CHAPTER 2
THEORETICAL PERSPECTIVES ON POLICE, POLICING AND NEW TECHNOLOGY

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Chapter 2

Theoretical Perspectives on Police, Policing and New Technology

2.1. PRELUDE

Police is an attribute of modern societies whereas the process of policing has been present in all societies to maintain social order. However the police is viewed as an arm of the state and the different approaches to explain the concept stems from two ideas- one is to view it as a repressive coercive organ and second is to conceptualize it as a proactive and people friendly force. However the process of policing is mainly explained on the basis of a function of the police organizations and classified chronologically through different eras of history. The use of new technologies/ICTs in police and policing activities results in a debate of whether it actually benefits policing, though much of the writings favour the use of technologies in policing activities. In this chapter the researcher intends to discuss the dimensions of police and policing with reference to new technologies in police organizations. In this light the foregoing chapter focuses on the theoretical perspectives on

a) Police
b) Policing
c) Technology and society
d) New Technology in police and policing

2.2. THEORETICAL PERSPECTIVES ON POLICE

The concept of police must not be confused or synonymously used with the concept of policing. Throughout pre modernity and into the current era, the terms police and policing have borne a diversity of meanings, reflecting the nuances of relations between police and people at different times and places. Their meaning has been subjected to change throughout history, reflecting both structural factors and the impact of interactions between state, police and people (Wright 2002:36). Reiner argues that in this regard, it is important to distinguish between the ideas of ‘police’ and ‘policing’. The police are a particular kind of institution. While ‘policing’ implies a set of processes with specific social functions. ‘Police’ are not found in every society, but ‘policing’ is arguably a universal requirement of any social order, which may be carried
out by a variety of different processes and institutional arrangements. .... To sum up ‘policing’ is an aspect of social control processes involving surveillance and sanctions intended to ensure the security of the social order. The order in question may be based on consensus, or conflict and oppression. Or an ambiguous amalgam of the two, which is usually the case in modern societies (Reiner 1994:1004, 1008).

Manning upholds the police to be a legitimate bureaucratically articulated organization that holds out fatal force in control of political order (Manning 2003:41-2). In the Preface of Public Policing Button has argued ‘that the police are but an organization engaged in the process of policing’ (Button 2003:.ix.). The main function of the police is social control. S. Cohen has argued that the notion of social control is a ‘Mickey Mouse’ concept as it is defined so broadly that it encompasses all that one wishes it to mean. He defines social control as all “those organized responses to crime, delinquency and allied forms of deviant/or socially problematic behavior which are actually conceived of as such......” (Cohen 1985:3). Thus police according to Button “is among many other bodies is a part of the apparatus of social control and policing as it must be a specific aspect of social control” (Button, 2003:6).

**Evolution of Police as an Institution**

Modern police institutions are, essentially the creation of nineteenth century nation states and empires. The word ‘police’ is currently used to identify the institution of social control which attempts to prevent crime and disorder and prevent crime and disorder and preserve peace. For the individual it attempts to protect his life, property and personal liberty. Prior to the 19th century protection was afforded through the ‘folk police’ as exemplified by the old ‘hue and cry’, ‘watch and ward’. Full time governmental policing as we know it today is a product of the industrial revolution and dates back from the Peelian Reforms of 1829 (Germann 1969:91).

It was in 1764 that a young Italian economist and jurist, Cesare Beccaria, published *Dei Delitti e delle Pene* (On Crimes and Punishments). In this treatise he summarized the importance of the development of some sort of agency charged with the apprehension of offenders and stressed that the best way of dealing with crime was through rational punishment. Beccaria’s text soothed contemporary anxieties and offered a rational solution to crime (Emsley 1999:10-13). In small communities informal social control was the most powerful force in law enforcement. As a society becomes bigger, its self-policing elements get weaker and the legal means of social control assumes greater significance. Again with technological progress there came a need
for new laws (Banton 1998: 957). Moreover many of the police institutions were created by European powers to police their overseas imperial possessions. Women were not recruited in the police force throughout the 19th century. They were employed in the early 20th century specifically to deal with women suspects and prostitutes. However women were authorized to deal matters other than those involving women and juveniles not until a generation after the Second World War. According to Banton police accountability and police adaptation to cultural traditions is the reason for the diversity of police organizations over the years and across boundaries (Fitzgerald 2000:17).

According to Parker (1957), the term police designate “that executive civil force of the state to which is entrusted the duty of maintaining order and of enforcing regulation for the prevention and detection of crime. In a perfect system of civil administration, the function of the police is to interfere with the liberty of the individual only when it degenerates into license, and any material variation from this standard is to be deprecated as being arbitrary and tyrannical” (Wilson 1957:20-21). Parker adds that the function of the police in so far as crime prevention is concerned operates at two levels: (a) the prevention of criminal acts by actual or potential physical intervention and (b) performance so effective that the fear of apprehension, conviction and punishment tends to prevent criminal actions, in other words crime repression (Ibid.:101). Parkers definition and his enumeration of the functions of the police stems from the idea of repressive policing.

Bittner (1970) was the first to identify the importance of coercive force to the definition of police. Bittner recommended that the core of police role in society was the capacity to use coercive force. The police symbolize force, which the society use to resolve all sorts of social problems (Langworthy and Travis 2002:4). Klockars in The Idea Of Police (1985) considers both police organizations and individual police officers and defines the police as institutions or individuals who have been given the general right to use coercive force by the state within the states’ domestic territory (Klockars 1985:9).

Police are the most visible arm of government for most citizens and a yardstick by which they measure authority. “The word ‘police’ is related to the Greek words ‘politeuein’ which means to be a citizen or to engage in political activity and ‘polis’ which means a city or a state”(Fitzgerald 2000:9). These definitions emphasize the importance of the individual, the political process and the state or the government in ensuring surveillance over the activities of the citizens. All governments past or present
have been vested with police power to regulate matters of health, welfare, safety and morality. This might be because every society must have structure and order if it wants to ensure the fulfillment of these needs of the citizens. There is another aspect to policing however that account for officers pervasive concern with personal injury. Police continually deal with situations in which physical constraint may have to be applied against people who are willing to fight, struggle, hit, spit, bite, tear, hurt, hide and run. People continually use their bodies against the police forcing the police to deal with them in a physical way. While police seem to be preoccupied with deadly force the more common reality in their lives is the possibility of a broken nose, lost teeth, black eyes, broken ribs and twisted arms (Bayley and Bittner 1984:42).

**Police Organization and Management**

According to Wilson police organizations and practice differ as a reflection of differences in communities. He classifies police work as service delivery, order maintenance and law enforcement (Wilson 1968:4-5). However police work is notably distinct from other work because “the police have no source of revenue of their own, they must justify their existence and their operations each year to representatives of the people who provide the funds for police operations, fix the number of employees who can be hired , designate their salaries and in general, prescribe the conditions of their employment”(Wilson 1957:100). The two core components of police work involve police discretion and police organization. “Discretionary authority allows officers and police agencies to set priorities for policing and to make best use of limited resources. Discretion allows the police to individualize justice and to avoid problems with the overreach of the criminal law...On the other hand, the exercise of discretion by police officers poses problems for police officers, administrators and the communities they serve. Discretion contributes to police corruption, supports discriminatory practices, and allows police to avoid their duty to protect the public” (Langworthy & Travis 2002: 21).

The police organization has three characteristics which are specific to all organizations: (i) composition (individuals and groups), (ii) orientation (towards goals), and (iii) the methods used to obtain organizational goals (division of labour and rational coordination). Police organizations are composed of individual who bring many qualities to the organization, some of which are highly beneficial while others are not. The organization never receives the whole person but there is a partial inclusion of individuals in social groupings. Again within organizations there are groups engaged
and interrelated in the pursuit of goals. Three major goals affect the setting of police goals: environmental, organizational and individual. Environmental or community influences involve the legal framework in which the police function and the community is input into organizational priorities. Organizational influences are those of powerful members especially top management who seek to fulfill certain objectives for the efficiency and perpetuation of the organization and to satisfy its members. Individual influences like job security, pay or fringe profits benefit members. Thirdly, all organizations involve division of labour or task specialization for the attainment of goals. Labor division can be vertical, representing the hierarchy of authority, and horizontal representing different functions performed at equal levels of authority. Rational coordination refers to the intended integration of activities by management to help organizations run efficiently and accomplish goals (Roberg et al. 2001:76-91).

Police organizations are not only different from private organizations but also visibly different from other public organizations. This is in regard to the conflict that is inherent in the role of the police in a democratic society. Since democracy is associated with some sort of freedom; the exercise of police authority reflects an authoritarian orientation and is a constant reminder that freedom is limited in an otherwise free society. Again a very important attribute of democracy is equality. Contrarily police and the people are not equals. The police officer has the power to arrest a citizen or compel him to obey laws and ordinances (Ibid: 11). Manning believes that the police is a service occupation whose basis for action is based on information. The information received by the police can be of three types: Primary, secondary and tertiary. Primary information is what comes first to police attention and patrolling officers are highly responsible for collecting these information. When this raw data is processed by any two units of the police force and has changed its location and format it becomes secondary information. Tertiary information is the domain of police management where information is processed twice and is intended to be guiding, commanding and controlling (Manning 1992:359-60).

2.3. THEORETICAL PERSPECTIVES ON POLICING

Jones and Newburn defines policing as “those organized forms of order maintenance, peacekeeping or law enforcement, crime investigation and prevention and other forms of investigation and associated information brokering which may involve a
conscious exercise of coercive power – undertaken by individuals and organizations, where such activities are viewed by them and by others as a central or key defining part of their purpose” (Jones & Newburn, 1997:18). Policing is an interactive process, which requires a balance between police powers and the rights of the citizens. Arrest or the use of coercive force is policing strategies, which reflect community values that are moderated through the police organization structure. Community values, organizational constraints and individual’s decisions are correlated with policing decisions (Langworthy & Travis 2002:7).

However Ericson and Haggerty have suggested that management of risk is a key activity of policing. Public police coordinates their activities with other policing agents to offer risk management (governance) and security to the society. In the latter part of the 20th century the concept of risk transcended from the assessment of threat or danger to the idea of risk as blame, liability and responsibility. Individuals seeks to get protection from the collective entity especially the state and its institutions. Risk assessment seeks to identify risk from a variety of threats to health, security and social welfare. The management of risk expands the actions of police and includes the activities other than crime prevention. With crime remaining as the core of risk management, it also entails the management of risks from traffic accidents and other risks associated with the use and condition of the street or the built environment (Ericson and Haggerty 1997: 3).

The evolution of police as an organization and its present form can be typified into four eras of policing. The following table illustrates the features of these eras:

Table 2.1: The Three Eras of Policing and Twenty-First Century Policing

<table>
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<tbody>
<tr>
<td><strong>Leadership</strong></td>
<td>Primary political</td>
<td>Law and professionalism</td>
<td>Community support (political), law, professionalism</td>
<td>Facilitative</td>
</tr>
<tr>
<td><strong>Objectives</strong></td>
<td>Crime-control order, maintenance, broad social services</td>
<td>Crime control, isolate from politicians, expected community passiveness</td>
<td>Crime control, crime prevention problem solving</td>
<td>Crime prevention, crime control, problem solving</td>
</tr>
<tr>
<td><strong>Organizational Design</strong></td>
<td>Decentralised geographical</td>
<td>Centralised, classical</td>
<td>Decentralised task force, matrices</td>
<td>Level task force</td>
</tr>
<tr>
<td>Relationship to community</td>
<td>Political Era 1840s-1930s</td>
<td>Reform Era 1930s-1980s</td>
<td>Community Policing Era 1980s-1990s</td>
<td>Twenty first century Community Policing</td>
</tr>
<tr>
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<td>----------------------------------------</td>
</tr>
<tr>
<td>Close and personal, face to face, intimacy</td>
<td>Professionally remote</td>
<td>Consultative police defend values of law and professionalism, listen to community concerns</td>
<td>Partnerships</td>
<td></td>
</tr>
<tr>
<td>Managed through links between politicians and precinct captains</td>
<td>Channeled through dispatching activities</td>
<td>Channeling through analysis of underlying problems</td>
<td>Problem oriented policing</td>
<td></td>
</tr>
<tr>
<td>Incident driven foot beat patrol rudimentary investigation</td>
<td>Preventive patrol, rapid response</td>
<td>Foot patrol, problem solving</td>
<td>Reorientation of patrol, organize community, empowerment, participative management</td>
<td></td>
</tr>
<tr>
<td>Maintaining citizen and political satisfaction, neighbourhood norms</td>
<td>Number of arrests, response time, number of passing of patrol vehicle: crime rate</td>
<td>Quality of life citizen satisfaction, order maintenance</td>
<td>Quality of life, resident satisfaction, officer satisfaction, social order</td>
<td></td>
</tr>
<tr>
<td>Political satisfaction, discrimination, police corruption, lack of agency control</td>
<td>Crime rose, fear of crime rose, unfair treatment, lost financial support</td>
<td>Quality of life and community satisfaction</td>
<td>Quality of life</td>
<td></td>
</tr>
</tbody>
</table>

Source: Stevens 2003: 12

The community and the police must be considered as an organic entity, a mutually supportive partnership. Any community relations programme that involves the police as part of the community, not apart from the community, is on solid ground. The community must involve itself with the police, and the police with the community. Neither the community at large nor the police can afford insulation, isolation, indifference or enmity any more than can a healthy functioning family (Germann 1969:93). The basic idea of community policing is keeping close to the community. Here the police are the public and the publics are the police. The chief duty of the police officer is to improve the quality of life of the people in the community. The idea of community policing first emerged in the writings of H.Goldstein in 1979 in his work ‘Improving Policing: A problem oriented Approach’ in the journal ‘Crime and
Community oriented policing and problem oriented policing, are two important models of community police. The community policing philosophy is expressed in a new organizational strategy that allows police departments to put theory into practice. This requires freeing some patrol officers from the patrol cars and the insistent demands of the police radio to maintain direct, face to face contact with the people in the same defined geographic (beat) area every day. Community policing provides a new way for the police to provide decentralized and personalized police service that offers every law abiding citizen an opportunity to become active in the police process. Community policing stresses exploring new ways to protect and enhance the lives of those who are most vulnerable - juveniles, the elderly, minorities, the poor, the disabled, the homeless. Community policing (1) is a philosophy, not just an isolated program (2) involves a permanent commitment to the community including average citizens (3) broadens the mission of the police beyond crime control (4) provides full-service, personalized, and decentralized policing; (5) focuses in problem solving (6) enhances responsibility (7) uses both reactive and proactive policing; (8) must operate within existing resources (Trojanowicz & Bucceroux 1990:5-6). According to Peak and Glensor "Community oriented Policing and Problem Solving is a proactive philosophy that promotes solving problems that are criminal, affect our quality of life, or increase our fear of crime, as well as other community issues. COPPS job involves identifying, analyzing and addressing community problems at their source” (Peak & Glensor 2002:99).

While community oriented policing is a broad effort to develop new relationships, within all or designated parts of the community, problem oriented policing is a narrower effort to deal with a specific problem oriented policing attempts to engage productively with the community by “(1) assigning officers to areas to areas for longer periods of time to enable them the problems of concern to the community; (2) developing the capacity of both the officers and the department to analyse community problems; (3) learning when greater community involvement has the potential for significantly reducing a problem; and (4) working with those specific segments of the community that are in a position to assist in reducing or eliminating the problem” (Goldstein,1990:26-7). Community policing is not just a program but an operational and organizational philosophy designed to promote police citizen community based problem solving. Partnering with the community, the police seek to find effective long-term solutions to neighborhood crime problems. Police officers must be proactive and

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anticipate the social and law enforcement concerns of the community before they become problem areas. Community policing officers are viewed as intelligent agents of the criminal justice system who are able to intellectually and emotionally react to citizen concerns (Vito, Walsh & Kunselman 2005:492).

Community policing has been embraced as a buzzword, and the variety of activities associated with it seem to have little in common. Neighbourhood watch, revised department orders allowing junior officers to speak to the media, local consultative committees, specialised attention to the problems of women and families, liaison with gay communities, diversified recruitment, establishment of shop front police stations unsolicited visits by police residences and public relation campaigns. There are four programmatic elements occurring again and again under the banner of community policing: (1) community based crime prevention. (2) reorientation of patrol activities to emphasize non emergency servicing (3) increased accountability to the public (4) decentralization of command including under certain circumstances civilianization. Community policing becomes more substantial when leaders see in solutions to the defects in customary practice and when it becomes part of a broader vision implying a change of values as well as programmes. However there are identifiable and persistent constraints to the development of community policing: (a) the culture of policing is resistant to community policing; (b) Community policing requires emotional maturity more likely to be present in older officers; (c) The innovative management cop is receptive to a more expansive vision of the police role. Traditional management cop remains rooted in his earliest training experiences; (d) The responsibility to respond to limitation of resources; f) The inertia of police unions who see community policing as a threat to police professionalism; (g) The two officer car engenders a sense of security and job enjoyment among those who are policing and it may also generate a sense of remoteness from the population being policed; (h) Command Accountability; (i) Reward structure as it is impossible to measure the amount of crime a certain police officer prevented;(j) Public expectations of police; (k) Failure to integrate steps for crime prevention; and (l) The ambiguity of community as police community reciprocity can be achieved when there is a genuine bonding of interests between the police and the served citizenry and among definable section of the public (Skolnick and Bayley 1988: 18-28).

Basic differences between community oriented policing and traditional forms of policing are illustrated in Table 2.2.
Table 2.2. Traditional vs. Community Policing: Questions and Answers

<table>
<thead>
<tr>
<th>Question</th>
<th>Traditional</th>
<th>Community Policing</th>
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<tbody>
<tr>
<td>What is the relationship between the police force to other public service departments</td>
<td>Priorities often conflict</td>
<td>The police are one department among many responsible for improving the quality of life</td>
</tr>
<tr>
<td>What is the role of the police?</td>
<td>Focusing on solving crimes</td>
<td>A broader problem solving approach</td>
</tr>
<tr>
<td>How is police efficiency measured?</td>
<td>By detection and arrest rates</td>
<td>By the absence of crime disorder</td>
</tr>
<tr>
<td>What, specifically do police deal with?</td>
<td>Incidents</td>
<td>Citizens problems and concerns</td>
</tr>
<tr>
<td>What determines the effectiveness of police?</td>
<td>Response times</td>
<td>Public cooperation</td>
</tr>
<tr>
<td>What is police professionalism</td>
<td>Swift effective response to serious crimes</td>
<td>Keeping close to the community</td>
</tr>
<tr>
<td>What is the essential nature of police accountability?</td>
<td>Highly centralized, governed by rules, regulations, and policy directives; accountable to the law.</td>
<td>Emphasis on local accountability to local needs</td>
</tr>
<tr>
<td>How do the police regard prosecutions?</td>
<td>As an important goal</td>
<td>As one tool among many</td>
</tr>
</tbody>
</table>


Community policing has also been impacted by the technological advances in computerization and crime prevention strategies. Three of the more significant advances include (1) crime analysis: there are three components of crime analysis: tactical crime analysis used to identify crime trends and patterns; strategic crime analysis, preparation of statistics and summaries designed to aid in long term operational planning; and administrative crime analysis, used to aid in administrative decision-making on social, economic, and geographic information. (2) Computer-Aided Dispatching enabled police officers to capture and retrieve many types of crime and operational data that had previously been unavailable or extremely time-consuming.
consuming to generate. It added global positioning information that enabled dispatchers to track movements of police cars in order to make better decisions in assigning calls for service. (3) Crime mapping are highly sophisticated graphics which enable investigators and crime analysts to obtain accurate and detailed maps of past, present, and potential crime areas within their jurisdictions (Hunter et.al 2008: 246-47).

The recent trends in the study of police and policing highlight the emergence of a **restorative policing**. Much against retributive form of justice in which offenders are punished and taken charge by the state, in the 1990s restorative justice called for systematic change in the criminal justice organizations including police agencies. Restorative justice addresses the social structural conditions which reproduce harm, inequality and violence (Johnstone 2002:7-13). Sullivan and Tifft argues that injustices are incurred not just by interpersonal violence but also by ‘violence done to people through the exercise of power, and hierarchical social arrangements that support the maintenance of this power’(Sullivan & Tifft 1996:40).It is enabled by the police, and relies heavily on the inclusion of victims, partner agencies in the Criminal Justice System and community members. Restorative justice is most accurately described as a model for ‘doing justice’ by repairing the harm of crime. It seeks to heal the wounds crime and conflict cause to victims, communities, families and relationships. New outcomes emphasize accountability for the offender based on taking responsibility to make amends to victim and community and rebuilding or strengthening relationship of both offender and victims to their communities and supporters (Bazemore 2009:750-60).

Restorative policing allows the community to establish norms and social boundaries, to clearly articulate what behavior is not acceptable within the community. It lends positive support to those who need a voice for their victimization as well as those who wish to curb their offending behavior. Restorative policing with the aim of persuading people to change, puts people into positions where they confront the consequences of their own behavior. This face-to-face confrontation makes it tough on offenders and can in torn bring about changes in their behavior. It allows victims to explain how they really feel about what has happened and helps them to put events behind them and move on. It promotes positive impacts on issues of local crime, disorderliness and fear that really affect ordinary peoples’ lives. It incorporates alternatives to prosecution and enforcement; it does not compete with criminal justice
or replace it. Restorative policing builds communities and depends on communities to achieve its goals by creating a sense of urgency about community (Hines & Bazemore 2003: 411-15)

2.4. THEORETICAL PERSPECTIVES ON TECHNOLOGY AND SOCIETY

“Technology is about how society uses science. The study of IT developments belong as much to the social sciences as it does to technology, and the social sciences insist on the adoption of a critical attitude to IT developments. This insistence starts with the assertion that technical factors do not determine how the advances of science are used. Social factors do not determine how the advances of science are used. Social factors shape both the design and implementation developments”(Heap et al. 1995:11).

Technology is popularly believed to be a type of knowledge. Historians claim that technology is simply applied science, the end product of knowledge–intensive research and development processes that consumes nearly 3% of gross national product across the industrial world. Philosophers have traced the Greek roots of technology in techne (‘arts and crafts’) and the suffix meaning 'knowledge about’ (Misa 1992:4). I look at the theme of the present work inter alia from the theoretical standpoint of sociology in general and the sociology of technology in particular – the latter being a sub-field of sociology which has become by the 1980s and 1990s a firmly entrenched and legitimate theoretical tradition within the discipline of sociology in particular At the same time a number of sociological approaches to science and technology have flourished which arose as a critique of the traditional sociological concerns with technology. The history of societies does not show any dearth of instances in which instead of the one path implied by technological determinism, there are multiple paths along which a given variety of artifact might proceed or might have proceeded. Technical artifacts embody or are associated with values: valuing progress versus efficacy in one instance, and worker control ,ad small shop affordability versus management control and technical precision in the other instance. Artifacts also seem to literally embody values (Kleinman 2005: 9-10). Thus the application of ICTs in police reflects how society and policing are mutually
dependent on each other. In this context I will be discussing four theoretical approaches to the study of technology and society.

**Technological Determinism**

The traditional sociological concerns with technology have focused on the effects of technology, its impacts and so on. The widely held commonsense belief commonly referred to as ‘Technological Determinism’ holds that technology is a kind of ‘black box’ which is really independent of the nature of society and, follows inevitably from personal logic. It causes social and technological change, and thus determines and shapes the society. It holds that the nature of technology and the direction of change are unproblematic or predetermined. It also asserts that technology had necessary and determinate impacts upon work, upon economic life, and upon society as a whole. Hence, technological change produces social and organizational change. “At its simplest, technological determinism portrays technology as an exogenous and autonomous development which coerces and determines social and economic organizations and relationships. Technological determinism appears to advance spontaneously and inevitably in a manner resembling Darwinian survival, in so far as the most appropriate innovations survive and only those who adapt to such innovations prosper” (Mackay1995:41).

Martin states that “technological determinism can be refuted for close examination of any technology reveals social factors that influenced its development and use. “There are many technologies that were developed but never caught on, such as the supersonic transport aircraft and plutonium watches. It would be easy to develop deadly miniature biological or chemical weapons such as each individual could have their own personal lethal deterrent but this has never happened”(Martin 1999:539). According to Winner the things we call technologies are ways of building order in our world. Many technical devices and systems important in everyday life contain possibilities for many different ways of ordering human activity. Societies choose structures for technologies that influence how people are going to work, communicate, travel, consume and so forth over a very long time. Different people are differently situated and possess unequal degrees of power as well as unequal levels of awarenesss (Winner 1998:32-3).

**Social Shaping of Technology**

Social scientists have increasingly recognized that technological change is itself shaped by the social circumstances within which it takes place. The new sociology of technology set out to demonstrate that technological artifacts are socially shaped, not
just in their usage, but especially in their design and technical content. These studies show that the generation and implementation of new technologies involve many choices between technical options. A range of social factors affect which of the technical options are selected. These choices shape technologies, and, thereby, their social implications. In this way, technology is a socio-technical product, patterned by the conditions of its creation and use (Wajcman, 2002:351). In sharp contrast to this technocratic standpoint, the sociological studies known as Social Shaping of Technology (SST) go beyond the traditional focus on the impact of technology and indeed attempt to go inside and analyze the content of technology and the processes of technological change. The SST shows that “technology is a social product, patterned by the conditions of its creation and use. At every stage in both the generation and implementation of new technologies variety of technical options are available. Which option is selected cannot be reduced to simple ‘technical’ considerations but is shaped by a range of broader social, economic, cultural and political factors” (Williams 1997:300-01).

SST arose in the 1970s when some historians of technology critiqued the premises of technological determinism. SST holds a middle ground in a heated theoretical debate between two conflicting views on the relationship between society and technology. On one side of the debate are the technological determinists who foreground the power of technology to transform society, and on the other are social determinists who stress those social relations especially economic relations as the most important considerations. SST has been influenced to some extent by the genealogical analyses of discourses introduced by Foucault. Wiebe Bijker has acknowledged the influence of Foucault’s thought on his own articulation of SST theory and especially in his conceptualization of power (Lenert 2004:240). The Economics of Technological Change approach treats technology as highly flexible and equally available to all. The evolutionary model propounded by them has influenced SST research and rejects the idea that technology can never be studied in isolation from the society (Edge 1995:14-32).

There are three major constructs of the SST: (a) socio technical ensembles and relevant groups, (b) interpretive flexibility and semiotic power, and (c) stabilization. Sociotechnical ensembles and relevant groups illustrates SSTs assertion that technological artifact do not exist in isolation. They are related to relevant social groups who hold a stake in the development of technology. Semiotic power refers to the power
that enables different social groups to assign different meaning to a particular technology. Thus within a specific socio-economic system some groups possess a greater capacity to shape socially the development of a technology than others. Again, stabilization is a process rather than a stage in the development of technologies. Old technologies can get destabilized by new social and technological progress and undergo alterations until they reach a new phase of stability (Williams & Edge 1996b: 868). Technologies therefore cannot be viewed as equipments alone but are inclusive phenomena whose development results in interaction of various social and technical elements. Technologies once developed and implemented not only entails the innovation of how forms of technologies but also creates new environments. Existing forms of work organizations prefigure technologies that embody earlier divisions of labour and expertise. Technical change in addition is influenced by particular ideas about the organizations and how they may be designed and implemented with those objectives of transforming work. Thus development of automated activities and work organizations should be analyzed in tandem (Ibid: 875-88). The promotion of integrated technologies took place with the objective of transformation of the organization. But however it was the former which underwent change as the users had to reconfigure to adapt them to their own particular local environments. This initiated new innovations and this ‘innofusion’ process may provide the basis for future technological and organizational development (Klein & Kleiman 2002:28-52).

**Social Construction of Technology**

A further extension of this theory is the Social Construction of Technology (SCOT). Berger and Luckmann (1966) were the first to use the phrase social construction in their ‘treatise in the sociology of knowledge’ focusing mainly on the society and the reality of social institutions. Wiebe Bijker and Trevor Pinch developed the perspective of ‘social construction of technology’ (Bijker *et al.* 1987). It grew out of the combination of three branches of thought; the science and technology movement (began in 1970s in Europe and USA), the sociology of scientific knowledge (emerged in 1970 in U.K) and the history of technology (emerged in the 1980s in USA). In the early days of SCOT, the unit of analysis was the single artifact. In the next step technological system became the unit of analysis. It comprises a combination of technical, social, organizational, economic and political elements. According to Bijker the final unit of analysis is the technological culture. Today’s societies are thoroughly technological and all technologies are pervasively cultural. Technologies do not merely assist in everyday
lives, they are also powerful forces acting to reshape human activities and their meanings (Bijker 2009:4-5).

The main focus of social construction of technology is ‘interpretative flexibility of technology’. It refers to the way in which different groups of people involved with a technology that is different ‘relevant social groups’ can have very different understanding of that technology, including different understandings of its technical characteristics. It also judges whether a technology works (Mackenzie and Wajcman 1998:21). SCOT underscores artifacts and in particular, their working as subject to radically different interpretations that are coextensive with social groups. This goes beyond saying that technology is merely embedded in human affairs. SCOT focuses attention upon what counts as a viable working artifact, and what indeed counts as a satisfactory test of that artifact. SCOT has said little about social structure and power relationships within which technological development has taken place. However SCOT can be criticized for not incorporating the influence of social structure such as class in technological development (Kline and Pinch 1998:114).

**Actor Network Theory**

A further advancement in the theory of technology is the Actor Network Theory (ANT) developed by scholars such as Bruno Latour, Michel Callon, Madeleine Akrich and John Law. According to this theoretical standpoint, once societies are aggregated, and chose not to avoid each other there must be a secondary adaptation to a new competitive environment of conspecifics. Similar bodies adapting to social life can either build the society using social skills (non human primates) or utilize additional material resources and symbols to define the social bond (human societies). In the human step different types of societies are created depending upon the extent of new resources that are used (Strum and Latour 1998:123-24). An actor network is simultaneously an actor whose activity is networking heterogeneous elements and a network that is able to redefine and transform what it is made of. Thus a network is durable not only because of the durability of the bonds between the points (whether these bonds concern electrolytic forces) but also because each of its points constitutes a durable and simplified network. It is this phenomenon that explains the conditions that lead to the transformation of actor networks. Each modification thus affects not only the elements of the actor network and their relationships but also the networks simplified by each of these elements. An actor network is a network of simplified entities that in turn are other networks. ANT calls upon us to adopt a symmetrical approach to humans and
non humans. This means that everything that we seek to describe or explain should be approached in the same way. The way in which particular artifacts operate is deserving as much attention as the behavior of human actors. From human beings emerge social actors who operate in a terrain conditioned by emerging structures but human beings are not to be reduced to either. Thus ANT is a standpoint associated with a skepticism about the characteristics of technologies and an unwillingness to accord any necessary objective characteristic to technical artifacts (Mutch 2002:484-85).

2.5. THEORETICAL PERSPECTIVES ON NEW TECHNOLOGY IN POLICE AND POLICING

The most recent round of technological changes in policing is determined by three imperatives to improve the effectiveness and efficiency, to satisfy the demands of external agencies for information and to meet the demands of police management and accountability. The first imperative is technology and holds that not only does technology promise to improve police effectiveness and efficiency in controlling crime, it may also enhance their professional status and organizational legitimacy (Manning 1992; Ericson and Haggerty 1997:390). The second imperative is information motivated and views that police organizations regularly provide and data for external bodies such as road traffic authorities and insurance companies for their own management and risk assessment needs (Manning 1992: 340-45). The third imperative is policy driven. Police organizations use of information technologies to improve performance is the result of externally imposed demands for public accountability in terms of cost effectiveness, probity and procedural regularity (Chan 1999:249-68).

Again there are three dimensions of the impact of technologies in police. According to Manning, ICTs have been constrained by the traditional structure of policing and by the traditional role of the officer. (1992:350) Harper in his research on the Computerised Crime Reporting System(CRS) by detectives in a British constabulary suggests that ICTs have a profound influence on the detective work as it has made retrieval of information fast and easy (1991:300). Ericson and Haggerty after his study of the Canadian Police Organization in the 1990s holds that ICTs has had a deep impact on the way the officers think, act and report on their activities. It has also created new cultures of policing and rendered police organizations more transparency (1997:398-9).
Since organizations are systems that communicate and process information, Information and communication technologies are perfectly suited to make organizational processes more effective and efficient. ICTs are introduced in organizations by a process of adoption, implementation use and effect (Bouwman et.al 2002:43). In police organizations ICTs are being incorporated in a wider array of services. The diverse technologies that are used in law enforcement indicate that they can broken into categories as follows:" (a) biometrics: use of biological parameters to control people and places; (b) monitoring: observation of people, places and machines; c) imaging: pictures of peoples places and evidence; d) communications: communication among agencies; e) decision support: systems capable of assisting decision making; f) record keeping: maintenance of databases; g) weaponry: lethal and non lethal weapons (Nunn 2001:13).

According to Besley "changes in technology will make it easier for citizens to hold government accountable and to participate in democratic decision making. In effect, we can confidently predict that the transaction costs of collective decision-making will be diminished. An optimistic view is that this should bring government closer to citizens making it operate in a more open and transparent way" (Besley 2003:225). It will successfully uphold the values of the civil society as " a civil society gives preferential treatment to individuals daily freedom from violence, claims concerning the importance of enabling groups and individuals freely within the law to define and express their various social identities; the argument that freedom of communication is impossible without networks of variously sized non state communications media; and the insistence that politically regulated and socially constrained markets are superior devices for eliminating all those factors of production that fail to perform according to current standards of efficiency" (Keane 1998:7).

In order to detect computer crimes and for efficient surveillance, crime prevention, detection and control, the police needs to be equipped with the new technologies. In developed nations there already exists an established infrastructure of ICTs in the police as an aid to police work. Without ICTs it will be quite difficult for the police to detect or for that matter even comprehend computer related crimes. From the available data the following new technologies are found to be available to the police in developed countries. This can be of huge assistance to the police force in India as well.
1. Mobile Data Computer

Wireless mobile data / mobile computing terminals and laptop computers with wireless / radio communications are becoming essential public safety communications tools to increase officer safety, increase productivity, improve agency effectiveness, control or reduce operating costs. Community-oriented policing becomes more efficient and more effective with the use of wireless mobile data and mobile computing. Mobile data communications can provide officers with access to information systems enabling them to: (a) receive and initiate Computer Aided Dispatch (CAD) calls for service, (b) check the status of calls for service in their response area and surrounding areas, (c) obtain call location and arrest history, (d) access e-mail (departmental and internet access) to communicate across space and time with department personnel, citizens, and community and government agency partners, (e) access departmental Intranet, (f) stay abreast of the latest crime incidents occurring in their assigned neighborhoods since their last tour of duty, (g) prepare routine reports in the field without having to leave their assigned patrol area, (h) maintain contact with supervisors and other personnel without tying up valuable voice radio airtime and (i) reduce the reliance on voice communications as the only means of communications from the field. (http://www.palidor.com/police_mobile_data.htm visited on 23.10.10) The use of mobile data computers in the roadside environment is the fastest emerging technology tool to assist law enforcement. The uses of this technology are only limited by the imagination and cost factors. Identification of suspect or missing/unidentified people can be readily accomplished in the roadside environment. This will assist law enforcement in ridding the streets of fugitives that may previously have gone undetected.

Along with the computerization that began in the 1980s, a few large agencies began installing specialized mobile data terminals (MDTs) in their patrol vehicles. Mobile data terminals feature a screen on which to view information and a keyboard or keypad for entering information, and may be connected to various peripheral devices. Standard peripherals include two-way radios and taximeters, both of which predate computer assisted dispatching. MDTs may be simple display and keypad units, intended to be connected to a separate black-box or AVL computer. While MDTs were originally dumb terminals most have been replaced with fully functional PC hardware, known as MDCs (Mobile Digital Computers). Adoption of these advanced
wireless data technologies has been slow to come for public safety agencies, including law enforcement. This, in turn, as generated interest in so-called broadband applications for mobile data, including video, mug shots and other photos, fingerprints, in-field reporting, and sophisticated ad hoc networking and messaging at critical incident scenes.\textsuperscript{9} More recent developments allow the creation of a so-called mesh network using Wi-Fi access points scattered around the jurisdiction. A receiving base station relays data from a field unit on to another base station, and the process repeats until it’s received at the main base station. Out-going data is transmitted to the field unit the same way. The programs allow instant messaging, multiple streams of and audio video between several computers, and unit management features to handle a critical incident.\textsuperscript{9}

2. Mobile Printers

Patrol vehicles are equipped with printers plugged into the mobile data computers. Violation notices can be given to the offender, depositions can be entered directly into the computer, printed, and signed. Photographs of wanted and missing persons can be printed. Mobile printers got their big start making life easier for people about 25 years ago. The devices have reached a point in their evolution where they are probably about as small, durable and cost-effective as they are likely to get. Most mobile printers in use today are ruggedized for use in the field. There are some available in a sleek, metal finish form factor aimed at people who work in a less rough and tumble environment. One application that is catching on with the nation’s police departments is the use of mobile printers to issue traffic tickets. Visions of reductions in data collection errors, missing documentation, payments or revenue that are lost because information is captured incorrectly help many cities see the potential and embrace e-citation applications. While e-citation applications are cropping up everywhere across the United States, they also are enjoying wide popularity internationally. Police departments in Greece, Spain and Canada are using the application.\textsuperscript{10}

3. Mobile camera

a) A webcam is a video capture device connected to a computer or computer network, often using a USB port or, if connected to a network, ethernet or Wi-Fi. The most popular use is for videotelephony, permitting a computer to act as a videophone or video conferencing station. This can be used in messenger programs such as Windows
Live Messenger, Skype and Yahoo messenger services. Other popular uses, which include the recording of video files or even still-images, are accessible via numerous software programs, applications and devices. Webcams are known for low manufacturing costs and flexibility, making them the lowest cost form of videotelephony. The term 'webcam' may also be used in its original sense of a video camera connected to the Web continuously for an indefinite time, rather than for a particular session, generally supplying a view for anyone who visits its web page over the Internet. First employed in 1991, some of these, for example those used as online traffic cameras, are expensive, rugged professional video cameras.

b) A **camera phone** is a mobile phone which is able to capture either still photographs or video. Since early in the 21st century the majority of cameras and mobile phones in use are camera phones. There are dozens of relevant patents dating back as far as 1956. Compared to digital cameras of the 1990s, a consumer-viable camera in a mobile phone would require far less power and a higher level of camera electronics integration to permit the miniaturization. Camera phones can share pictures instantly and automatically via a sharing infrastructure integrated with the carrier network, thus negating the need for connecting cables or removable media to transfer pictures. As mobile phones are constantly carried, camera phones allow for capturing moments at any time. While phones have been found useful by tourists and for other common civilian purposes, as they are cheap, convenient, and portable; they have also posed controversy, as they enable secret photography. They can also be used for activities such as voyeurism, invasion of privacy, and copyright infringement. Camera phones have brought to light the issue of laws relating to public and private photography. While in general photography is unlikely to pose any legal dilemmas, care should be taken before photographing individuals or private property where permission has not been given.

4. Global Positioning System

The **GPS** is a space-based global navigation satellite system that provides reliable location and time information in all weather and at all times and anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. It is maintained by the United States government and is freely accessible by anyone with a GPS receiver. The GPS System was created and realized by the American
Department of Defense (DOD) and was originally based on and run with 24 Satellites. It was established in 1973 to reduce the large number of navigation aids and to overcome the limitations of previous navigation systems. The GPS consists of three parts: the space segment, the control segment, and the user segment. GPS satellites broadcast signals from space, which each GPS receiver uses to calculate its three-dimensional location (latitude, longitude, and altitude) plus the current time. Equipped with these GPS receivers, users can accurately locate where they are and easily navigate to where they want to go, whether walking, driving, flying, or boating. GPS has become a mainstay of transportation systems worldwide, providing navigation for aviation, ground, and maritime operations. Disaster relief and emergency services depend upon GPS for location and timing capabilities in their life-saving missions. URL14 Once the user's position has been determined, the GPS unit can calculate other information, such as speed, bearing, track, trip distance, distance to destination, sunrise and sunset time and more. Today's GPS receivers are extremely accurate, thanks to their parallel multi-channel design. URL15

5. Electronic Breath Alcohol Test

A breath alcohol test determines how much alcohol is in one’s blood by measuring the amount of alcohol in the air one breathe out (exhale). There are various brands of breath alcohol tests. Each one uses a different method to test the level of alcohol in the breath. The machine may be electronic or manual. One common manual tester requires us to blow up a balloon in one continuous breath until it is full, then release the air into a glass tube. The tube is filled with bands of yellow crystals. The bands in the tube change colors (from yellow to green), depending on the alcohol content. URL16

We hear and read about drivers involved in an accident who are later charged with drunken driving, and usually a news report on the accident will say what the driver's blood alcohol level was and what the legal limit for blood alcohol is. A driver might be found to have a level of 0.15, for example, and the legal limit is 0.08. It is important for public safety that drunken drivers be taken off the roads. So police officers use some of the latest technology to detect alcohol levels in suspected drunken drivers and remove them from the streets. Many officers in the field rely on
breath alcohol testing devices (Breathalyzer is one type) to determine the blood alcohol concentration (BAC) in drunken-driving suspects. 

6. Computer

A computer is a programmable machine that receives input, stores and manipulates data, and provides output in a useful format. Although mechanical examples of computers have existed through much of recorded human history, the first electronic computers were developed in the mid-20th century. These were the size of a large room, consuming as much power as several hundred modern personal computers (PCs). Modern computers based on integrated circuits are millions to billions of times more capable than the early machines, and occupy a fraction of the space. Simple computers are small to fit into small pocket devices, and can be powered by a small battery.

However in police work the following programmes are very much in use: (a) **Word Processing** - Word Processing software automatically corrects spelling and grammar mistakes. If the content of a document repeats you don’t have to type it each time. (b) **Digital video or audio composition** – Audio or video composition and editing have been made much easier by computers. It no longer costs thousands of dollars of equipment to compose music or make a film. Graphics engineers can use computers to generate short or full-length films or even to create three-dimensional models. (c) **Desktop publishing** - With desktop publishing, we can create page layouts for entire books on your personal computer. (d) **Telecommunications** - Software is widely used here. Also all mobile phones have software embedded in them. (e) **Weather analysis** – Supercomputers are used to analyze and predict weather. (f) **Spreadsheet programs** enable individuals to prepare tables easily. The users of such programs establish rules for handling large groups of numbers. For example, using a spreadsheet program, a person can enter some numbers into a table and the program will calculate and fill in the rest of the table. When the user changes one number in the table, the other numbers will change according to the rules established by that user. (g) **Database programs** allow a computer to store large amounts of data (information) in a systematic way. Such data might include the name, address, telephone number, salary, and starting date of every employee in a company.
The computer could then be asked to produce a list of all employees who receive a certain salary. (h) **Communication programs** connect a personal computer to other computers. People can thereby exchange information with one another via their personal computers. In addition, communication programs enable people to link their personal computers with databanks. Databanks are huge collections of information stored in large centralized computers. News, financial and travel information, and other data of interest to many users can be obtained from a databank.

7. **Internet**

The **Internet** is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide. It is a *network of networks* that consists of millions of private, public, academic, business, and government networks of local to global scope that are linked by a broad array of electronic and optical networking technologies. The Internet carries a vast array of information resources and services, most notably the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail. Mobile phones, datacards, handheld game consoles and cellular routers allow users to connect to the Internet from anywhere there is a wireless network supporting that device's technology. Unlike online services, which are centrally controlled, the Internet is decentralized by design. Each Internet computer, called a *host*, is independent. Its operators can choose which Internet services to use and which local services to make available to the global Internet community. Higher officials in the police organization are now very much dependent on internet communication with other officers and police stations under their jurisdictions.

8. **Laser Radar**

Laser Radar (LADAR) is employed similar to millimeter wave radar, but uses laser beams to scans and process the signal echoed from targets, to create a virtual picture of the area. The LADAR processor looks for familiar patterns in the scenes. Due to its capability to scan large areas with very high precision, and its ability to gradually build a detailed picture of the area under surveillance, LADAR sensors are usually employed on loitering systems, which can look at the target from different
angles, verify the target identification and select the best attack position for the desired effect.

Laser Radar (LADAR) seeker can detect objects and identify specific features with very high definition of up to 15cm resolution (from a distance of 1,000 meters). Apertures for ladars are optical focusing devices (lenses, prisms, and/or mirrors) used to collimate laser energy into a narrow beam. Some models use the same aperture for transmit and receive; some use separate apertures one for transmit and one for receive.

One situation where LADAR has notable non-scientific application concerns traffic speed enforcement, for vehicle speed measurement, as a technology alternative to radar guns. The technology for this application is small enough to be mounted in a hand held camera "gun" and permits a particular vehicle's speed to be determined from a stream of traffic. The equivalent radar based systems are often not able to isolate particular vehicles from the traffic stream. It has the distinct advantage of being able to pick out one vehicle in a cluttered traffic situation as long as the operator is aware of the limitations imposed by the range and beam divergence. Most traffic LADAR systems send out a stream of approximately 100 pulses over the span of three-tenths of a second. A "black box" proprietary statistical algorithm picks and chooses which progressively shorter reflections to retain from the pulses over the short fraction of a second. These laser radar thus revolutionized the traffic controlling system in police work.

9. Photo Radar

Law enforcement officials diligently try to keep people from breaking all traffic laws. However, since they can't possibly be everywhere at once, they decided to bring in a little high-tech help. Busy intersections are a prime area for accidents, due to drivers speeding past a red light, and sometimes a driver can be ticketed erroneously. Red light cameras are strategically placed at pre-determined intersections. The cameras are, in most cases, placed in all corners of that intersection to photograph law breakers in the act. The photo radar cameras are hooked to a sophisticated computer system that also acts as a trigger. The stop lights are constantly monitored and when a
car reaches a certain point during a red light, the cameras are triggered to take two pictures of the vehicle. One will be to show that it reached the trigger point during a red light and the other one will show the vehicles in the middle of the intersection to prove that it is moving forward during a red light. The owner of the vehicle will then receive a traffic citation in the mail, along with the picture showing the offense taking place.

Photo radar is a traffic enforcement tool which uses a camera to snap a picture of cars which violate traffic laws, for the purpose of issuing a citation. This method is viewed as controversial in some areas of the world, and numerous people have come up with creative ways to beat tickets issued by photo radar systems. A typical photo radar unit includes a radar gun which is used to judge the speed of traffic, along with a computer which records information from the radar unit. When a violation of the speed limit is detected, the computer triggers a camera. It takes a photograph of the offending vehicle. The photographs can either be gone through manually or with a computer to extract the license plate information. While photo radar systems are used for speeders, cameras can also be used for traffic enforcement at red lights, tricky intersections, and other problem areas. In all cases, the citation allows the driver either to pay a fine, or to contest the citation in court or through the mail. From law enforcement prospective, photo radar is supposed to make the streets safer because people are aware that they can be ticketed even if a police officer isn't around, so they watch their speed more closely.

Photo radars can perform the following functions: (1) Bus lane cameras to detect unauthorised vehicles using bus lanes; (2) Congestion charge cameras to detect vehicles inside the chargeable area which have not paid the appropriate fee; (3) High-occupancy vehicle lane cameras to identify vehicles violating occupancy requirements; (4) Level crossing cameras to identifying vehicles crossing railways at grade (5) Noise pollution cameras that record evidence of heavy vehicles that break noise regulations by using engine braking; (6) Parking cameras which issue citations to vehicles which are illegally parked or which were not moved from a street at posted times; (7) Red light cameras to detect vehicles which go through a red light; (8) Speed limit enforcement cameras for identifying vehicles traveling over the legal speed limit (both radar to measure a vehicle's instantaneous speed and average speed cameras
which detect average speed of a vehicle between two points); (9) Toll-booth cameras to identify vehicles proceeding through a toll booth without paying the toll; (10) Turn cameras at intersections where specific turns are prohibited on red. This type of camera is mostly used in cities or heavy populated areas and (11) automatic number plate recognition systems can be used for multiple purposes, including identifying untaxed and uninsured vehicles, stolen cars and potentially mass surveillance of motorists.

10. Night Vision System

Night vision is the ability to see in a dark environment. Whether by biological or technological means, night vision is made possible by a combination of two approaches: sufficient spectral range, and sufficient intensity range. Humans have poor night vision compared to many animals, in part because the human eye lacks a tapetum lucidum. Night vision technologies can be broadly divided into three main categories: First, image intensification technologies work on the principle of magnifying the amount of received photons from various natural sources such as starlight or moonlight. Examples of such technologies include night glasses and low light cameras. Second, active illumination technologies work on the principle of coupling imaging intensification technology with an active source of illumination in the near infrared (NIR) or shortwave infrared (SWIR) band. Examples of such technologies include low light cameras. Third, thermal imaging technology work by detecting the temperature difference between the background and the foreground objects.

Night Vision works with two different systems. With the near-infrared system, two barely noticeable infrared emitters are integrated into the headlights. First the infrared light they produce is captured by a small camera positioned close to the rear-view mirror. The second system, a solution in the long-wave spectral range, a high-resolution infrared camera is installed behind the radiator grille. Using a wavelength of 6 to 12 micrometers, it detects the infrared heat radiation from the vehicle’s surroundings, which is displayed as a negative image: inanimate objects appear darkened and living things are displayed as bright objects.
11. Mobile Telephones

Billions of people in the world today realize how essential mobile phones are in their lives. Mobile phones have become a part of everyday life for many individuals and some could not even manage to last an hour without them. This is also the fashion trend nowadays. Without cellular phones we are incomplete. They turned out to be the personal dairies of a lot of people. This device calculates, wakes people up, and reminds them of all occasions and appointments, helps in accessing the Internet and has the messaging service and several other benefits. Mobiles are of use to the elderly and handicapped, as well. For example, the visually impaired have their "talking mobile phones" wherein they can read the text messages. These special talking mobile phones are feature phones installed with software to make it "talk". Since the unit talks, the visually impaired can read his messages without having a sighted person read it for him. Mobile phones also provide the user the confidence to get out and go places because they know they can avail of its assistance, if needed. Police everywhere and in all the time use mobile telephones both in crime prevention and detection and in non crime services.

12. DNA Sample Kit

Deoxyribonucleic Acid (DNA) is found in every living cell of our body and can be extracted from a whole variety of different materials, such as: blood, semen, hair roots, finger-nail pairings, saliva, body tissues, bone marrow, urine, faecal matter, tooth canal, root pulp, foetal materials (Adhikary 2007:30). DNA collection and analysis gives the criminal justice field a powerful tool for convicting the guilty and exonerating the innocent. Only one-tenth of a single percent of DNA (about 3 million bases) differs from one person to the next. Scientists can use these variable regions to generate a DNA profile of an individual, using samples from blood, bone, hair, and other body tissues and products. In criminal cases, this generally involves obtaining samples from crime-scene evidence and a suspect, extracting the DNA, and analyzing it for the presence of a set of specific DNA regions (markers). If the sample profiles don't match, the person did not contribute the DNA at the crime scene. If the patterns match, the suspect may have contributed the evidence sample. DNA analysis is a powerful tool because each person's DNA is unique (with the exception of identical
Therefore, DNA evidence collected from a crime scene can implicate or eliminate a suspect, similar to the use of fingerprints. It also can analyze unidentified remains through comparisons with DNA from relatives. When biological evidence from crime scenes is collected and stored properly, forensically valuable DNA can be found on evidence that may be decades old. Therefore, old cases that were previously thought unsolvable may contain valuable DNA evidence capable of identifying the perpetrator.

DNA typing, since it was introduced in the mid-1980s, has revolutionized forensic science and the ability of law enforcement to match perpetrators with crime scenes. Thousands of cases have been closed and innocent suspects freed with guilty ones punished because of the power of a silent biological witness at the crime scene. 'DNA fingerprinting' or DNA typing (profiling) as it is now known, was first invented in 1985 by an English geneticist named Dr. Alec Jeffreys. He found that certain regions of DNA contained DNA sequences that were repeated over and over again next to each other. He also discovered that the number of repeated sections present in a sample could differ from individual to individual. By developing a technique to examine the length variation of these DNA repeat sequences, Dr. Jeffrey's created the ability to perform human identity tests.

New Technologies in Policing and Digital Divide

The application of cybernetics would change the character of the traditional industrial society and turn it into a society based on "knowledge" and permanent learning, dominated by new intelligent information technologies. The growing importance of scientific and technical knowledge as well as of literacy, education and the "knowledge industry" would bring the dominance of bourgeois, bureaucratic and meritocratic society and an increasingly secular, individualistic, pragmatic utilitarian and hedonistic culture in general (Garnig 2003:236). Politics and government would be transformed by free communications, changing the balance of power between governments and their citizens. People would be better informed and will be able to communicate their views to their government leaders and representatives. Again they would find it easier to communicate with the rest of the world (Cairncross1997:25). This again would create a level of inequality in the form of "digital divide" induced by the differentiation between internet haves and have-nots causing social exclusion in a
complex interaction that appears to increase the gap of the promise of Information Age and its bleak reality for many people around the world. The dispossession of Internet which distribute information, power, knowledge and networking by sections of the community, leads to fragmentation of the society fostering new forms of marginalization and exploitation (Castells 2001:246-61). The e-marginalisation brings forth a segmented civil society where there is inequality of rights and responsibilities and resources. Although political theory rejects envisioning civil society as fluid and as segmented, such societies exist on a continuum. Civil society and government being complimentary constructions which represent discrete values there is enormous tension between the government and the civil society (Post & Rosenblum 2002:6-23).

2.6. CONCLUDING REMARKS

In understanding the impact of ICTs in police work at Kolkata the SST perspective will help the researcher to fulfill the purpose of the study. The introduction of ICTs in police work is the result of a need of the organization to combat modern forms of crime, which are at the moment hardly detectable by the traditional methods of crime control. The approach will further help the researcher to explore whether the ICTs in Kolkata Police are bringing into light the need for the introduction of more sophisticated technologies for organizational development. New technologies have been introduced in the police departments to meet the demands of the recent times and to combat the modern forms of crime apart from the traditional crimes. They have resulted in an infrastructural change within the police organization. The study seeks to analyze the impact of these changes in the working of the police. In this regard police is viewed as an agency for management of risks. In the process of tackling risks the present study aims to explore in what ICTs are helping the Kolkata Police to carry out community policing to make the community a safer and better place to live in. The study thus based on the theoretical perspectives as discussed in this chapter and the analysis of the operational aspects of policing and new technology be conceived as far as practicable within the parameters and limitations spelt out in the aforesaid discussions in this chapter.

A debate exists as to that whether the use of technologies benefits policing at all. However, much of the literature supports the use of technologies in policing activities.
The stereotypical image of the police as concerned mainly with the pursuit of violent criminals has been changed in the present time. The police officers are supposed to be the ‘jack of all trades’. In this regard the rapid advancements in the new technologies or more specifically ICTs can prove to be quite handy in extracting efficiency and accountability from the police. In view of this it is to be noted that the new sociology of technology reveals that technological artifacts are socially shaped, not just in their usage, but especially in their design and technical content. ICTs can change the tempo of work and modify the space and time limit for work. When working on technology, human agents are inclined by the institutional properties of their settings and are the institutional conditions of interaction with technology. The concluding influence involves the manner in which human action when it uses technology acts upon the institutional properties of an organization either by reinforcing them or by transforming them. ICTs have been inhibited by the traditional structure of policing and by the traditional role of the officer. ICTs have had a profound influence on the detective work as it has made retrieval of information fast and easy. They have a deep impact on the way the officers think, act and report on their activities. It has also created new cultures of policing and rendered more efficiency to the police. Politics and government will be changed by free communications and changing the equilibrium of power between governments and their citizens. People would be better informed and will be able to communicate their views to their government leaders and representatives. Again they would find it easier to communicate with the rest of the world. However, it will expose a bleak reality for many people around the world by creating a new level of inequality in the form of "digital divide" induced by the separation between information haves and have-nots in the so-called Information Age.
PHOTOGRAPHS OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs)

Mobile Data Computer

Source: http://www.vsp.state.va.us/image/Rear04.jpg visited on 10.10.2010
Mobile Printer


Source: (b) http://www.thebarcodewarehouse.co.uk/Assets/Images/Products/1431.jpg visited on 27.10.2010
Mobile Camera


Global Positioning System

Source: http://humanitarianfutures.files.wordpress.com/2009/05/gps.jpg visited on 20.11.2010

Electronic Breath Alcohol Test

Computer

Internet

Laser Radar

Source: http://www.town.manton.ab.ca/Protect/Laser/20Photo.gif visited on 02.12.2010
Photo Radar

Night Vision System


Mobile Telephone

DNA Sample Kit

DNA