanders were given more authority, more resources, and more encouragement to accomplish the Department's singular mission; to reduce crime, the fear of crime and disorder. Yohe (1997b) contrasts this to the, "sense of powerlessness and lack of purpose" that was generally associated

with the Department's earlier Community Policing Program. As the lynch pin in the Department's overall crime-fighting efforts, precinct commanders were:

> [E]mpowered with a new autonomy to devise successful techniques. With this autonomy came a new responsibility as well. Commanders found themselves in the altogether new position of developing their own strategies and being supported by Headquarters. Requests for personnel, support services and materials were considered and usually granted during the meeting itself. Rewards and punishments were based on performance and both were distributed swiftly: while more than 75 % of the precinct commanders were replaced within 18 months, the participants also witnessed promotions at an unprecedented rate (Yohe, 1997b, p. 15).

They were, quite literally, "accountable for all activity in their areas" (Bratton, 1998, p. 195). Bratton explains:

> I encouraged the precinct commanders to use their own initiative, and I told them I would judge them on their results. The day-to-day operations were to be managed at the precinct level. I did not penalize them for taking actions that did not succeed, but I did not look kindly on those who took no action at all. The precinct commanders owned the successes, were responsible for the progress, and were accountable for the failures. No passing the buck here (Bratton, 1996, p. 231).

As he did during his tenure as head of the Transit Police Department, Bratton again relied heavily on the "Broken Windows" theory, noting that its architects (Wilson & Kelling), "understood the importance of disorder's relationship to crime" (Bratton, October 15, 1996, p. 6) (see also, Kelling & Bratton, 1998, p. 7, n.14). Speaking at the Heritage Foundation in 1996, Bratton emphasized the importance of this approach:

> [W]hat are [the police] going to work on? Problems. Not 911 calls, the individual incidents, but the problems that generate all those calls, and problems that generate those signs of disorder in our streets....Think of Malaria; for years and years the response to malaria was to swat at all those mosquitoes. But we are never going to kill all those mosquitoes. What was generating all of those mosquitoes? Swamps. Not until people went in and drained the swamps did they start dealing effectively with the problem....Policing must be more focused on the problems that generate crime, whether it is actual crime or the signs of crime – something we had

> not been doing well in the 1970's and 80's (Bratton, October 15, 1996, p. 8).

Bratton's statements during this presentation echo views expressed by policing scholars such as Sparrow (1992) and Goldstein (1990) several years earlier.

Bratton and his colleagues showed little tolerance for inactivity and insisted upon proactive techniques and new ideas to fight crime. Maple (1999) notes with dismay that a significant amount of enforcement activities, those that were being performed at that time by the Department's various 'specialty' units, were typically not being performed during evening hours when they were most needed. He sharply criticized this practice of "part-time policing" set out to alter both their methods of operation and the way they thought about their work and their roles within the Department (Maple, 1999, p. 23).

Maple is also credited with crystallizing the basic principles that were incorporated into each of the Department's new crime fighting strategies. While sitting in a Manhattan restaurant with Bratton, Maple began," doodling on a napkin, trying to figure out how to stop crime. He decided it came down to four elements...Maple had captured on his napkin the essence of all our strategies (Bratton, 1996, p. 233-234). Maple describes how these principles were developed:

> On the napkin in front of me, I started scratching out a few ideas about what any police department needs in order to operate as an undeterrable force against crime. Before long, I reduced those ideas to four principles, which were to become our guideposts as we went about redefining the objectives, methods, and outcomes of the NYPD and, in turn, police organizations everywhere:
>
> 1) Accurate, timely intelligence;
> 2) rapid deployment;
> 3) effective tactics; and
> 4) relentless follow-up and assessment.

> In the days and weeks that followed, I refined my definitions and misplaced the napkin, but I remained obsessed with the four principles (Maple, 1999, p. 33).

Bratton responded to this simplified approach; "In everything I do I always try to reduce it to its simplest elements, so that's why those four steps resonated when Jack first laid them out" (W. Bratton, personal communication, August 15, 2000). These four principles guided all of the Department's operations during this period and provided the theoretical framework within which Compstat was developed.

Bratton and his top advisors, however, encountered another very significant problem. While they demanded that precinct commanders take primary responsibility for all police operations in their respective areas, these commanders, who reported to the Chief of Patrol, had previously had "no control over the detectives in their own precincts, who were run by the precinct detective squad commander, who reported ultimately to the Chief of Detectives" (Bratton, 1998, p. 230). This jurisdictional barrier, as well as a number of others, had greatly hampered previous reform efforts, and the new administration had no intention of allowing them to do so again. Bratton recognized that:

> [C]ontrol of personnel was guarded jealously. Rather than focus on the greater goal of reducing crime, commanders had traditionally refused to cooperate and instead concentrated on maintaining the importance of their own commands. Precinct commanders also had no ability to coordinate activities with other precincts without going through division and borough commands (Bratton, 1998, p. 230-231).

If Bratton were to succeed in re-focusing the Department's overall orientation back towards crime fighting, it was first necessary to ensure that the efforts of field units were coordinated and that they each displayed an appropriate level of cooperation and support. The Department's overall re-engineering program was designed to dramatically alter the organizational architecture of the Department (by breaking down certain

jurisdictional barriers) and to affect a necessary shift in organizational culture (from a reactive to a proactive style of policing) (Silverman & O'Connell, 1999; Silverman, 1999; Bratton, 1998). Maple's iteration of the four essential principles of effective policing provided a sense of direction and was critical to the creation of a new organizational mindset.

It was in the context of this period of dramatic organizational change that the innovation known as Compstat was first developed (Gorta, 1998).

REQUEST FOR NUMBERS

Jack Maple is widely credited with having been the catalyst for the development of Compstat, both from a practical and a theoretical standpoint (P. McGuire, personal communication, February 21, 2001; W. Bratton, personal communication, August 15, 2000, 1998; J. Timoney, personal communication, December 12, 2000; W. Gorta. personal communication, July 6, 2000; J. Yohe, personal communication, July 26, 2000; Silverman, 1999). By the end of January 1994, Maple made an unprecedented request to the office of the Chief of Patrol; he wanted to know what the Department's *current* crime situation was. Maple wanted to be provided with a recapitulation of recently reported crime throughout the city. This information was intended to serve as the basis of discussion at weekly executive staff meetings (attended by the heads of each of the Department's eight bureaus) (Silverman, 1999). Maple was informed that such up-to-date information was unavailable (W. Gorta, personal communication, July 6, 2000). Bratton explains:

> When I began running the NYPD in 1994, the crime statistics were gathered only twice a year for the sole purpose of submitting the statistics to the FBI for their semiannual and annual reports. The NYPD did not use crime statistics to manage the routine assignment of resources. At first,

> they told us we could not get crime stats on a daily or weekly basis – there were just too many of them. . . . Imagine trying to run a business without timely, accurate information on where your customers are and where your markets are: it is not an efficient or profitable way to operate" (Bratton, 1996, p. 12).
>
> (Yohe #4. Yohe #7, Yohe #5).

Interestingly, Anemone, Maple, Timoney, Bratton, Yohe, and Gorta all state that the Department's city-wide crime statistics lagged by approximately six (6) months. Mealia believes that the time-lag was only approximately two (2) months (Mealia #20). McGuire agrees that the actual time-lag was less than six (6) months.

Nevertheless, the failure of the Department to maintain and produce this information was considered by Bratton and his senior staff as a profound limitation in the Department's ability to fight crime. It indicated to them that: 1) The decisions that were previously being made were not based upon current (i.e., accurate) information; and 2) That senior administrators were apparently unconcerned with this situation. Bratton (1998) suggests that this indicates a far deeper problem; one that touches upon how the police view themselves and their core mission:

> Maple understood, as I did, that the biggest secret in law enforcement is that many police departments do not address crime. They are dysfunctional. Chiefs don't ask follow-up questions because they haven't been on the street in about twenty years, they don't know the answers, and they're afraid that in the fencing back and forth, their underlings are going to embarrass them. Rather than be made to seem foolish, they let themselves be given fantasy briefings (Bratton, 1998, p. 232).

Gorta (1998) concurs that this simple request for information sent shock waves throughout the organization and served as the first concrete step in the development of Compstat:

> [Maple] asked the most ridiculous question ever heard at One Police Plaza, "How much crime did we have last week?" Here is where Compstat

> began – not with a bang or a plan or a stroke of genius, but with shrugged shoulders and downcast eyes. The Department had various repositories for crime statistics that operated on a sliding scale of accuracy versus alacrity. Maple was agog. How could we fight crime if we didn't know what the "crime universe" was? (Gorta, 1998, p. 17).
>
> (Yohe #6, Yohe #8) (Mealia #21, Mealia #22).

Maple was not particularly surprised by the response he received. From his prior experience with the NYPD, he was relatively certain that they were not in the habit of obtaining and analyzing current crime information:

> I was surprised, but I really wasn't. We knew there would be slippage; it's the nature of police work. There is a time lag in a lot of things, robbery reports that never get handed in by the cop, [etc.] . . . I was actually happy that they didn't have the stats they needed. If they knew their numbers and were doing everything they could, and if crime was still going up, then I knew we were in trouble. I was more surprised that they really didn't look at crime at all (J. Maple, personal communication, September 12, 2000).

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> What worried me was that we had no process in place to ensure the strategies were carried out. We knew from history that the greatest ideas in the world are useless unless they are carried out (Maple, 1999, p. 31).
>
> The eight strategies, those were the eight major issues that the Department was going to have to focus on in its re-engineered state, to achieve the three goals. But within the strategies, we were leaving it up to the precinct commanders to develop the tactics. And the idea was, that we would share information about what was working and CompStat eventually evolved to support that (W. Bratton, personal communication, October 5, 2000).

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> When they say that it [Compstat] was Jack Maple's creation I think it was, but I think it was a reaction to, they had come in, and the first thing they started to do was to work on all these strategies. And the next question is how are we going to monitor these things? (P. McGuire, personal communication, February 21, 2001).

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> [T]hey had come up with the first 2 or 3 strategies, getting them out, they were saying "Look, we've got to monitor this" (J. Timoney, personal communication, December 12, 2001).
>
> (Mealia #23).

Maple, however, insists that the idea of requiring "up-to-date" and timely crime data predates this request, as well as the creation of the Bratton-era crime strategies. He stresses that the idea of the four essential principles of policing (those that he authored in the Manhattan restaurant) was simply the crystallization of the many strategic ideas that he had employed as a lieutenant with the Transit Police. He explains:

> [T]he juices were flowing before that [the request for current crime data]; Bratton was named on about the third or fourth of December; January tenth he took office, by the end of December, I started thinking about this. It's described in my book. I was thinking about this, and doing this for years. It is the way I did business in Transit. The four principles just boils it down, makes it understandable. By the second week of January it was up and running as Compstat
>
> Q- So did it stem solely from this unanswered request for real time statistics?
>
> A- No. The ideas existed before that (J. Maple, personal communication, September 12, 2000).

Once this request was made, the historical record becomes much more clear. Personnel assigned to the Chief of Patrol's were immediately directed to assess what type of crime information was available and to create new databases or systems where necessary. Lieutenant William Gorta, who was then assigned to the Chief of Patrol's office, recalls how Maple's request was responded to:

> [The request for stats] was sent out [ ] on a Friday, and then we drew the book on a Tuesday for a Wednesday. So the first book didn't come...we might have had a week or two lead time, from when we first heard of it, to devise it and make the system and all of that, or at least a week....[we were] just getting stick figured counts from the precinct commands, for the

first six weeks in 1994 for comparison with the first six weeks in 1993 (W. Gorta, personal communication, July 6, 2000).

The Chief of Patrol would get monthly robbery reports or something. They reported it to the borough, and I think that was it. I don't know if they went up to the chief of patrol everyday. But mostly it was robbery, it was the big, the bell weather as we called it (W. Gorta, personal communication, July 6, 2000).

They had some crime stats come up [to their office], or on the monthly management reports some stats would come up. [ ] So I think they offered that. I think they offered the OMAP stats, which of course were 7 or 8 months behind because they were waiting to do UCR numbers [i.e., mandatory federal reporting of major index crimes] (W. Gorta, personal communication, July 6, 2000).

The only time they had crime information was in these Robbery meetings. The problem was, that it was only patrol that was meeting to discuss it, not detectives. I had attended these NYPD Robbery meetings in Queens as a Transit Detective Sergeant; they weren't *using* the numbers (J. Maple, personal communication, September 12, 2001) (emphasis in original).

Unfortunately, [ ] detectives didn't have direct access to [a wide variety] of computerized database systems down at headquarters that could fetch everything from court histories and motor vehicle records to narcotics rap sheets and fugitive investigations. Most of the hardware they needed was right there in the squad room, but the department's Management Information Services Division, living up to its reputation as an enemy of management, information, *and* service, was holding back on the access codes. The standard excuse was that opening up access to the systems would open up opportunities for corrupt cops to sell information to the bad guys (Maple, 1999, p. 101) (emphasis in original).

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In the NYPD of early 1994, not many detectives had access to all nineteen data systems, due in part to concerns that corrupt cops might sell information back to the criminals, but mostly because catching crooks was not the Department's top priority (Maple, 1999, p. 88).

I seem to remember them talking to John and myself and I just remember [Chief Patrick] Kelleher telling me, "just make sure this thing gets done." Because I was the jack of all trades (W. Gorta, personal communication, July 6, 2000).

Gorta explains that the compilation of this information was performed in response to the initial request for up-to-date crime data (Anemone #4). He insists that the Compstat crime meetings (as they have become known and understood today) were not yet envisioned:

> We invented the meetings. [laughing] No, there was nothing,....they wanted the crime stats. And the crime stats were initially going to be given out to everybody in the executive staff meetings. So the operational use of it hadn't [yet occurred] (W. Gorta, personal communication, July 6, 2000).

Yohe concurs that the preparation of the book predates the actual meetings, "Compstat had an extremely objective system in place and functioning that *preceded* any meetings (Yohe, 1997b, p. 17) (emphasis in original)[1].

DEVELOPMENT OF THE PROGRAM

The term "Compstat" was first used as the filename, "given to [this] new statistical database of crime outputs (Computerized Comparative Complaint Statistics) (Yohe, 1997b, p. 15). Gorta credits another member of the Chief of Patrol's office, Detective John Bruncato, with creating the name:

> He was up in the Chief of Patrol's office for a while; it was like, "Hey John, what do you want me to call this directory?"; because John wrote the program. "I don't know, write what you think." "How about Compstat?"....You try to truncate so they get the thought identified, so they would recognize it.
>
> Q-And the full term is what, "compare statistics"?
>
> A-There never was. I don't know. [laughing] (W. Gorta, personal communication, July 6, 2000).

Maple agrees that the exact meaning of the term is uncertain, "The name was short for 'computer statistics' or 'comparative statistics' – nobody can be sure which."(Maple, 1999, p. 33) (Yohe #10, Yohe #11).

The program itself was written by John Yohe (W. Gorta, personal communication, July 6, 2000). Yohe describes the process:

> Because of hardware constraints, we wrote the field version of Compstat in a database product called SMART. It isn't very demanding regarding what hardware it needs and was available to all our precincts. On the Headquarters end, where we were fortunate to have more powerful computers available, I utilized Microsoft FoxPro to write the master Compstat program (Yohe, 1997, p. 1).

Maple suggests that this development took place, "not because of any new technology but in spite of the technology we had" (1999, p. 107). Much of the data that came in from the field commands had to be stored on discs, then driven into Manhattan where it was uploaded onto the new system.

Gorta describes his own role as being primarily supervisory:

> John wrote the computer code. I didn't write code. I was . . . 'Push it through!" I was talking to precinct commanders on the phone. The line I used to use was, "Captain, the next sound you hear will be the Chief of Patrol picking up the phone, are you ready?" If they're not . . . I was the guy three o'clock in the morning calling the desk officer saying, "Well, call the captain at home. Because if not, he's going to have to see the chief at seven o'clock." "Either way, you'll either need to get the office open, or he's going to have to come see the chief at seven o'clock in the morning." And they were very, very good about support. I threw [Chief Anemone's] name around like it was for free (W. Gorta, personal communication, July 6, 2000).
>
> (Yohe #20).

The development process was facilitated by the fact that both Yohe and Gorta had been "good street cops" and "understood how a crime became a report and how a report became data that we could capture" (Maple, 1999, p. 107). Interestingly, they had both also participated in the re-engineering teams (NYPD memorandum, May 12, 1994).

During the second week of February 1994, crime data from all seventy-six precincts had been inputted into this new system and the first "Compstat book" was

prepared. It included, "current data on a year-to-date basis for crime complaints and arrests for every major felony category, as well as gun arrests. The data were compiled on citywide, patrol, borough, and precinct levels" (Silverman, 1999, p. 100). The data were however, far from entirely accurate:

> The initial Compstat report was for the second week in February 1994, so the first disks sent up contained data for the first six weeks of 1993 and 1994. The report was a masterpiece: well designed, covered and bound, ready before deadline, and, of course, completely unreliable. There were far too many inconsistencies and inaccuracies for the early reports to be considered anything more than a lovely looking trial run. We had assumed too much uniformity in definition and methodology and, despite what we thought were explicit and precise instructions, wound up with seventy-five different interpretations, eighty-two if you count the boroughs...it took more than several weeks for the figures to be considered reliable, and even then . . . there were spurious figures that must be explained or ignored (Gorta, 1998, p. 17).

Silverman (1999) explains that the inaccuracy of the initial data led to a profound change in the collective mindset of the Department:

> When it was discovered that some of the arrest statistics were inaccurate, precinct commanders were made accountable for all errors. Elevating the level of responsibility for gathering crime statistics from a clerical task to an administrative obligation signaled that there was a new regime in town (p. 100).

The first several versions of the Compstat book were distributed throughout the administration and were continually refined and enhanced. Relative rankings were soon made among the precincts and were, "viewed as indicators of patrol effectiveness" (Silverman, 1999, p. 101). It soon became apparent that there was a need for a forum in which to actually make use of this new information. As Gorta explains, "Once the stats were out, it was sort of like what are they doing about this?" (W. Gorta, personal communication, July 6, 2000).

By April 1994, the Compstat book played a central role in the Department's executive staff meetings. It was also being utilized in the field, during the monthly robbery meetings that were being held in each borough. At these meetings, precinct commanders and their robbery and anti-crime sergeants met with borough staff to brief them about robbery trends (Silverman, 1999). Maple recalls that he visited several of these meetings in the field, and was not very impressed with their overall quality (Maple, 2000). Gorta concurs, "The general tenor was less than confrontational and the good that came out of the meetings relative" (Gorta, 1998, p. 18).

A very significant event occurred in the Spring of 1994, when, "[t]op-level executives requested that the Brooklyn North Patrol Borough hold one of its monthly robbery meetings at headquarters-One Police Plaza" (Silverman, 1999, p. 102) (see also Bratton 1998) (Anemone #6). Silverman describes how this request unnerved field commanders who did not know what to expect. He describes the first meeting:

> After the Brooklyn borough CO's overview of special conditions, several precinct CO's were called to the front of the room. Their presentations, although suitable for public community-council meetings, lacked in-depth analyses of complex crime problems. Dissatisfied, Anemone abruptly terminated the meeting and announced monthly meetings at headquarters for each borough. The process was launched; there was no turning back (p. 102).
>
> At the second meeting it was clear: they were not prepared. I asked a few simple follow up questions and they were unprepared. Nobody had apparently done that before [asked such probing and direct questions]. The first time they came in, it was more of a briefing session. The very first briefing session was in the field, the boroughs. We would hear from the borough commanders. There came a point where we told them, "Let's have every other (Robbery) meeting down here (HQ)." Those first meetings, they didn't know anything. We got answers like, "Commissioner, that case is under active investigation." It was very clear that they didn't have the answers we were looking for (J. Maple, personal communication, September 12, 2000).

> We would have our executive staff meetings, then we'd have the local, whatever borough was up, they'd come in just to talk about crime] for about an hour. It started to generate more questions, and it was clear that it was taking up much more time than the executive staff meeting. And the questions got more in depth. And ultimately what was happening, because the executive staff meetings would start at 10:00, these things would go until 12, 12:30, it's the middle of the day, phones were ringing, the decision was made, I don't know whether it was Jack or Anemone, that let's make, let the crime meetings be separate....And that's kind of how it evolved and then, what you built it was, it was a process then over the next year and one half of iteration after iteration, refinement, fix the margins, do this, try that, to what you see today (J. Timoney, personal communication, December 12, 2001).
>
> (Anemone #8) (Yohe #9, Yohe #12).

Maple insists that he personally would have preferred if these meetings could have taken place in the field. "I wanted the borough commanders to have meetings with precinct commanders every two weeks, going over all crime, but not necessarily at headquarters" (J. Maple, personal communication, September 12, 2000). Over time, it became clear however, that it was necessary for him and his staff to take a leading role in overseeing how these meetings were held. "We had to come up with new ideas. That's what I was there for. We had to break it to them gently, piecemeal. I envisioned these meetings a certain way, but had to make adjustments all along the way" (J. Maple, personal communication, September 12, 2000).

The technology that was utilized at the first meetings was quite simple. Commands submitted "handmade pin maps" to supplement the information contained in the Compstat book. Manual pin mapping had been taking place in the field for decades (see Chapter 2). Timoney suggests that, "there was no great analysis initially, this was just kind of rudimentary stuff" (personal communication, December 12, 2001). Norris concurs, noting that the presentations were initially made with paper maps on easels" and

were often quite "weak." (E. Norris, personal communication, September 21, 2000) (Anemone #7).

As the crime meetings developed, the use of maps became more common. Chief Anemone "ordered all precincts to maintain pin maps, cover them with acetate overlays for each of the major index crimes, and bring them to the meetings" (Silverman, 1999, p. 104). Commanders were required to, "separately map robberies, murders, shootings, and narcotics arrests, and they were strongly encouraged to map any other conditions or crimes that were likely to be considered a major problem for their command" (McGuire, 1999, p. 14). The meetings began to develop as, "a forum for precinct commanders to explain spurious bad numbers or to receive assistance in combating sudden surges" (Gorta, 1998, p. 20). McGuire explains:

> The routine availability of electronically mapped crime data and related overlays ha[d] both an amplifying and catalytic effect on the weekly crime strategy meetings. The maps provide[d] a much more intimate view of a command's crime problems. . . The displays also stimulate[d] discussion (McGuire, 1999, pp. 15-16).

By the Spring of 1994, Yohe and Gorta were directed to develop a computerized crime mapping capability (W. Gorta, personal communication, July 6, 2000). The intention was, "not only to determine the usefulness of electronic mapping software but also to resolve the logistical issues of acquiring timely incident data and securing the appropriate hardware to prepare and present the mapped data at Compstat meetings" (McGuire, 1999, p. 14). That May, Gorta and Maple attended a crime mapping conference in Washington, DC, where they were exposed to the crime mapping practices of several other agencies. Gorta recalls that Maple stated, "Next year we'll come back

and show them what it's about. We'll show them how to do this" (W. Gorta, personal communication, July 6, 2000; 1998) (Yohe #13, Yohe #14).

During this time, MISD was working on the development of an on-line-complaint system; one that was expected to greatly advance the Department's information processing capabilities. Gorta and his staff were able to avail themselves of information that was being compiled by MISD as part of this project (known as the on-line complaint index) (McGuire, 1999, p. 14). This information described the type of criminal complaints that were being made and matched them to particular geographical locations (W. Gorta, personal communication, July 6, 2000; McGuire, 1999). Gorta explains:

> MIS converted a part of their [ ] System to record and retrieve geo-data through precinct dumb terminals. This was in itself a major concession [i.e.,] custom work for a unit that the MIS hierarchy regarded as upstarts, outlaws and competition. Once the On Line Complaint Index was operational – and in fairness to MIS personnel, the project was both on time and correct – it was a simple matter of collecting the data, sorting it, geo-coding it and learning how to use [the mapping software] and then we were off to the races (Gorta, 1998, p. 19).

> ***

> We just put in the index crimes. I think it was index crimes and family offenses, or something. But it was just what we needed. Then when the on-line complaint system came out, we wound up using their dots. Even though they were not perfectly correct, they were within shouting distance anyway.
>
> Q- So you're pretty much just taking, off the [complaint reports], address locations, putting it into a central repository . . .
>
> A- Right.
>
> Q- ...and being able to print out where your locations are of what crimes....
>
> A- Yeah. It was just a standard software program. This is not . . but understanding the police department, it was an achievement of

> monumental proportions. Epic proportions (W. Gorta, personal communication, July 6, 2000).

The system still did not yield "real-time" data (as a week's worth of files were sent out each Monday), but it was certainly more current, and a much more effective means of compiling these data. Bratton explains that the maps were extremely useful; "It was like computerized fishing....The mapping progressed, and the intelligence progressed, and the questioning got harder and harder (Bratton, 1996, p. 234).

By late 1994, computerized crime maps were being utilized at all meetings. Gorta insists that computerized pin-mapping, which he refers to as "the undisputed centerpiece of the modern Compstat meeting," developed "as a separate project from the Compstat book or the meetings (Gorta, 1998, p. 19).

Bratton recounts the early evolution of the meetings:

> As the months went by, our sophistication grew. Week by week, we gathered more data, and rather than report only to their immediate superiors, the precinct commanders were instructed to also report to my command staff. We expected every precinct commander to be present and prepared to participate. We started with a book of numbers and ultimately fed them into computers that spat out an updated set of weekly statistics. What we began referring to as "the crime meetings" evolved into computer-statistics meetings, or Compstat (Bratton, 1996, p. 232-233).

By April/May of 1994, the crime meetings had come to be known as "Compstat meetings."

DEVELOPMENT OF THE MEETINGS

It is important to note that the, "meetings themselves developed simultaneously but independently of the report" (Gorta 1998, p, 18). The borough-wide robbery meetings had become Compstat meetings by the Spring of 1994. They continued to evolve, however, for quite some time.

During the first few months of 1994, there was a certain degree of experimentation, with regard to the format of these meetings as well as with physical layout. The seating arrangement, "was shifted from rows to a horseshoe shape to encourage more interaction" (Silverman, 1999, p. 102). As the number of participants grew, the meetings moved to a larger venue (from the Pressroom to the Operations Center) (W. Gorta, personal communication, July 6, 2000; J. Maple, personal communication, September 12, 2000; Gorta, 1998) (Anemone #5, Anemone #6). Representatives from other agencies attended and participated, including "district attorneys from each of the five boroughs, the New York State Department of Parole, the City Probation Department, [ ] the City Corrections Department...consumer affairs, social services, and environmental protection" (McGuire, 1999, p. 14). Their participation was encouraged and appreciated, particularly if, "the problems or strategies to be discussed require[d] inter-agency coordination and cooperation" (McGuire, 1999, p. 14).

Oral presentations of field commanders became much more thorough, as additional personnel participated (Andrews #20). Similarly, the Compstat briefing books became more comprehensive:

> Briefing books were at first prepared only for the chief of department, deputy commissioner for crime control strategies, and police commissioner. Although bureau chiefs attended meetings and occasionally participated, their involvement was originally less central to the questioning process. Eventually, these chiefs (chief of detectives, organized crime control, transit, and housing, plus the first deputy commissioner) became more involved and were also provided with briefing books (Silverman, 1999, p. 117).
>
> [ ] The Compstat staff began supplementing its oral briefings to Maple and Anemone with increasingly refined briefing books. These books summarize each precinct's unresolved investigations and patterns of

> criminal activity, particularly homicides, shootings, rapes, and robberies (Silverman, 1999, p. 114).
>
> (Andrews #21).

The questioning of precinct commanders became more intense. They were now required to possess an in-depth knowledge and understanding of a wide array of crime-related topics, as well as, "qualitative information about precinct and community conditions and their relationship to effective crime fighting" (Silverman, 1999, p. 106) (Anemone #24). More importantly, they were being held responsible for crime reductions (Carroll #2). Bratton notes, "having given the precinct commanders increased power, I had to make sure they were handling it properly through accountability and relentless assessment" (1998, p. 231). Many commanders were unprepared for this new level of responsibility. Gorta suggests that, perhaps, the administration was also unprepared:

> [S]ome guys just obviously weren't up to it. In some ways it was unfair because they changed the game, maybe they didn't even know they had changed the game, without telling everybody. And when all of a sudden they started asking these questions I think people were unprepared for it. I'm not sure they [the administration] were prepared for the answers they were getting. You know, I think they expected to hear different things....- But I think they really expected to get an answer, and were stunned to find nothing. You know, as I said, the precinct commands weren't prepared for the change, and I'm not sure whether the executive staff was prepared for the change (W. Gorta, personal communication, July 6, 2000).
>
> (Mealia #24).

During this time, there was a particularly high level of turnover at the precinct commander level (P. McGuire, personal communication, February 21, 2001; J. Maple, personal communication, September 12, 2000). McGuire reflects upon this:

> During that first year or so, they ended up replacing about 75% of the precinct commanders, not because they didn't necessarily do well in Compstat, although some might have been. But they also...there were a lot of people who retired. There was a change of administrations, so they

> were confronted with a situation in which they could make, they could create a lot of new precinct commanders and get people in there who they believed would do well in this kind of environment (P. McGuire, personal communication, February 21, 2001).

Anemone similarly comments upon the new pressures placed on precinct commanders; (Anemone #26).

Commissioner Bratton attended many, but not all, of these meetings. He describes his role as follows:

> There was always a chair for the commissioner. There was a pecking order on one end of the table; but it was not intended to focus attention. If anything, the commissioner, not to be the grand inquisitor...I was there as a participant observer. And it didn't require my being there. I'd often times only go for 15 or 20 minutes, and in those 15 or 20 minutes, I could thumb through the profile book, get a flavor of what was going on, make my comments to the collective gathering: "great job", "lousy job", "we need to do this", "need to do that"...To show involvement and awareness, but not to run it. Literally it was the Chief of Department's game and when Maple was there, his show also (W. Bratton, personal communication, August 15, 2000).

> [It is quite valuable] in a very large organization, a 50,000 person organization, like the NYPD, for the police commissioner to be able literally to sit in a room and see first-hand, not just reading on a piece of paper, not just hearing second-hand but seeing first-hand how people from the rank of patrolman all the way on up to the super chief, act, behave, interact, cooperate, don't cooperate....(Bratton, personal communication, August 15, 2000).

Gorta agrees that Maple and Anemone (not Commissioner Bratton) were instrumental in designing the challenging format of the meetings:

> In many ways, these initial meetings became talent shows: an unprecedented opportunity for "face time" in front of the executive corps of the Police Department. Many precinct commanders didn't make the cut. Some were unable to take the heat; some were unable to effect changes necessary to meet the increasing demands of the top brass; some were simply tired and uninterested. The real winners of the talent show were Maple and Anemone, who enjoyed crime-fighting, interrogative and comical synergies. They were a joy to watch, provided you weren't in the hot seat when they launched into their act. They fed off each other; while one led a commander down a line of questioning, the other would work on

> a new series of questions or shout objections to the answers. They would whisper to each other and giggle, perhaps sharing a private joke, but unnerving many a precinct commander. They would engage in wildly colorful stories and speculative questions, often for laughs, but always looking for hard answers...The Police Commissioner came down for part of the meeting, but was more of an observer in the beginning months. It was only after the refinement of the systems and the development of the computerized pin-mapping did the meeting "move up" to the war room [i.e., the Operations Center] and to national prominence (Gorta, 1998, p. 18).
>
> (Andrews #22, Andrews 23).

McGuire believes that a precinct commander's success depended in large part on his/her ability to understand the demands of the new administration:

> If you're a precinct commander and you can sort of comprehend what they are looking for, you can probably do pretty well, you can keep on . . ., you just have to be attentive. You just got to be on top of your game. You can even be in a situation where you haven't been very effective in dealing with the problems that you've got, because, you know, you've tried everything and they just, you know, the problems may be beyond you (McGuire, personal communication, February 21, 2001).

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> A commander's success at the meeting requires a detailed and careful study of precinct conditions, an understanding of the success or failure of recent tactics, and the ability to use this insight to respond to questions and present appropriate plans for the next period (McGuire, 1999, p. 14).

In order to ensure accountability and foster a sense of 'ownership,' precinct commander profile sheets were developed. Bratton explains their use and importance:

> [T]he precinct commander, squad commander, borough commander, all the way up to the Chief of Patrol, there was literally a profile sheet for everybody; profile sheets on one side were all crime, in terms of date, day of the week, week of the month, month to date...then literally as each year went by, [ ] you could see that constant big picture. But on the flip side, the profile side you could see reflected there the intimacy of information being gathered for a whole range of initiatives that were part of the overall re-engineering of the organization; there was information on overtime, there was information on citizen complaints, there was demographic information, there was information on certain specialized officers that had

> been created, domestic violence officers, youth officers...Were those numbers increasing or decreasing? [The purpose was] to simplify as much as possible huge amounts of information; present it in a user friendly and always timely fashion (W. Bratton, personal communication, August 15, 2000).
>
> As time went by, we incorporated color photographs of the commander and his or her executive officer on the profile sheets. When it was their turn to report, each precinct's leaders came loaded with information, statistics, and ideas, ready to fire. We called that being "in the barrel" (Bratton, 1996, p. 233).

Initially, there was no formal process for recording or assessing the operational plans and performance of commands. Silverman (1999) notes that, "the assessment of how well the NYPD was complying with Compstat decisions depended on the memories of two individuals: Maple and Anemone" (p. 110). By the Spring of 1996, "Compstat staff in the Chief of Department's office began taking detailed minutes" which served as an institutional record (Silverman, 1999, p. 110). Pre- and post-Compstat meetings and briefings also developed over time and evolved, "from informal, oral interviews to more systematic, in-depth briefings" (Silverman, 1999, p. 114).

The format of the meetings was adjusted as the intensity of the questioning increased. Silverman explains that initially:

> The Compstat meeting timetable scheduled precincts by patrol borough, with the expectation that eight to twelve precincts would be represented at every meeting. It quickly became apparent, however, that only three to five precinct commanders could be adequately questioned at a typical Compstat session. Briefings became more selective and concentrated as precinct presentations were streamlined, crime data mushroomed, and Compstat staff became more familiar with precinct problems (1999, p. 114).

Maple was apparently not content to rely solely upon the information that was presented (by field commanders) during the Compstat meetings. In order to verify and supplement the information available to the newly formed Compstat unit, he solicited the

assistance of Edward Norris, commanding officer of the Department of Investigation. Norris, who knew Maple since they had both worked together in Manhattan ("on 42nd street"), explains his role:

> They wanted someone to see if they were being [lied to], to look at the investigations. I had an investigative background at that time. I had spent ten years of my career in the [detective] bureau. So they wanted someone who could look at a case and tell them if it was done properly or not. Jack reached out for me, and had me come up and read a couple of murders, and then I was transferred like that night to Bratton's office....Shortly thereafter, I went to work for Maple....Since he was Deputy Commissioner, obviously he couldn't be doing the field stuff. So he was looking for a field person (E. Norris, personal communication, August 21, 2000).
>
> I did everything for them. He would send me to the scene of a shooting or homicide to get information right from the scene and call back so that the Commissioner knew what was going on. I briefed the Mayor on one of my first days there (E. Norris, personal communication, August 21, 2000).

Norris believes that he played an essential role in establishing Maple's credibility before field commanders, especially commanders of detective units:

> When Maple was questioning people at Compstat, asking about crime patterns, especially in the beginning, you know, you get a lot of resistance. So you would be asking them how many wanted subjects they had in the precinct, what their efforts were. And they would all lie. And so what he would do is, they would stand up and tell how hard it was to catch everybody...He'd send me out, [laughing] he sent me out to the 75 [precinct] and didn't let us come back until we caught thirty people....we started catching them immediately. And Jack would just rub it into the face of the Chief of Detectives, he'd say, "Gosh, look at my [expletive deleted] detectives, they were able to catch everybody. You guys are the greatest detectives in the world and you can't catch anybody....He would use us to embarrass and motivate the bosses (E. Norris, personal communication, August 21, 2000).

In a similar attempt to obtain 'background' information, Maple held informal meetings during May of 1994 with precinct special operations lieutenants. He did so, "to gain their confidence and find out what was going on in their commands" (Silverman,

1999, p. 106). Silverman (1999) notes that these officers were, "most familiar with precinct crime strategies. They were an excellent source of information to arm the higher echelons for subsequent formal Compstat meetings" (p. 107).

By the summer of 1995, the Department abandoned the established schedule for Compstat meetings and began to advise precincts and boroughs, "only a few days prior to a scheduled meeting whether they [would] be requested to appear" (Silverman, 1999, p. 118). Silverman contends that this was done due to a concern that, "some precincts were slacking off because of the predictable Compstat schedule" (Silverman, 1999, p. 118).

Bratton left the Department in April 1996, but Compstat remained. Edward Norris (who by then had been promoted to the rank of captain) replaced Maple and joined Anemone in leading the Compstat meetings (E. Norris, personal communication, August 21, 2000). During 1996, Compstat was awarded the Innovations in American Government award from the Ford Foundation and Harvard University's Kennedy School of Government (Silverman, 1999, 123). In May 1997 and 1998, the NYPD sponsored three-day Compstat conferences, each time attracting over 400 attendees, including representatives from more than seventy-five police departments in the United States and other countries (Silverman, 1999, p. 123). Silverman suggests that Compstat also contributed to Mayor Giuliani's "highly successful 1997 reelection campaign, which featured television adds saluting New York City's crime drop. The ads cited as their statistical source "Compstat: NYPD" (Silverman, 1999, 123).

CHAPTER 3

ENDNOTES.

1. Gorta believes that the same request was made to MISD (the Department's office of Management and Information Systems), with similar results. No office within the Department possessed the type of information that was requested. (Gorta, 2000) Gorta and his colleagues in the Chief of Patrol's office were therefore charged with assembling this data.

CHAPTER 4

COMPSTAT'S IMPACT UPON THE NYPD

There is a unanimity of opinion among scholars and the informants in this study, that Compstat had a profound positive impact upon many of the Department's most basic operations. It is important to note, however, that many of these benefits were (at least initially) unintended and unexpected. For example, Bratton notes, "It started as the simple monitoring of a briefing. It became an extravaganza. We had started panning for gold and had struck the mother lode" (Bratton, 1996, p. 233).

This chapter will examine and explain how Compstat resulted in tangible changes in three (3) distinct areas: 1) the flow of information within the Department; 2) the Department's decision-making processes; and 3) the Department's organizational culture.

Every effort has been made to provide context for the underlying thoughts and actions of the informants. Texts are preserved (in their entirety or in excerpts) in a manner intended to provide a flavor of the reasoning and original purpose of the informants. The information provided is also used to support the various research propositions of this study. While a distinctively objective reality might be elusive, it is the purpose of this study to "get as close an approximation of the truth as possible" (Gottschalk, 1969, p.47). Once again, the particular recollections and opinions of informants contained herein have been selected based on the fact that they are consistent with, or supported by, the statements and beliefs of others. This process of "triangulation" or verification is consistently used throughout the chapter. The author has also, to the

extent possible, attempted to identify and analyze any erroneous or deliberately false statements that might assist in providing context to the historical record.

Communication and Information Management.

Prior to the advent of Compstat, the flow of information within the Department was, in many respects, retarded.

> [T]he coordination of information was really non-existent, other than when you had an identified, significant news pattern like Son of Sam or some of those ones where all of a sudden they would have a city-wide task force (W. Bratton, personal communication, August 15, 2000).

Bratton notes that this phenomenon is not restricted to the NYPD, as he had experienced it while in Boston:

> In the Boston Police Department, inside of a suit coat pocket, officers or detectives would hide their files. And what was [ ] one of my personal experiences and frustrations was that the Boston Police Department, despite efforts on the part of the organization to improve the flow of information...sharing information, they never did fully accomplish in the seventies, getting those envelopes out of those inside suit pockets and into the computer systems, and into the sharing of information. Detectives still kept their files, you know, in their coat pockets; and I recognized how frustrating that was. You would be having a serious series of crimes and only one person in the precinct would be on top of it; and it wasn't sharing with others (W. Bratton, personal communication, August 15, 2000).

Norris recalls his own similar experiences:

> I was in Patrol, Narcotics and the Detective Bureau. I was the commanding officer of about three detective squads in the city. If the precinct commander needed to speak with me, I would have to track him down to talk to him. Nobody cared what we did upstairs....As far as crime, we never met (E. Norris, personal communication, August 21, 2000).

Silverman (1999) concludes that information did not flow freely throughout the Department prior to 1994. On the contrary, a great deal of information was maintained by the Department's many 'specialized' units, and was only released on a "need to know basis" (p. 184). Information that did flow to Headquarters from the field commands

typically did so in a formalized and deliberate manner. Lateral communications (i.e., those between the commands) were informal and generally limited (J. Maple, personal communication, September 12, 2001). In sum, information flowed primarily through official channels, and field commands (both the precincts and boroughs) were not communicating freely and candidly with Headquarters (W. Bratton, personal communication, August 15, 2000; Silverman, 1999).

Prior to the Bratton-era, former Commissioner Lee Brown had lamented the inherent difficulty associated with attempting to open the Department's many lines of communication:

> '[The Department] is so large,' Brown noted in the introduction to his ambitious community policing reform program, 'that many units do not have the opportunity to interact with other units on a regular basis' (Silverman, 1999, p. 109).

Bratton set out to change that. He believed that the Department would only succeed in coordinating its many crime-fighting efforts if it could open the channels of communication. Both he and Maple believed in the concept of "transparency," whereby all units operated from the same general information base and understood the operations and goals of one another.

In an official Department publication, issued in 1996, the following claim is made:

> The barriers that long separated the Department's Patrol Services Bureau, Detective Bureau and Organized Crime Control Bureau have been broken down, and a new spirit of cooperation is resulting in the rapid deployment of appropriate resources (NYPD, Managing for Results, 1996, p. 2).

In many respects, that statement appears to be true. The way in which it was accomplished, was to change people's attitudes towards information. Bratton and the

Department's upper echelon wanted to clearly show that no one unit or administrator had a proprietary interest in information. Bratton explains how the 'hoarding' of information was no longer tolerated:

> Another element of what we did in this new process at NYPD was inclusion, not exclusion. The NYPD had been run as an exclusive organization; it would exclude people from information. We approached it from the other direction – inclusion. Give everybody as much information as they need and want...everybody was sharing information (Bratton, 1996, p. 13).

Information and ideas were openly shared during Compstat meetings. Bratton contends that this was the original intent of the meetings. Others disagree (see, e.g., W. Gorta, personal communication, July 6, 2000, "The idea sharing...was an unintended benefit."). Issues that had previously taken weeks to resolve were quickly addressed since most (if not all) necessary parties were assembled in the same room:

> The sharing went on in that room from 7:00 to 10:00 in the morning; everybody was sharing information. If an issue was raised, such as why someone could not make an arrest, and the answer came out that it was because the District Attorney would not give them the complaints, I could confront the District Attorney's representatives who were right there. Instead of spending three or four days trying to track the D.A. down, I could get answers directly from someone right there in the room (Bratton, 1996, October 15, p. 13).

> ... but so the focus on patterns, and we spent a lot of time developing patterns so that every pattern that was identified, after 3 or 4 incidents received a number . . . was shared with everybody else throughout the city, even if it was a Brooklyn pattern it would be shared with others figuring that sometimes the (INAUDIBLE)(prowler?) from Brooklyn would be actually operating in Manhattan also (W. Bratton, personal communication, July 6, 2000).

Silverman concludes that Compstat served to gather, "all NYPD informational arrows in one quiver, targeting crime conditions for all key decision makers at their crime-fighting meetings. Interaction and information sharing [were] now built into the system....These

built-in interactions [were] a major departure from previous practice" (1999, p. 109). As Bratton explains:

> Until this time, a precinct commander would never in his or her career expect to talk consistently and directly to the chief of department, the first deputy, or the police commissioner, but there we were, sitting at the command table (Bratton, 1996, p. 233).

Timoney explains that top administrators discussed crime among themselves, formally and informally:

> We started to talk about crime. We talked about crime. It would not be uncommon for myself, and Maple and [Deputy Commissioner for Public Information John] Miller, to be in Elaine's [Manhattan restaurant] having dinner, and talk and talk and talk. To really talk about crime, after hours, you know. What should we do (J. Timoney, personal communication, December 12, 2001).

Silverman contends that Compstat was, "the informational cement of reform. the central mechanism that provide[d] communication links to traditionally isolated specialized units" (Silverman, 1999, p. 186). This communication led to better coordination. As Bratton states, Compstat provided all members of the organization with, "sheet music; they have some music specific to the notes they're playing, but they also need to know what the rest of them, everybody else is playing. That's what Compstat's all about" (W. Bratton, personal communication, August 15, 2000).

Maple asserts that the crime meetings, "were always intended in part as a mechanism for sharing good ideas throughout a department and for keeping good ideas from ever being forgotten" (Maple, 1999, p. 187). McDonald suggests that Compstat has achieved its goal (insofar as the open exchange of information) since it has increased the vertical flow of information and opened new channels for lateral communication:

> Compstat demands that communication occur throughout the police hierarchy, up and down....Executive officers who do not communicate

> with or involve supervisors and officers will be unable to respond effectively to issues raised at Compstat meetings. Compstat demands that communication occur across districts or precincts and units within the agency (McDonald, 2002, p. 18).
>
> (Yohe #18).

It is interesting to note that the ten copies of the original February 1994 Compstat book were inscribed with the following notation: "'These figures are for internal use only - not to be released to the public or other agencies.' Three years later, more than 200 Compstat books were issued weekly to all NYPD units, representatives of the city's district attorneys, probation departments, courts, the State Division of Parole, federal agencies, and numerous outsiders" (Silverman, 1999, 123).

The Bratton administration made other changes (as part of its overall re-engineering process) that opened the internal flow of information. These include the creation of new administrative positions (i.e., the creation of the position of precinct Domestic Violence Prevention Officer and the transfer of some units and positions for the purpose of coordination of information) (Silverman, 1999, p. 184). However, there is clear evidence that many changes are attributable solely to Compstat: such as the, "push [ ] to emulate successful tactics disclosed at Comp stat meetings" (Silverman, 1999, p. 113); the recurrent theme of follow-up and reinforcement (p. 113); and the dissemination of 'best practices.') (Maple, 1999, p. 187) (Mealia #25, Mealia #26).

The NYPD has clearly benefited from the collaborative nature of these meetings. Today, if a discussion between a chief and a precinct commander happens to touch upon a legal issue, representatives from the Department's Legal Bureau are present and available to participate, provide guidance and expertise. Similarly, if a problem relates to the Department's information technology system, individuals with appropriate expertise

are available at each meeting to narrow the issues, clarify them, and possibly rectify the condition. "It's a tremendous way to communicate without giving a speech. Because things leave that room, and it's all over the city in a few minutes....Anything you've said in that room; if you had a problem with somebody or somebody was good...the message got out to the furthest reaches of the city quickly" (E. Norris, personal communication, August 21, 2000) (Norris #5).

Compstat has opened existing lines of communication within the organization but, perhaps more importantly, has also created new ones. The Chief of Patrol (who is literally situated at the pinnacle of the organizational chart) can now frequently engage in lively and in-depth conversations with precinct anti-crime sergeants or detective squad commanders (individuals who rarely had direct access to upper-level managers at Headquarters). Operational questions and concerns that typically required a flurry of memos from the field, to headquarters, and back again, can now be addressed immediately via candid discussions between those at the top and bottom of the organizational chart (Anemone #15).

Compstat has quite simply resulted in *more* communication taking place within the organization. While the NYPD formerly had many official reporting requirements and mandated notifications, these communications were the equivalent of a series of one-way streets running parallel to one another. Today, thanks to the Compstat meetings, these communication channels have been converted to two-way streets; broad two-way highways with several lanes of traffic running in many different directions at the same time (Anemone #11) (Yohe #15 Yohe #16).

Compstat ensures that information is no longer just meticulously compiled; it is *used.* It is openly shared for the express purpose of collaboration and the development of effective new strategies. By analyzing the relative performance of each operational unit, upper-level managers can now determine, relatively promptly and accurately, whether or not a planned course of action is succeeding. It informs their efforts with regard to strategic planning and problem-solving and provides them with a direct and effective means of setting and communicating organizational goals, then monitoring and evaluating performance vis-à-vis those objectives.

There is ample evidence to suggest that Compstat is far more than an efficient performance monitoring system. It is a knowledge management device that enables the agency's chief decision-makers to tap into and use the intellectual capital of the entire organization. This includes not only what is expressly known by the organization and its key administrators ("explicit" knowledge), but also what is known and understood intuitively or instinctually by the individuals who actually perform the work (Cook & Brown, 1999). Compstat is a useful mechanism for the identfication and harnessing of individual competencies, successful practices, skills and routines. It is a particularly effective form of internal benchmarking that enables senior management to identify top performers, to analyze and pinpoint any significant distinctions that contribute to superior performance, and to communicate and/or adapt them to the entire organization.

Compstat also facilitates the transfer of knowledge among sub-units (by the sharing of 'best practices') and also corrects factors and/or structures that inhibit the transfer of knowledge. Compstat has drawn together otherwise disconnected groups and facilitates both the vertical and horizontal transfer of knowledge. It also confronts the

powerful forces, "that oppose productive dialogue and discussion" within the organization (Senge, 1990, p.237). Compstat encourages team work and collaborative responses to problems and challenges.

The Compstat process enables administrators to take a holistic view of the entire organization. It views the organization as an open system, and discourages "linear thinking." Rather than merely reacting to what is perceived as simplistic 'cause and effect' chains, Compstat encourages administrators to continually search for the interrelationships of events and processes that hinder or facilitate peak performance. Senge (1990) refers to this as "systems thinking" (Silverman, 1996, p. 11). Rather than basing one's managerial decisions on a series of random snapshots or glimpses of the performance of isolated parts, this management approach enables decision-makers to keep "the big picture" in focus at all times.

Compstat also manages tension, strain, stress and conflict within the organization. All organizations experience the tension that is caused by the discrepancy between current reality and the desired state (vision) (see generally, Fritz, 1996). Compstat enables the Department to *use* this tension to *redirect it* towards desired goals. It entails a continuous process of analysis – action – re-evaluation - and adjustment, that keeps the Department continually moving forward. By proceeding in this manner, the Department learns, reacts, and gets smarter each time around.

Analyzing the findings of this study in light of the "competing values framework/approach" developed by Quinn and Rohrbaugh (1983; 1981), it is clear that the Department had formerly operated with a "hierarchical style." That is, prior to the development of Compstat, it operated in an environment of "high market certainty [i.e.,

somewhat of a monopoly]," and rarely saw the need for immediate action. Organizations such as this tend to value predictability and security (Quinn & Rohrbaugh, 1983; 1981). It is understandable that the Department would have this orientation as it, "has been the clear and overwhelmingly dominant strategy in public sector organizations for most of [the twentieth] century" Van Wart (1998, p. 82).

Compstat has prompted the Department to adopt a new style of information management, one that is known as the "rational style." This similarly occurs in an environment of relatively high market certainty (as the overall mission of the Department will always be monopolistic), but within an environment of "immediate action" (Quinn & Rohrbaugh, 1983; 1981). This style works diligently to analyze patterns and selects the best available strategy.

The competing values approach can also be used to document how the Department moved from an overall "internal" organizational focus to an "external" one (Van Wart, 1998, p. 85).

DECISION-MAKING

An official Department publication, written in 1996, contains the following admission:

> [Traditionally] precinct commanders were hampered by central management from headquarters. They were not given broad authority to formulate and implement crime fighting plans in their own precincts, appropriate to precinct conditions (NYPD, 1996, p. 9).

Bratton also found the Department to be overspecialized.

> It was a centralized bureaucracy that was not capable of responding to the many different needs around the city. It was also, from a management perspective, an entity that had become overspecialized (Bratton, 1996).

A document that was distributed at the 1998 Compstat conference describes how this 'overspecialization' occurred:

> With the rise of the so-called "professional model," police agencies created a host of specialized units to deal with specific (and often temporary) problems, while executives attempted to retain tight control over the direction and scope of officers' activities. This attempt at specialization of police functions was predicated upon prevailing management theories which emphasized rigid organizational and supervisory structures as the key to efficiency – theories that worked quite well on assembly lines and other highly routinized private organizations, but less effectively in large public service organizations charged with a broad mandate to achieve a wide range of social objectives. Like barnacles on the hull of a ship, these overlapping and often-duplicative specialized units accreted upon the organizational structure and slowed its progress (The Compstat Process, NYPD, 1998, p. 3) (see also Silverman & O'Connell, 1999).

Bratton altered this situation by giving more authority to precinct commanders who, in his view, were in the best position to effect local strategies that would yield dramatic crime reductions. Bratton explains:

> I decentralized. I gave away many of my powers not – as my predecessors wanted – to the cop on the beat, but rather to the precinct commander. I did not want to give more power to the cop on the beat. They were, on average, only 22 years of age. Most of them never held a job before becoming New York City police officers, and had only high school or GED qualification. These kids, after six months of training, were not prepared to solve the problems of New York City....My form of community policing, therefore, versus former Police Commissioners Lee Brown's and Ray Kelly's, put less emphasis on the cop on the beat and much more emphasis on the precinct commanders (Bratton, 1996, p. 12).

Bratton's views regarding the most effective means of implementing the community policing philosophy are echoed in official Department documents. One such example states:

> In New York City and elsewhere, agencies [began] empowering patrol officers, in accord with the ideology that every officer should in essence be the chief of his or her beat, responsible for coordinating or directly providing virtually all police services within that sphere of responsibility.

> In many respects this overreaching effort to force the implementation of community policing was flawed, since it naively assumed that every young police officer on patrol possessed the requisite knowledge, experience and wisdom to judiciously utilize the considerable discretion and authority they were given. Moreover, it effectively cast supervisors and superior officers in a supporting role and diminished their authority to manage, direct and control the beat officer's activities (NYPD. The Compstat Process, 1998, p. 4) (see also, Kelling& Bratton, 1993).
>
> ***
>
> The New York City Police Department has departed from the traditional wisdom of police management and has modified conventional community policing ideology by recognizing that in order for the agency top be effective in reducing crime and in responding to the needs of communities, many operational decisions must be made by commanders at the precinct level. Precinct commanders are in a far better position than Headquarters executives to appreciate and meet the particular needs of their communities and to direct the efforts of the 200 to 400 officers they manage. They are also in a better position than beat officers to understand and harmonize the agency's policies with the social dynamics operating within their geographic areas. To operationalize this, the NYPD's policies were revised to empower precinct commanders and to significantly expand their authority, responsibility and discretion, as well as the degree of control they exercise over personnel and other resources. The corollary of that expanded authority, responsibility and discretion is increased accountability (NYPD, The Compstat Process. 1998, p. 4).

The role of the precinct commander was clearly redefined during the Bratton administration. Another Department document that was published at this time describes the many concrete changes that were made, including the fact that:

> Precinct commanders were given more freedom to manage their own commands.
>
> Precinct commanders were told that they would be responsible for reducing crime in their commands.
>
> The Department refocused its strategy of Community Policing, giving the main responsibility for problem solving, and for getting concrete results, to Precinct Commanders.

> Compstat meetings were held, in which Precinct Commanders discussed crime conditions in their precincts, and, more importantly, what they planned to do to address them. These meetings shortened the chain of command between the Supervisor in the street and the Executive Staff, allowing high-level managers to get timely information directly from their subordinates in the field.
>
> Specific, Department-wide strategies were developed to address particular crimes and conditions, all of which stressed urgency. The Department would no longer simply wait for crime to happen, but would become proactive, and search for solutions (Compstat: Leadership in Action, 1996?, p. 9).

These changes all contributed to a significant alteration to the Department's overall decision-making processes. Compstat was central to these changes. Silverman (1999) explains:

> The NYPD [ ] made enormous strides in feeding information to appropriate decision-making levels. Traditionally, NYPD headquarters was perceived as the nerve center of the department's decision-making apparatus. Changes in operational police tactics were conceived, formulated, and issued from headquarters, primarily on a city-wide basis, and often with very little input from field commands. The post-1993 restructuring and crime-control strategies provided field commanders with far more leverage over their own troops....The post-1993 NYPD leadership also realized that uniform, city-wide crime-fighting decisions were not as effective as individualized strategies designed for particular communities....By increasing the authority and responsibility of precinct commanders, the NYPD freed them from having to forward information along the chain of command simply to receive high-level confirmation or reassurance (Silverman, 1999, p. 182).

Timoney (2001) credits Compstat with refocusing the attention of the Department's upper echelon upon crime, a change that he contends is extremely significant:

> By virtue of the fact that you set up this formal process [i.e., Comp stat], you have for the first time in policing, the *first time* in policing, involved top management, the deputy commissioner, if he so chooses, to get involved in crime on a day-to-day basis. That's revolutionary. That did not happen. I mean prior commissioners would never ever have gotten involved in crime as they do today (J. Timoney, personal communication, December 12, 2001) (emphasis in original).

McGuire (1999) agrees that Compstat enabled and encouraged top administrators to become intimately familiar with specific conditions and crime-fighting strategies. He likewise notes that this was unprecedented:

> The discussions [during Compstat meetings] frequently involve details of specific crime patterns and ongoing investigations that previously would not have been brought to the attention of top management. The result is a familiarity and knowledge of week-to-week operational results at the executive level that helps flatten the organizational pyramid – an accomplishment that many thought impossible before Compstat (p. 16).

Bratton and his senior staff were extremely active. Indeed, Bratton viewed himself as a corporate CEO, who constantly examined his organization's bottom line. He used Compstat as his primary monitoring mechanism:

> We began to run the NYPD as a private profit-oriented business. What was the profit I wanted? Crime reduction. I wanted to beat my competitors – the criminals – who were out there working seven days a week, 24 hours a day. I wanted to serve my customers, the public better: and the profit I wanted to deliver to them was reduced crime. All of my franchises – my 76 precincts – were measured, not on how many calls they responded to, but on how much crime was reduced (Bratton, 1996, p. 13).

Giuliani provides a similar understanding of how Compstat's process of continual monitoring could help the Department operate as a private institution:

> The analogy which I often use is that of a major banking institution which each day at the close of business contacts its branches to assess the transactions of the day so that it can develop strategies to enhance its measure of success, namely, profits. For years, the NYPD's measure of its performance was based on arrest statistics – an indicator that while important is not a measure of its success. After all, the primary mission of a police force is to prevent and deter crime, a mission which is measured by crime statistics not arrests, since arrests represent a police response to crimes that have already occurred. Through the use of Compstat, the NYPD captures, retrieves and analyzes crime statistics on a daily basis, and, like a bank, is able to quantify its successes and develop strategies or deploy resources to build upon that progress (Giuliani, 1997, p. 6).

Compstat helped to institutionalize this new management philosophy. By 1996, The Department recognized that a dramatic change had taken place:

> The gathering of field intelligence, the adapting of tactics to changing field conditions, and the close review of field results is now a continual, daily process rather than an annual or biennial event. The NYPD can make fundamental changes in its tactical approach in a few weeks rather than a few years (NYPD, Managing for Results, 1996, p. 2).

Compstat was intended to provide guidance and support to field commanders without engaging in 'micromanagement':

> Although overall strategy guidance flows *down* to the precincts, many of the tactics that are accomplishing the strategies flow *up* from precinct commanders, squad commanders, and rank-and-file police officers and detectives (NYPD, Managing for Results, 1996, p. 2).
>
> (Anemone #16).

Compstat's impact upon the Department's decision-making processes is best described by Silverman (1999):

> Ultimately, Compstat's significance lies in its impact beyond the confines of its data and its war room – crime strategy meetings. This innovation process radiates throughout the NYPD as the energizer of strikingly creative decision making at headquarters and in the field (Silverman, 1999, 124).

To understand Compstat's influence upon the Department's decision-making capabilities, one must realize that it was designed to have impact far beyond the formal crime meetings:

> There are four levels of Compstat. We created a system in which the police commissioner, with his executive core, first empowers and then interrogates the precinct commander, forcing him or her to come up with a plan to attack crime. But it should not stop there. At the next level down, it should be the precinct commander, taking the same role as the commissioner, empowering and interrogating the platoon commander. Then, at the third level, the platoon commander should be asking his sergeants, "What are we doing to deploy on this tour to address these conditions?" And finally you have the sergeant at roll call...all the way

> down until everyone in the entire organization is empowered and motivated, active and assessed and successful. It works in all organizations...(Bratton, 1996, p. 239).

Compstat has forced the organization to engage in a productive form of self-reflection that enables it to discern environmental changes and to react accordingly (Anemone #23). It has provided an ability to, "modify behavior and strategies in accordance with changing conditions" (Yohe, 1997b, p. 15).

Utilizing the competing values framework to analyze the foregoing findings, it is clear that the Department has moved from "an overall concern for means" (i.e., process), to "ends" (outcomes) (Van Wart, 1998, p. 85).

ORGANIZATIONAL CULTURE:

Timoney contends that aggressive crime fighting was not the primary focus of precinct commanders prior to 1994. (personal communication, December 12, 2001) Anemone contends that an aggressive stance towards crime would actually impair a precinct commander's career:

> We were there [prior to 1994] to keep the lid on and not to be an embarrassment. The main thing was don't make waves, something might go wrong. You were put through the ringer if you really did your job (Silverman, 1999, p. 87).

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> [W]hen I was a precinct commander, it was really up to the individual commander whether the precinct was going to take the initiative on crime, and there wasn't much encouragement for the ones who did (Andrews, 1996, pp. 2-3).

A Department publication that was issued in 1996 provides a similar account of the lack of a clear directive to field commanders that their primary focus was to fight crime:

> Like many large bureaucracies, the NYPD had been organized around avoiding risk and failure. For years, precinct commanders had been

> constrained on every side by regulations and procedures. Many police operations, such as prostitution sweeps and executing search warrants, could only be conducted by centralized units, reflecting an abiding distrust of precinct personnel and resources. Yet, despite all the micro-management, the Department was providing very little in the way of genuine strategic direction. It was clear what precinct commanders and personnel weren't allowed to do, but much less clear what they *ought* to be doing to combat crime, disorder, and fear (NYPD, Managing for Results, 1996, p. 1) (emphasis in original).
>
> (Andrews #9, Andrews #11).
>
> (Carroll #1).

Prior to 1994, there was a general impression that the surest way to succeed as a precinct commander, was to simply "maintain the status quo" (P. Carroll, personal communication, November 6, 2001; W. Gorta, personal communication, July 6, 2000). Mc Donald attributes this sentiment somewhat to the "overblown conclusion" of the 1973 Kansas City Preventive Patrol Experiment (2002). This classic policing study generally concluded that "random patrol did not deter crime." Mc Donald believes that this view, "predominated policing [including the NYPD] for two to three decades" (McDonald, 2002, p. 3). Bratton concurs:

> Somehow, in the 1960's and in the increasingly permissive society of the 1970's, we began to excuse police from having any responsibility for the prevention of crime. We began to espouse that there were so many causes of crime that were beyond the control of police: How could we hold the police accountable for preventing crime when so many of the things that we believed caused crime were beyond their control?...By the 1980's, American police by and large were excused from controlling behavior in our streets or changing behavior that was aberrant, to the extent that they were also excused from doing anything about the prevention of crime (Bratton, October 15, 1996, p.3-4).

As a result, "careerist" field commanders within the Department to ok steps to avoid an aggressive crime-fighting posture. Additionally, the bureaucratic structure of the Department influenced the development of a unique occupational culture:

> [The Department's] hierarchical accountability structures generated many administrative rules, bureaucratic regulations, operational protocols and excessive paperwork. Important as these formal accountability structures seemed to the fulfillment of management's concerns, the police officers who actually delivered services to the public saw little value or purpose to them, often deriding the structures as unnecessary and burdensome. This dynamic – born of two distinct and incompatible spheres of interest and activity – contributed to the emergence of two occupational cultures within the agency: street cops and management cops. As a result, the Department lacked a central focus and unanimity of purpose since both groups had different agendas and approached crime problems from different perspectives (The Compstat Process, OMAP, 1998, p. 3) (see also Reuss Ianni, 1983).

Maple blames upper-levels of management (not the field commanders themselves) for this lax posture towards crime:

> It wasn't their fault. They were never given the direction that, "Hey, we are going for the win." That's just the way the game was played in those days. They weren't going for the win, the real success. But they were very smart guys. Don't kid yourself. They did what was expected of them" (J. Maple, personal communication, September 12, 2000).

Bratton's initial selection of top personnel was critical to the establishment of a new mindset. Maple, Anemone and Timoney were selected by Bratton *because* of their aggressive attitudes and fundamental belief that crime could be dramatically reduced (Bratton, 1998) (Anemone #12, Anemone #13). Gorta comments upon the importance of their "street cop" mind set:

> [T]hese guys were cops at heart. "Crime was bad." This was something they were saying years and years ago, when crime was, "Ahh, its not our business." And so, now all of a sudden, they're in power, and when they said crime was bad, they were saying it for twenty and forty years. Most of the people now have got to say, "Hmm, crime probably *is* bad. (emphasis in original)
>
> ***
>
> [It's] the same as in the street; you're supposed to be helping people, you know? You're not supposed to be building an empire. If you happen to build one, that's fine. But your purpose here is helping people. When

> you're in the office, the idea is to help the people do whatever it is they're supposed to do. It's the same as when you're out there in the blue suit. You're supposed to help the people do whatever it is that they're supposed to do. And we've lost that all in all, you know, that helping people. In many ways, Compstat was helping [these] bosses do what they wanted to.
>
> ***
>
> "Hey, people are getting robbed here, these aren't [just] dots, these are people!" And that type of appeal to the conscience, appeal to what brought them in [initially to the job], really enlivened a lot of people too. Like, its just wrong. How could we have let this gone on? You know, some indignation was fueling the process as well (W. Gorta, personal communication, July 6, 2000).
>
> (Anemone #18).

Bratton explains that a "street cop" orientation was unique among senior police officials, but nonetheless desirable:

> I was looking for leaders that were very conscious of the needs of the cops on the street, that were not cop haters . . . You had many commanders in policing, there's a joke that's told we think of the cop on the street as just a, somebody made an expression, a comment sometime, by one of the commissioners or one of the bosses, that he didn't sleep well at night because he had 28,000 career assassins out on the street at any one time. And if that's how you looked at the people that were doing the work, that's how you ended up leading them (W. Bratton, personal communication, August 15, 2000).
>
> (Andrews #5).

As experienced crime fighters, these men were able to identify *bona fide* efforts to reduce crime, and similarly challenge insufficient ones:

> Sometimes the grilling got tough....You didn't want to lie at Compstat. You'd get caught and get hung out to dry. The people who did best had given thought to solving their precinct's problems; the people who did worst tried to fudge them. "The two biggest lies in law enforcement," says Maple, are "We worked very closely together on this investigation," which means they don't work at all together, and "We're doing this as we speak," which means, "we haven't done it yet." They're holding actions. Maple and Anemone sliced through whatever crap they fired (Bratton, 1996, p. 235).

Gorta believes that this clear, new direction was welcomed by many within the Department:

> When the Mayor and Police Commissioner defined the primary mission of the Police Department as 'the reduction of crime, fear of crime and disorder,' you could almost hear the Department exhale in relief. It was the first time in my tenure that the goals were so clearly and succinctly defined. Over the years, we had been a "service organization," we had served as "community ombudsmen": we had suffered from ill defined roles in a constantly shifting mission. But once the NYPD decided its core competency and shed some of its reluctance to be judged on the results (we'll see what happens when crime goes up), crime could only fall in the face of so large a policy – and therefore manpower and energy – shift (Gorta, 1998, p. 20).

Yohe agrees that Compstat effected an attitudinal change that permeated through the entire organization:

> Commanders felt in control of their destiny, and this new confidence was communicated to the line officers, who were reminded of the importance of their contributions. The patrol officer experienced a sense of participating in a common mission with measurable and satisfying results. Morale increased and productivity increased even more. It was not unusual for police officers to be publicly commended and applauded by the entire executive staff of the department for a job well done (Yohe, 1997b, p. 15).

Bratton similarly believes that Compstat had a positive effect upon morale:

> Over time, commanders brought in beat cops from their precincts who had done an exceptional job . . . They described the circumstances and heard the whole room burst into applause. You can imagine the effect on a young cop and his or her career to stand there and be applauded by everyone in the department from his commanding officer up to and including the police commissioner. Compstat became a rallying point to encourage and reward people for good work (Bratton, 1996, p. 237).

Bratton believed that the earlier reform efforts of his predecessors had been stymied because they had, "left the old guard at the top in place" (1998, p. 205).

Personnel changes were, therefore, made whenever they were deemed necessary. Compstat was used to facilitate the selection process:

> Compstat was as much about changing the organization of the New York City Police Department as it was about crime. The first year of Compstat was often referred to as "spring training," a baseball term for the tryout and team building period before the season begins in earnest. About half the precinct commanders were changed during the first year (some to other, better precincts, some to retirement, some promoted out of precinct commander rank, some simply dumped). Empowerment, opportunity and competition replaced the staid old precinct commander with forward-thinking hotshots concerned with crime and career....Indeed, the New York City Police Department itself, in its application to the Ford Foundation's Innovations in Government Award (which it won), defined Compstat as a "dynamic style of police management...that has transformed the NYPD from a reactive, low-energy organization...to a vigorous, motivated police department" (Gorta, 1998, p. 18).

The Compstat mechanism was critical to this overall change in the organizational culture. It served as a constant reminder that a "business as usual attitude" would not be tolerated. Compstat illustrated that:

> [T]he central strategic direction of the Department became far stronger and the lines of accountability far clearer. Avoiding failure [was] no longer a formula for success. Instead, the positive efforts of commanders and cops at reducing crime, disorder, and fear [were] being recognized and encouraged (NYPD, Managing for Results, 1996, p. 1).

These results are often referred to (by Bratton, the Department, etc) as a "sea change" in the Department's operations and organizational culture (W. Bratton, personal communication, August 15, 2000, 1998; P. McGuire, personal communication, February 21, 2001; NYPD, 1996).

Silverman explains how several prior reform efforts within the Department had failed, primarily because of a lack of "buy-in" (1999). McGuire believes that Compstat helped achieve the necessary buy-in for Bratton's reforms, due to its persistent nature, and its reinforcing (almost self-perpetuating) message:

> They were able to maintain their focus for that first three or four years because you had this guy who was the right hand of the police commissioner [Maple] going out and visiting all the sites and everything and reporting back and, you know, keeping constant touch. But often the Department over the years that I have been here, if somebody starts and implements a program and then sort of says "that's it," you know "let them....," you know just delegate, and then maybe ask a couple of questions about it maybe two months later...If the program has some good parts, the good parts will probably be adopted and maybe live long after all the participants are long gone. If the program has parts that may be good but cause work for people, they're the ones that may not last as long unless there is someone looking over their shoulder saying "Where is that report?" You know, file cabinets can be filled with a lot of reports that people don't use. People, if given the chance, will shed work (P. McGuire, personal communication, February 21, 2001).

Gorta agrees, noting that, "Previous quality of life initiatives failed to affect crime rates because the efforts lacked the focus, supervision and follow-up demanded by the expanded system of local accountability (1998, p. 20).

Compstat ensured that all levels of the organization were constantly focused on crime. Maple suggests:

> The beauty of [Compstat] is that it is the only management process in the world where the boss has to work just as hard or harder than the cops (J. Maple, personal communication, December 12, 2000).

Compstat forced managers to develop cross-functional skills and an aggressive mindset that no doubt altered their mindsets, as well as the culture of the entire organization (Norris #6).

Timoney summarizes Compstat's influence upon the Department's organizational culture:

> I had been up there [Headquarters], I had worked for Johnson, the year before Bratton come in I was in charge of OMAP so I was part of Kelly's inner circle, so I kind of knew what was going on, I knew the Department better than anybody, and the comparison for example of that Department mid-1994 after we're in power for 6 months, compared to mid-1993, there

> is no comparison. Two entirely different organizations (personal communication, December 12, 2001).

Giuliani agrees, noting that, "Compstat transformed the NYPD from an organization that reacted to crime to a police department that actively works to deter offenses" (Giuliani, 1997, p. 6). Howard Safir (Bratton's successor) referred to Compstat as, "a shot of adrenaline to the heart of the NYPD" (Silverman, 1999, p. 124). Silverman similarly concludes that it, "remold[ed] the Department" (Silverman, 1999, p. 124).

The foregoing data suggest that Compstat is not merely a meeting, or a process, it is a distinct management philosophy. It is based upon the need for continuous performance improvement and a general dissatisfaction with the status quo. Compstat is founded upon the belief that "things can always been done better."

Compstat empowered field managers (i.e., precinct commanders) and encouraged them to sense and create opportunities. This sense of entrepreneurialism is quite distinguishable from the philosophies of traditional hierarchies (and of the NYPD in particular), which are often characterized by, "timidity and caution on the part of subordinates who fear criticism from superiors and thus fear to pass unpleasant information up the line" (Perrow, 1979, p. 39).

Compstat released the creativity in NYPD managers by promoting innovation and experimentation. Bratton explains, "one of the other benefits of Compstat is the stimulation of people, they are free to be creative. So you inspire creativity, because its constantly changing" (W. Bratton, personal communication, August 15, 2000). By pushing decisions down the organizational chart and distributing power more widely, it encouraged fresh thinking and expanded possibilities. Thinking "outside the box" quickly became the norm. In essence, each field command began to formulate and assess new

methods and approaches to routine tasks, as well as unexpected challenges (Anemone #17, Andrews #7).

Although the overall direction of the organization was still monitored and controlled by senior administrators and policy makers at Headquarters, Compstat enabled most "field decisions" to now be made "in the field." Field units began to perform functions that would ordinarily be reserved for a "research and development" section or a "skunkworks" unit. Commanders were encouraged and empowered to "try new things" and to take necessary steps to address the needs and challenges of their particular commands. Bratton recalls:

> We encouraged creative thinking and backed our people up when they practiced new technique. We freed them from old restraints, gave them responsibility, held them accountable, and were very pleased with the results. We were often amazed. Commanders came up with solutions and innovations that none of us on the command staff had thought of. It was great to watch their minds at work (Bratton, 1996, p. 237).

The innovation, creativity and experimentation that resulted yielded significant results in the form of rapidly dropping crime rates and enhanced organizational performance (Bratton #5).

Compstat enabled the NYPD to manage change, but it also taught the organization to welcome, rather than fear it. It served to institutionalize a general dissatisfaction with the status quo and resulted in an organizational philosophy based upon the continuous search for "better",rather than "best," practices. As Gorta notes, "What Compstat really stands for is a zero tolerance approach to shrugged shoulders, shoddy workmanship and shirked responsibility" (Gorta, 1998, p. 20).

As Junod (2000) notes, Compstat helped change the way the Department "thought":

> What has generally escaped notice, [ ], was the simple and fundamental and revolutionary change Bratton inspired in the way the NYPD thought. What has generally gone unrecorded is the day Bratton held his first retreat for his executive officers, and John Timoney stood before them, before the entire command structure of the NYPD, before all the chiefs and captains, before all his peers, before everyone he knew, before all those freaking cops, and said that they were wrong, and had been wrong all along, the last twenty-five years, for they had built an entire organization on the probability of failure when they ought to have built one on the possibility of success. They were out reacting when they should have been anticipating; they were out containing crime when they should have been attacking it; they were out cleaning up dead bodies when they should have been out saving lives . . . (Junod, 2000, p.38).

These findings clearly indicate that Compstat has helped to move the Department from a "hierarchical culture" (i.e., one which is characterized by security, stability, order, and routine) towards an "adaptive culture" (i.e., one that can be characterized by creativity, risk and flexibility) (Van Wart, 1998).

CHAPTER 5

CONCLUSIONS

Clearly, Compstat did not occur spontaneously. It developed over time in distinct phases (W. Gorta, personal communication, July 6, 2000) (Yohe #19). This study has tracked its development in detail in order to address two central questions: "Was it truly an innovation?" and "If so, how did it change the organization?"

1) Technology: There is abundant evidence to suggest that the technology that fueled Compstat was not innovative. On the contrary, Compstat was developed in a relatively backward technological landscape. The creators of Compstat did not develop any new technology: they simply availed themselves of the (somewhat simplistic) technology that was available to them at the time. As Gorta notes:

> It was just a standard software program. This is not . . . but technologically speaking, still in the stone age. We dragged the Department kicking and screaming into the 1960's [laughing] . . . [Nevertheless], understanding the police department, it was an achievement of monumental proportions. Epic proportions (personal communication, July 6, 2000).

Interestingly, the Department possessed somewhat "state of the art" mapping software *prior* to the Bratton administration (R. Kelly, personal communication, August 29, 2000; W. Gorta, personal communication, July 6, 2000). However, this software, which was purchased during the Kelly administration, was not used for crime analysis (J. Timoney, personal communication, December 12, 2001; R. Kelly, personal communication, August 29, 2000). It was used by the Operations Unit to coordinate large-scale events, such as demonstrations and civil disturbances (J. Timoney, personal communication, December 12, 2001; W. Gorta, personal communication, July 6, 2000).

By 1994, other American police departments were certainly using mapping software more extensively than the NYPD.

Gorta contends, however, that no department had yet attempted to utilize mapping to coordinate *all* of its crime fighting operations (W. Gorta, personal communication, July 6, 2000). He believes that many departments, "had a big crime mapping thing, but they were doing it sort of like, just to show pictures. Like, "Oh, look." But what are you doing to fight crime with this? Maple thought you could solve crimes by looking at the maps" (W. Gorta, personal communication, July 6, 2000). Arguably, the technological aspects of Compstat (i.e., sophisticated mapping system) might have evolved naturally over time. Such a system would, however, have developed at a far slower pace. Such a system undoubtedly would have had the capacity to coordinate *many* of the Department's crime-fighting operations, but not all. What Compstat did, was to accelerate this development process and orient it towards a far more comprehensive use of this technology.

Gorta believes that the successful development of Compstat can also be attributable to, "an ancillary sort of revolution between the pc (personal computer) people and the mainframe people (MISD)" (personal communication, July 6, 2000). He contends that the pc people (like himself) were "more experimental" (W. Gorta, personal communication, July 6, 2000). Virtually every informant in this study agrees that it is extremely significant that Compstat developed in the office of the Chief of Patrol, and not MISD (the unit from which one would expect to produce a technological innovation) (see, e.g., W. Bratton, personal communication, August 15, 2000; J. Yohe, personal communication, July 26, 2000; L. Anemone, personal communication, October 6, 2001;

P. McGuire, personal communication, February 21, 2001; J. Timoney, personal communication, December 12, 2001; Maple, 2001) (Anemone #9, Anemone #10). Gorta perceived those individuals assigned to MISD as "control freaks," who "fought [ ] every step of the way," and were obsessed with maintaining control of technology (personal communication, July 6, 2000). He believes that the MISD personnel initially resented the accomplishments of the fledgling Compstat unit, which explains their lack of participation and apparent lack of interest (W. Gorta, personal communication, July 6, 2000). Interestingly, many respondents believe that Compstat would never have occurred, had its development been assigned to MISD (see, e.g., Timoney, 2001; Yohe, 2000). Maple contends that, "If it had been up to MISD, we would have all been sitting around the Old Policemen's Home before they found a system they liked and could make operational" (Maple, 1999, p. 108).

Despite this professional rivalry however, it is important to note that MISD did play a supportive role when they assisted in providing necessary information from their on-line complaint system (P. McGuire, personal communication, February 21, 2001).

The data suggest that the technological aspects of Compstat developed within the Patrol Bureau as a result of an operational need for information. The resulting program was simple and clearly, "not planned at the outset," but has, "emerged as the NYPD's most permanent, far-reaching, and widely imitated innovation" (Silverman, 1999, p. 124). The developers of the Compstat program were free to be creative, due to an overall sense of urgency and the moral authority and support of the Chief of Patrol. They operated 'under the radar' of the Department's traditional research and development units and, as a result, undoubtedly proceeded at a much quicker pace than they otherwise would have.

McGuire is not at all surprised at the way in which Compstat developed, "I think it came up through the operational wings because Bratton had chosen his people very carefully, the people that were going to be in there [with him]" (personal communication, February 21, 2001). From the executive staff, down to the people who actually wrote the program, these individuals were street cops who were free to create a crime fighting system for other street cops.

Silverman notes that, "Quickly bringing the right information to bear on police decisions, or any decisions, for that matter, is not a novel notion" (1999, p. 182). Indeed, as the present research indicates, as early as during the 1960's, some in the NYPD had anticipated a time when computerized data systems would be used to aggressively fight crime. In the ensuing period, however, the Department's use of such systems was sporadic, fragmentary, and primarily focused upon the support of "specialized" units (such as Auto Crime and Narcotics) (R. Mealia, personal communication, September 20, 2000). McGuire (2001) reflects upon this point and suggests that, perhaps, the idea of the comprehensive use of computerized crime data systems had always been present but, for myriad other reasons, was never acted upon:

> There are occasionally people that have great insight beforehand, and a lot of times, some of the things that they do, they were so labor intensive, or they were so unique, that nobody ever, . . . or there was a lack of communication, or somebody at the executive level didn't grab it and run with it. It was just some little guy sitting in an office someplace, who thought up something. And maybe there is a shred of evidence someplace, in some lost book or something, that somebody stumbles over and says, "Oh, yeah, he did this back fifty years ago" (P. McGuire, personal communication, February 21, 2001).

This begs the question: "Why wasn't this idea acted upon earlier?" Perhaps the most accurate explanation is offered by Zairi:

> A good idea alone does not necessarily mean that an innovation will take place: very often the idea will have to wait for other enabling technologies to become available to support the development of the creative thought into a successful application (1998, p. 1).

Fritz (1996) offers another possible explanation. He suggests that most organizations (including the NYPD) are often, "structured inadvertently - as smaller systems grow into larger systems" (p. 11). Such unplanned development "almost always" leads to structural oscillation that will frustrate attempts at innovation (p. 11). Fritz explains that large organizations are generally threatened by a state of non-equilibrium (such as that caused by innovation) and tend towards continuity. This organizational inertia is a powerful force that stymies many bona fide attempts at innovation.

Perhaps the powerful bureaucratic forces present within the NYPD prevented the desires of its innovative leaders during the 1960's from ever coming to fruition. Perhaps the economic realities during this period (which included a city-wide fiscal crisis during the 1970's) prevented any real technological advancement in this regard. Then again, perhaps the wishes and intentions manifested by the Department's leaders during the 1960's were not entirely sincere and were fueled primarily by a desire only to be perceived as a technologically advanced police organization. Silverman (1999) provides a detailed account of the Department's history during this period and suggests that other issues, such as the prevention of police corruption were preeminent in forming the collective mindset of the Department's top administrators.

Nevertheless, the historical record is clear that Compstat represents the Department's first attempt at creating a comprehensive information management system to coordinate *all* of its crime-fighting efforts. In this respect, Compstat should be considered quite innovative.

Compstat's impact on the Department has been fully detailed in chapter 4 of this study. The historical record clearly suggests that Compstat: 1) altered the Department's information processing capabilities; 2) altered the flow of internal communication; and 3) altered the Department's decision-making processes. The first two research propositions of this study (p. 43, 44) have therefore been supported.

2) Management Philosophy and Process: What distinguishes Compstat is not the system or the technology behind it, but the philosophy and process that support it. In other words, the technology was not new: what was new was *how they used it*. This highlights the truly innovative aspects of Compstat. For the first time in the Department's history, all levels of the organizational chart gathered in one central forum for the sole purpose of discussing crime. This had never before occurred within the Department or, for that matter, in any other major American police department (J. Timoney, personal communication, December 12, 2001). If Compstat is not unique as a computer system, it most certainly is a management forum.

This suggests a more significant point. The creation and success of Compstat indicates that an extraordinary change was made to the Department's management mindset and organizational culture post-1994. Bratton and his colleagues succeeded in reorienting the Department back to its original (core) mission: crime fighting. This mission resonated with the rank and file, altered the character of the organization, and spurred an unprecedented level of productivity. This shift did not eliminate the police bureaucracy, but it helped to dramatically modify it and make it far more efficient.

Bratton explains: (Bratton #5).

Compstat did not create this philosophy: it grew out of it. The philosophy of strategic deployment of resources, continuous improvement and accountability clearly predates the implementation of Compstat (as evidenced by the words and actions of Bratton and Maple prior to their arrival at the NYPD). Bratton confirms this finding, noting that, "Compstat did not become an end unto itself; Compstat was one of the systems or mechanisms that evolved to support the managerial philosophy that I brought to the organization" (W. Bratton, personal communication, August 15, 2000) (Anemone #14). Virtually every informant in this study agreed that Compstat "grew out of" or was "fueled by" the Department's overall re-engineering process (see, e.g., W. Bratton, personal communication, August 15, 2000; J. Maple, personal communication, September 12, 2000, J. Timoney, personal communication, December 12, 2001).

In order for this philosophy to take root and permeate the entire organization, however, some new mechanism or process was needed. Compstat served that purpose. It developed as an effective monitoring mechanism for ensuring creativity and accountability. In that sense, the development of Compstat was inevitable. In light of the Department's ambitious plans to "re-engineer" itself during this time period, some monitoring mechanism was needed. It would have been naïve to assume that the Department could radically overhaul its most fundamental practices and processes without creating an effective, new monitoring device.

Nevertheless, while some new management device might have been expected (in hindsight), the development of this particular device was unexpected, insofar as Compstat's development occurred piecemeal on an "as needed" basis (i.e., based upon

changing operational demands). Anemone (2001) refers to this process as an evolution (personal communication, October 6, 2000) (Anemone #19).

The historical record suggests that Compstat (in and of itself) did not solely result in this fundamental shift in organization mindset, but it certainly contributed to it. To that extent, research proposition number 3 of this study (p. 45) has been supported.

3) The Historical Context: When examining Compstat in a broader historical context, it is possible to suggest that a development of this type (or some iteration of it) was somewhat inevitable in light of the "re-inventing government" movement, the advent of "problem-oriented" or "hot-spot" policing, the administration of a reform-minded mayor, etc. Indeed, this is quite likely as all of these movements occurred during the early 1990's (the time period under study) and Bratton and his senior staff were certainly well aware of them. However, the record clearly indicates that the particular evolution of Compstat and the creation of the actual mechanism (the meetings) were indeed unique and rather unexpected (Silverman, 1999, p. 123, 124).

Bratton concedes that he is personally familiar with a great deal of the management literature that was produced from the private sector during the late 1980's and early 1990's (W. Bratton, personal communication, August 15, 2000). He similarly acknowledges that he was aware of the "re-inventing government" movement, a national public sector reform movement that was occurring at the time (see generally Brudney et al., 1999; Russell, 1998; Frederickson, 1996; Van Wart, 1995; Kamensky, 1996). He insists, however, that none of these sources influenced him, or his senior staff, with regard to the development of Compstat. Rather, he suggests that his overall management philosophy developed gradually as a result of his prior command experiences:

> Maple and Anemone and the staff people that worked with them would probably indicate to you that they had not had exposure to a lot of those corporate books. I had shared...one of the books I had shared with everybody at management retreats was Re-engineering the Corporation, and they all had access to that. Now as to whether they all had read it or not...We bought and distributed it because I thought that...you know we brought in some of the people from Harvard...you know we had retreats on re-engineering; but a lot of it was, in my case, that...a lot of it was based on my experience in policing; coupled with my...some of the mentors I had had over time, some of the readings I had been exposed to, and in some instances I think it was just [obtained] instinctively or [based upon] common sense...(W. Bratton, personal communication, August 15, 2000).
>
> (Andrews #6).

Maple is quite blunt in his dismissal of the idea that the developers of Compstat were influenced by private sector management literature:

> Not at all. Let me tell you, they can learn a lot from us. The private sector couldn't keep up with us. They would be lost. They spend hundred of hours in research and development. That is a luxury we don't have. You have to understand, the NYPD, for all of its faults, it does the job 24/7. Everything that goes down, any major event or crisis that takes place, is on page one the following day. They wouldn't be able to deal with that (J. Maple, personal communication, September 12, 2000).
>
> Bratton had people come in to talk to us, from American Express, Johnson & Johnson, Jack Welch from General Electric; The guy from Johnson & Johnson spent all of his time telling us about how they handled the Tylenol crisis. It was interesting but, "Are you kidding me, that was a walk in the park compared to what we are faced with everyday." You really can't even compare the two. They could learn from us. Besides, most of the businesses got their stuff from the military anyway. Take a look at it. I only read Drucker and the others years later.
>
> [EMPHATICALLY] Listen, I did not copy any business model that I know of! But I read everyone, every one of them, Drucker and the others. But it was a couple of years later when I started writing the book. That's when I read all of that (J. Maple, personal communication, September 12, 2000).

Whether or not these informants acknowledge that they were influenced by the broader reengineering or reinvention movements is perhaps not as significant as the fact

that they admit that they were aware of them. The fact remains that these reform movements occurred contemporaneously with the Department's overall reengineering efforts. It is therefore possible that Comp stat's development was somehow influenced (either directly or indirectly) by these broad historical movements or, at the very least, that it is consistent with many of these movements' basic precepts and principles.

It is apparent that the Department's ambitious re-engineering efforts during this time period created a need for a comprehensive and effective monitoring and accountability device such as Compstat. To that extent, research proposition number four (p. 45) has been supported by the historical record showing that Compstat developed as a logical consequence of the Department's overall re-engineering process.

Just as there is no single explanation or cause for a war or a disease, there appears to be no one *cause* of Compstat. Rather, there are many direct and subtle historical influences that have shaped and advanced it. They might have acted upon Compstat independently, or in combination with one another (creating a synergistic effect). For example, the advancement of computer technology occurred at the same time as the development of problem-oriented policing. The nexus between the two is obvious, as enhanced data processing capabilities led to more sophisticated use of crime information. Each development acted upon the other, and both impacted the development of Comp stat. The historical record similarly indicates that each of the predecessor concepts and practices (discussed in Chapter 2) had a possible influence (either direct or indirect) upon the development of Compstat.

Nevertheless, none of these trends, concepts or practices can fully explain (in and of itself) the development of Compstat. While many potential influences and

relationships have been identified in this study, it appears that additional "causes" are likely to exist.

4) A "Creative Moment": There is a consensus among the primary informants in this study that the Bratton-era represents a particularly creative moment in the history of the NYPD. Several indicated that Compstat can only be fully explained and understood if one has an appreciation for the unique history of this particular organization (i.e., a micro-historical perspective) (see, e.g., Silverman, 1999) (Anemone #20).

Clearly, the Bratton-era is characterized by the emergence of a cohort of highly skilled and reform-minded police administrators who operated with a singularity of purpose. They were intentionally selected because they possessed skill sets that were desired by the new administration (Andrews #10). Nevertheless, when examining their achievements in light of the history of the Department, some believe that the scope and magnitude of their success was fortuitous. Gorta explains:

> I'd rather be lucky than good. Fortunately, we had both good personnel and the good luck to have them in the same place at the same time. Compstat, in its various strands, developed for two reasons: the right people came together at the right time and the process was allowed to develop. While much of Compstat was groundbreaking stuff for the NYPD, it was the incremental implementation, the capacity to adjust on the fly, and the permission to make mistakes that gave it its ability to withstand and overcome organizational resistance. The fact that powerful, cunning, and clever chiefs championed the process in its infancy didn't hurt either (1998, p. 20).

This "right time/right place" belief is echoed in the narratives of several other key informants (e.g., J. Maple, September 12, 2001; P. McGuire, personal communication, February 21, 2001; J. Yohe, 2000). All informants who actually participated in Compstat's development characterize that time period as one of unique "creativity" and

"dynamism" (see, e.g., J. Timoney, personal communication, December 12, 2001; Gorta, 1998). Bratton characterizes this period in this manner:

> We were very fluid. We were literally...we had goals we were trying to reach but the scaffolding that was going to be constructed to reach those goals, at the beginning, we did not have that blueprint laid out. It evolved over time. And that was part of the incredible dynamics of those first couple of years, because the excitement of people not being given a model to build, but rather being asked to come up with the model, being asked to actually participate, they added here, added there...that is why Compstat...no one person can lay claim to the idea.
>
> ***
>
> What we created was a dynamic organization that was not bound by structure. That is what made it so exciting and I think what made it so . . . why it accelerated the change so rapidly. It was like I guess in some respects creating the atom bomb. We created a fusion that just kept multiplying...There were a lot of people continually contributing to what became a very dynamic process. And in some respects, that was the strength of it, because there was wide-spread pride of authorship and participation (W. Bratton, personal communication, August 15, 2000).
>
> (Yohe #21).

The record is clear that the Bratton-era was an unusually dynamic period in the history of this Department. Bratton took office during the administration of a reform-minded mayor, at a point in the Department's history when its administrators were afforded the opportunity to be more experimental (as long as their results satisfied the overall mandate to reduce crime, fear of crime, and disorder). Bratton also surrounded himself with a cadre of intelligent and daring change agents who shared his vision and entrepreneurial spirit.

Bratton et al. did not do away with the bureaucratic structure of the Department. Rather, they seized an historical window of opportunity to radically readjust and realign

the bureaucratic structure to serve the ends that they valued most (see generally, Perrow, 1970) (Anemone #21, Anemone #22).

5) The Viability of the Compstat Model: Moore (1995) provides a diagnostic framework with which to gauge the relative effectiveness of public sector action and management practices. Known as the "strategic triangle," it focuses managerial attention upon three (3) key questions: 1) whether the action is publicly valuable; 2) whether it is politically and legally supported; and 3) whether it is administratively and operationally feasible (p. 22). Utilizing this framework, it is clear that there is sufficient evidence to suggest that all three criteria are satisfied with regard to Compstat.

Compstat has proven itself to be an extremely valuable and effective mechanism for police management. It is not only feasible, but is readily replicated (see generally, O'Connell, 2001). Thus far(as of the date of this study), it has survived the administrations of a new mayor and three subsequent police commissioners. It is therefore politically supported as well.

Fritz (1996) notes that, "all organizations have success - but not all success succeeds in the end" (p. xiii). He contends that, "the only way that organizations can really change is not by a change in behavior or process systems, but by a change in structure" (p. 133). He adds that, if change has been imposed upon existing inadequate organizational structures, the organization is likely to soon experience a period of oscillation, a distinct period of reversal where "success is neutralized" (i.e., does not succeed) (p. 7). This has clearly not been the case with Compstat. The historical record indicates that Compstat significantly altered the Department's organizational structure. It also suggests that Compstat is both viable and sustainable. Indeed, Timoney predicts that

Compstat will, "continue [to exist] even after all of the original players are gone" (2001). Judging by the historical record, it appears that Compstat will continue to exist (in some form or another) for many years to come. Thus, another of this study's major research propositions has been supported (number five, p. 46); that is, that Compstat developed as a sustainable strategy.

Compstat not only marks a unique period in the history of the New York City Police Department, but in the history of police management generally. It stands as one of the most significant innovations in this field over the past several decades and its full impact and influence have yet to be seen. This study has traced the development and implementation of Compstat in an effort to document and critically examine how and why change occurs in police organizations. It has identified and examined those particular ideas and practices that influenced its development, and has demonstrated their effect upon the organization.

It is hoped that the Compstat experience, as reflected by this study, will inform future studies of comprehensive police reform efforts of this type.

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