

## CCTV Evaluation for the Prevention and Reduction of Crime and Disorder - A Case Study of Seoul Metropolitan CCTV -

Jong Eop Kim\*, Jong Seok Choi\*\*, Cheol Hyun Jeong\*\*\*

Social Science Research Institute, Yonsei University, 262 Yonsei-ro, Seodaemun-gu, Seoul, Korea  
 Office of Local Information, 85 Cheongyecheon-ro, Jongro-gu, Seoul, Korea  
 and Department of Public Administration, Yonsei University, Busan, Korea, 262 Yonsei-ro,  
 Seodaemun-gu, Seoul, Korea

### Abstract

Prevention and reduction of crime and disorder have been important political issues in South Korea during the past decade, and specifically in local autonomous boroughs in Seoul. These boroughs have introduced CCTV's installation as main policy for the prevention and reduction of crime and disorder. This paper focuses on empirically-based public policy that is relevant to these issues. Key themes are the trends and effectiveness of CCTV policy on prevention and reduction of crime & disorder. The debate about CCTV as a policy for crime prevention and reduction since the 1990s is described and analysed. In other words, this paper describes and critically assesses the impacts of the CCTV policy and summarizes the information related to CCTV. In this paper are also reviewed, including CCTV policy trends, the UK's experience with CCTV policy at local and central levels. The research results showed that CCTV was not effective in the prevention and reduction of 5 serious crimes in Seoul, South Korea.

**Key words:** CCTV, crime prevention, policy evaluation

\* First author. Tel. +82-2-2123-3538. Fax. +82-2-2123-8176. E-mail. [kimje49@hanmail.net](mailto:kimje49@hanmail.net)

\*\* Second author. Tel. +82-2-3279-0800. Fax. +82-2-3279-0898. E-mail. [jschoi@kdid.or.kr](mailto:jschoi@kdid.or.kr)

\*\*\* Corresponding author. Tel. +82-2-2123-2968. Fax. +82-2-2123-8118. E-mail. [chul@yonsei.ac.kr](mailto:chul@yonsei.ac.kr)

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## I. Introduction

Closed Circuit Television(CCTV) systems are securely entrenched in modern society, not only in terms of their widespread presence in public places, but also as a core part of community safety, policing and national security policy. In the last decade there has been a proliferation of CCTV installations in South Korea, particularly in Seoul, as a means of preventing and reducing crime, disorder and fear of crime, through deterrence. The CCTV system brought the explicit surveillance revolution, but there are a number of intriguing issues embedded in the development of public policy surrounding these systems and which raise interesting questions about the rational logic of their ongoing provision and their purported benefit to society[1]. In the case of CCTVs, these benefits are usually assumed to be reductions in crime and the 'fear of crime', as captured and measured by crime statistics. But even here the evidence is not clear-cut, and doubts are frequently raised about the ability of these systems to have the impact on crime that many take for granted[2].

Since 2002, CCTV cameras and systems are firmly entrenched in Seoul metropolitan area as a core policy for prevention and reduction of crime and disorder. However, 5 major crimes have not declined in Seoul. Unfortunately, the effect of CCTV as a prevention and reduction measurement was not enough and compared to the cost of the prevention program against crime and disorder. Therefore, the evaluation of the policy is necessary for the effect of prevention and reduction against crime and disorder. This study attempts to address such concerns by the revisiting the discussion of CCTV policy, by reviewing the policy and provision of CCTV surveillance in South Korea, and by considering the lessons learned from the experience of the UK's CCTV policy. The remainder of the article is set out as follows. The next section, section 2, outlines some of the main features and discussions pertaining to the CCTV revolution. Section 3 provides an exploration of the UK's CCTV policy experience with CCTVs for lesson. Section 4 provides an overview of the adoption of a distinct CCTV policy in South Korea and stresses linkages with effects in the diffusion of CCTV camera systems as a means of preventing crime and disorder. Section 5 goes on to critically examine the CCTV policy of local governments in South Korea. Following this, section 6 offers some concluding comments. The article is based on the author's longstanding research interest in the policy processes surrounding the provision of CCTV in South Korea and much of the analysis presented in this paper has been derived from ongoing policy and document collection and review. This study is based on the author's long standing research interest in the policy of prevention and reduction against crime and disorder through CCTV cameras in the UK and South Korea and much of the analysis presented in this paper derives from ongoing policy and document collection and review.

Furthermore, this study presents a case study of diffusion of CCTV in Seoul, South Korea with the experience of the UK. The empirical evidence offers important insights the effect of CCTV for prevention and reduction of 5 serious crimes and disorder.

## II. Emergence and Proliferation of CCTV systems

Ever since the early 1990s, many countries have introduced and diffused CCTV cameras in public places, and the CCTV system has not gone unnoticed. In recent years, there has been a proliferation of these systems, particularly in town and city centres[3][4][5][6], as well as in residential and public service settings[7]. Typically they were introduced to assist in 'the fight against crime', not only to deter and detect crime, disorder and antisocial behaviour, but also to help reduce the 'fear of crime'[1]. As a result, CCTV systems have proven to be very popular and have received widespread support from politicians, policy-makers and citizens. Due to their popularity and perceived effectiveness, CCTV's have been further supported by political rhetoric and financial assistance from central and local governments[6]. Although the precise number of CCTV cameras can be debated, the existence of the CCTV 'revolution' cannot. CCTV's and the surveillance practices and relationships embedded in the technology are a key feature of modern society, and the proliferation of CCTVs has brought with it a lot of controversy in the world. The following section discussed the issues associated with CCTV systems.

Currently, CCTV's are considered to be a ubiquitous, normal part of everyday life, with citizens willingly acquiescing as surveillance subjects, and perfectly happy to forgo some personal privacy in return for greater levels of personal safety and security[1][8]. The proliferation of CCTV systems has continued unabated despite important concerns about their impact on individuals and communities. Issues that have arisen around the operation of CCTV include; the effect on individuals privacy and civil liberties, citizens 'rights' to anonymity and freedom of movement, citizen-state relations arising from changes in relations between the surveyor and the surveyed, changes in behaviour arising from intense levels of visual monitoring, and the efficacy of new and untried technological systems. These concerns raise important questions about the rationale of widespread CCTV provision in society and the extent of that rationale's validity[1]. Nevertheless, the unequivocal support for CCTV's, evidenced by the results of public satisfaction surveys[9] and the overwhelming belief in the capabilities of the technology have remained intact and have overridden any such concerns about the use of such sophisticated technologies.

CCTV policy is also a contentious issue due to the myriad different ways CCTV's can be conceptualised. Firstly, there is the technological aspect, where technological advances in

information and communications have enabled the configuration of camera, information and communication technologies into a useful surveillance tool. This approach stresses the technical specifications and capabilities of CCTV systems, as well as the actual number of systems in use. Secondly, there is a criminological perspective, which focuses on the CCTV system's role as a crime prevention tool and a central plank for policing. This approach emphasizes the effectiveness of CCTV's in reducing and deterring crime and disorder[10]. Finally, sociological understandings of CCTV's focus on issues of control and power, and highlight changes in the nature of society and human behaviour arising from new surveillance - based relationships - that is the social construction of technologies[1]. These three approaches dominate mainstream discussion of CCTV's, but these perspectives do not provide a comprehensive explanation for the CCTV revolution or the ongoing support for CCTV technologies.

The alternative to these approaches is the policy perspective approach which is illuminating as it highlights the complex intertwined interactions between the government, policymakers, service providers, users, and technological and policy developments. CCTV's are supported by central government funding programmes established in the early 2000s, through which vast sums of money were invested in CCTV schemes, and through which guidance documents were published and political rhetoric dispersed in favour of CCTV as a policy initiative for preventing crime and disorder. The emergence of this discreet policy area dominated the crime prevention policy environment to such an extent in the early 2000s that some researchers argued that CCTV was not part of a broader crime prevention policy, but rather than it was the policy[8]. Over time, there has been a policy 'shift', and CCTV policy is now also about reducing antisocial and undesirable behaviour, encouraging the provision of CCTV to move beyond town and city centres and into residential and other public places[2]. Since 9/11 in the US, the policy has shifted again, so that the emphasis is soon national security and deterring terrorism. In particular, advances in computerisation have enabled number plate, move mentand facial recognition systems to be used along side human operatives, and advances in communications have led to the integration and networking of previously disparate systems. Recognising this policy shift is important as it demonstrates how a technology introduced for one purpose can actually shift and be used for another. This shift is often referred to as 'policy creep' and by surveillance theorists as 'surveillance creep'. It means that a view point about CCTV differently showed against before.

The effectiveness of CCTV has been the subject of much debate among many researchers since its introduction. CCTV's are an effective measure in preventing crime, but this claim is often based on a handful of apparently successful projects that were poorly evaluated using simple before-and-after designs with no comparison conditions[11][12] This design is

seriously flawed, because it fails to address many threats to internal validity[13]. The first systematic review of the effects of CCTV in preventing crime was carried out by Welsh & Farrington[13]. The systematic reviews had explicit objectives, explicit criteria for including or excluding studies, extensive searches all over the world for eligible evaluations, careful extraction and coding of key features of studies, a structured and detailed report of the methods used for locating, appraising, and synthesizing evidence, and explicit conclusions about effect sizes[13][14]. In their systematic review, Welsh & Farrington (2006) concluded that existing evaluation research showed that CCTV's were effective in reducing crimes in car parks but not in city centres or public housing, was effective in reducing vehicle crimes but not violent crimes, and was most effective when combined with improved lighting. They compared the effectiveness of CCTV's and improved street lighting and concluded that improved lighting was more effective in reducing crimes in city centres and residential areas[13]. These reviews did not aim to address other possible effects of CCTV, such as helping to detect offenders, helping to deploy police, providing evidence for use in court, or reducing the fear of crime[12]. CCTV's were only effective in car parks, where crimes were committed in public view, where a large fraction of the area could be covered by the cameras, where there was controlled access, where the vehicle crimes probably involved rational decision making, where it seems likely that potential offenders were deterred by the risk of detection, and where CCTV was combined with other interventions.

In addition, an evaluation of six crime prevention initiatives found that overall car crime had been reduced in the car parks in which CCTV's had been installed, when compared either to a period prior to the installation or to control areas without CCTV. The effects appeared to be more positive for theft of as opposed to theft from vehicles[11][12][15]. CCTVs were also found to work effectively in reducing burglary within a sheltered housing scheme. A significant decrease in the level of thefts from vehicles was found to result from the use of CCTV, but the effect upon theft of vehicles and criminal damage to vehicles was much less certain[11][16]. They also found that CCTV reduced vandalism on buses[12][17]. An evaluation of CCTV's in Airdrie, revealed that property crime(burglary, vehicle crime, shoplifting, fraud and arson) was reduced after the introduction of the cameras[12][18].

Thus, research into the effectiveness of CCTV suggests that it is most effective in reducing property crime. This goes some way to supporting the 'rational choice theory'[19], which suggests that offenders seek to maximise the benefits of offending and in doing so make rational choices or decisions based upon the information or cues available to them at the time of the offense. CCTV appears to deter the criminal in offences such as vehicle crime or burglary, perhaps on the basis that they perceive the risk of apprehension to outweigh the benefits. In crimes involving public disorder(or antisocial behaviour) where 'rationality' is often lost, the deterrent or 'risk' effect of CCTV is weakened.

Research of CCTV's effect on crimes against the person includes in larger metropolitan districts, CCTV systems had less impact upon personal crime. However, the same study found evidence that the cameras reduced assaults within smaller market towns[9]. In another, CCTV systems, as part of a general security package, reduced robberies within London(especially underground stations) that were smaller and less complex in their layout[3]. The Ilford study revealed that implementation of CCTV's resulted in a reduction in robbery and theft from the person offences, but did not effect a reduction in violence or drug-related offences[20]. CCTV(as part of a general security package) reduced robberies within London Underground Stations that were smaller and less complex in their layout. However, CCTV had less impact upon personal crime. Overall, the introduction of CCTV's had no effect on personal crime offences such as assault, even though CCTV showed measurable crime prevention.

In conclusion, above researches included various issues like <Table 1>: CCTV proliferation; the myriad different ways about CCTV; the effective of CCTV; and current concern. First, Norris & Armstrong(1999) and Gill(2003) conducted a proliferation of CCTV systems, particularly in town and city centres. Second, Hempel & Topfer(2009) and Webster(2009) conceptualized the myriad different ways: the technological aspect; criminological perspective; and sociological understandings of CCTV's. Third, and Farrington, Gill, Waples, and Argomaniz(2007) explored the effectiveness of CCTV. Welsh & Farrington(2002) presented that the first systematic review of the effects of CCTV in preventing crime was carried out. Argomaniz(2007) showed to address other possible effects of CCTV, such as helping to detect offenders, helping to deploy police, providing evidence for use in court, or reducing the fear of crime. Finally, there is current concern. Groombridge(2008) was viewed as a ubiquitous, normal part of everyday life, with citizens willingly acquiescing as surveillance subjects. Webster(2009) presented the effect on individuals privacy and civil liberties, citizens 'rights' to anonymity and freedom of movement.

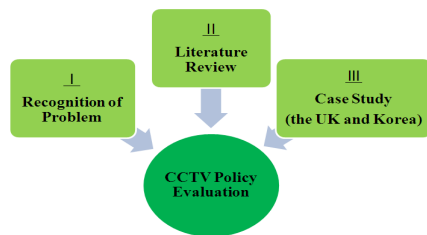
<Table 1> Major Research of CCTV Effect

Subject	Author(year)	Contents
CCTV proliferation	Norris & Armstrong(1999) and Gill(2003)	- A proliferation of CCTV systems, particularly in town and city centers
	Webster(2009)	- To assist in 'the fight against crime', not only to deter and detect crime, disorder and antisocial behaviour, but also to help reduce the 'fear of crime'
	Kim(2009)	- CCTV's have been further supported by political rhetoric and financial assistance from central and local governments

<Table 1> Major Research of CCTV Effect(Continue)

Subject	Author(year)	Contents
The myriad different ways	Hempel & Topfer(2009)	- The technological aspect: technological advances in information and communications have enabled the onfiguration of camera, information and communication technologies into a useful surveillance tool.
	Webster(2009)	- Sociological understandings of CCTV's: focus on issues of control and power, and highlight changes in the nature of society and human behaviour arising from new surveillance
The effectiveness of CCTV	Armitage et al(1999) and Farrington, Gill, Waples, and Argomaniz(2007)	- A handful of apparently successful projects that were poorly evaluated using simple before-and-after designs with no comparison conditions
	Welsh & Farrington(2002)	- The first systematic review of the effects of CCTV in preventing crime was carried out
	Farrington, Gill, Waples, and Argomaniz(2007)	- To address other possible effects of CCTV, such as helping to detect offenders, helping to deploy police, providing evidence for use in court, or reducing the fear of crime
	Poyner(1992b) and Armitage(2002)	- CCTV reduced vandalism on buses
Current concern	Groombridge(2008)	- A ubiquitous, normal part of everyday life, with citizens willingly acquiescing as surveillance subjects - Happy to forgo some personal privacy in return for greater levels of personal safety and security
	Webster(2009)	- The effect on individuals privacy and civil liberties, citizens 'rights' to anonymity and freedom of movement

Methodology of this study is based on the literature review and explored the UK's experience(CCTV policy). Furthermore, the study reviewed a case of Seoul. Over all, this study used literature research and case study a core methodology. The research flowchart is like(<Fig 1>).



<Fig 1> The Research Flowchart

III. The UK experience: CCTV Policy

Many governments in the world have adopted CCTV systems as a policy for the prevention and reduction of crime, disorder, and the fear of crime. However, CCTV's have also engendered a lot of controversy since 1990s. In the UK, there are 4.2 million CCTV cameras, which roughly translates to one camera for every 14 UK citizens[6].Furthermore, the number of CCTV cameras in Britain is more - even in absolute terms - than the rest of the EU put together. Over the last decades, the UK Home Office has spent more than three quarters of its crime prevention budget on funding CCTV's and have invested an estimated £500 million of public money into the CCTV infrastructure[10]. In other words, the UK's government, Home Office and local governments, also consider CCTV systems as the best policy for prevention and reduction of crime & disorder in public places. However, it is reported that of the five London boroughs with the most camera as, four have a crime solving-record that is below average. Ever since the wide spread introduction of CCTV in the UK there have been questions regarding its effectiveness and value-for-money. Many scholars and critical observers, especially Hempel & Topfer, have articulated concerns regarding the discriminative potential of CCTV and its implications of civil liberties; but these concerns have been more or less ignored for more than a decade.

The following statistics, however, illustrate that CCTV is failing in its key objectives[21][22]:

- Detering criminals: Only 3 per cent of crimes are prevented by CCTVs[23]. Four out of five London boroughs with the highest number of CCTV cameras have lower than average crime-detection rates[21]. After surveying the effects of CCTV installation in 13areas, the Home Office has concluded that CCTV's have "little overall effect on crime levels". The Government has also admitted that there are no definitive national studies that find a positive deterrent effect with CCTV[22].
- Detecting crime: Only half of surveillance control rooms are staffed 24 hours a day.
- Solving crime: a CCTV only produces images that enable the police to identify criminals in 15-30 percent of cases. More significantly, 90 percent of CCTV activities violate the Information Commissioner's Code of Practice, as their usage could be seen as breaking the Data Protection Act[24].

In 2007, the National Association for the Care and Resettlement of Offenders(NACRO) produced a report which indicated that improved street lighting was proven to cut crime by up to 20 percent[21]. It recommended that the money on CCTV would be better spent on street lighting. Generally, a common goal of most CCTV systems has been the prevention of crime and disorder through deterrence[4], but it would not be cost effective to hire CCTV system rather than other measures as a policy for prevention and reduction of crime,

disorder, and fear of crime in the UK.

In addition, the CCTV's policy demonstrates an overall lack of effectiveness because of an extravagant over-credulity. In other words, proponents of CCTV diffusion have championed various myths about it as a panacea for the prevention and reduction of crime, disorder, and fear of crime[1]. He outlined few myths about the CCTV system which did not really use to very much in prevention and reduction of crime and disorder as a negative aspect. The first myth is that CCTV cameras work in delivering their main policy objective: reducing crime and disorder. The evidence here is inconclusive and disputed. Initial anecdotal evidence and provider analysis of crime statistics in the era of innovation and experimentation suggested that CCTV was going to be a very effective tool. However, Groombridge(2008: 77) goes so far as to argue that there is no rigorously consistent evidence to suggest that CCTV cameras work and consequently they do not offer value-for-money. He says that if we are to judge CCTV on its impact on crime then, "the Home Office, and therefore the Treasury, has wasted enormous sums of tax-payers' money on the deployment of CCTV." Another myth is that CCTV surveillance cameras are everywhere and that we are constantly under the visual gaze of CCTVs. At the outset of this article argued that the proliferation of CCTV cameras in public places across the UK is generally recognised and accepted. The third myth is that citizens want CCTV surveillance systems. This myth is trickier to establish, as there is clearly widespread support for CCTV, which is based on the assumption that the first myth is valid. Public perception surveys show unequivocal support for CCTV[9] and there is plenty of anecdotal and research evidence to show citizens putting pressure on their elected representative to install systems[7]. Last myth questions that CCTV is typically perceived to be a crime prevention and detection tool. For example, Tony McNulty, Minister of State for Security, recently stated "I see CCTV as an important tool in the Government's crime-fighting strategy"{1}. However, the impact of CCTV is equally felt on antisocial and undesirable behaviour, essentially lower level non-criminal activities, and evidence suggests that CCTV is actually more effective in deterring this undesirable behaviour than reducing crime and disorder[5]. These myths showed that introduction of CCTV are not much impact in prevention and reduction of crime and disorder with fear of crime. Of course, the myths are not absolutely right, but these myths present the adverse effects of CCTV introduction and proliferation.

Consequently, CCTV is not a panacea for the prevention and reduction of crime, disorder, and fear of crime, and the UK's effort top prevent and reduce crime and disorder through the use of CCTVs was ultimately an unsuccessful policy. The approximately 4.2 million cameras in the United Kingdom capture a person, on average, 300 times a day. Over the past decade, the has invested £500 million in equipment, and, in the 1990s, it spent 78 percent.

of its crime prevention budget on installing CCTV equipment. However, ironically it is not effectiveness or civil liberties issues that have reignited a policy debate about CCTV, but the costs associated with running systems and its potential usefulness for national security and anti-terrorism purposes that has brought CCTVs to the forefront again. Overall, the UK's experience shows the inefficient results which mean the effectiveness of CCTV for the prevention and reduction of crime and disorder. In other words, the UK government had to use a lot of costs to install CCTV cameras on the prevention and reduction of crime and disorder. However, it was less effective compared to the cost on the prevention and reduction of crime and disorder using CCTV system. The UK's experience shows that the effectiveness of CCTV systems is a myth and at the same time not a panacea on the prevention and reduction of crime and disorder. Therefore, we need to learn from the UK's experience and ought to make a policy turnaround not to lose budget.

#### IV. Introduction and Diffusion of CCTV in South Korea

In the 1990s, South Korean governments -- central and local - began to set up CCTV camera systems in public places as major policy against crime(including anti-social behaviours and disorder) and as a means of reducing crime, disorder, and fear of crime. Particularly, since 2000, the central government has recommended that local governments put up CCTVs in a variety of sites, even though some groups, NGOs and minority parties have expressed deep concerns about the abuse of privacy. As such, local governments have thrown out CCTV and are conducting patrols and searches in their own areas. Central and local governments are operating CCTV cameras of 241,367 in 2009(<Table 2>).

<Table 2> The Number of CCTV Installations

Issues		Central government	Local government	Total
Public Security	Prevention of crime and disorder	46,697	13,202	59,899
	Prevention of disaster	2,243	3,437	5,680
Maintenance of public order	Traffic information	2,698	1,252	3,950
	Illegal parking	3,152	3,932	7,084
	Dumping waste	691	3,040	3,731
Management of general facilities	Building maintenance	43,281	28,480	71,761
	Parking	4,092	5,257	9,349

<Table 2> The Number of CCTV Installations(Continue)

Issues		Central government	Local government	Total
Management and maintenance of special facilities	Management of airport and harbour	3,295	6	3,301
	Bank and Post office	23,931	5	23,936
	Monitoring of underground and railroad	6,642	12,852	19,494
	Prison and police station	12,348	64	12,412
Others		19,008	1,762	20,770
Total		168,078	73,289	241,367

※ Source: [25].

The purposes for CCTV installation focus on various reasons: management of general facilities(34%), public security(27%), management and maintenance of special facilities(24%), maintenance of public order(6%), and others(9%). Central government have placed CCTV in various purposes and sites, such as public security(28%), building maintenance(26%), bank and post office(14%), whilst local governments put the CCTV for keeping building(39%), prevention of crime and disorder(18%), safety monitoring.

The central government's use of CCTV is widely distributed in several sections like public security(around 27.8%), management of general facilities(about 28.2%), and management and maintenance of special facilities(approximately 27.5%). While the distribution of CCTV installation is similar in the local and central governments, in contrast to the local government's priorities, the central government regards the management of general facilities(about 33.6%) is regarded as a core aim rather than others, particularly public security(around 27.2%) and management and maintenance of special facilities(approximately 24.5%).

Consequently, local governments of South Korea began to vie with each other to set up CCTV camera in a variety of sites, and at the same time central government also unleashed the installation of new CCTV cameras in public places. Therefore, due to the stiff competition among local governments, these governments put more CCTV cameras into use. For example, the number of CCTVs in some municipalities, such as Incheon, Taegu, Ulsan, and Gyeongnam, increased by 10% in 2009.

In the same year, the Seoul metropolitan government set up 20,464(27.9%) of all CCTV cameras at the local level(<Table 3>).

<Table 3> The CCTV Installation by Local Governments

Issues		City of Seoul	Capital Area	Urban Area	Rural Area	Total
Public Security	Prevention of crime & disorder	4,062	3,283	1,541	4,316	13,202
	Prevention of disaster	917	887	454	1,179	3,437
Maintenance of public order	Traffic information	275	294	357	326	1,252
	Illegal parking	1,448	1,129	470	885	3,932
	Dumping waste	788	508	636	1,108	3,040
Management of general facilities	Keeping building	4,505	7,567	5,944	10,464	28,480
	Parking	1,146	2,047	1,258	806	5,257
Management and maintenance of special facilities	Management of airport & harbour	0	0	4	2	6
	Bank and Post office	0	0	0	5	5
	Monitoring of underground and railroad	6,889	457	5,506	0	12,852
	Prison and police station	0	21	0	43	64
Others		434	300	343	685	1,762
Total		20,464	16,493	16,513	19,819	73,289

※ Source: [25].

※ Notice 1: Capital area refers to metropolitan of Incheon and Gyeng gi province(excluding Seoul).

※ Notice 2: Urban area refers 5 metropolitan cities- Busan, Taegu, Taejeon, Kwangju, and Ulsan(excluding Incheon).

※ Notice 3: Rural area refers to the 10 provinces other than Gyeng gi province.

The number of CCTV cameras in capital areas -- Seoul, Incheon, and Gyengki -- was 36,957 which corresponds to over half(50.4%) of all CCTVs at the local level. Local governments used CCTVs for various aims, such as public security 16,639(22.7%), maintenance of public order 8,224(11.2%), management of general facilities 33,737(46%) and management and maintenance of special facilities 12,927(17.6%).

The diffusion of CCTV cameras is increasing at an extraordinary rate recently, regardless of whether central and local governments use it as a policy against crime in South Korea(<Table 4>). For instance, CCTV cameras at the central level were past the 1000,000 mark in 2008 and then reaching around 168,000 in 2009.

<Table 4> The Increase of CCTV Installation

Year	Central level	Local level	Total
2008	107,950(69%)	49,295(31%)	157,245
2009	168,078(70%)	73,289(30%)	241,367
Increase rate	56%	49%	53%

※ Source: [25].

The rate of increase peaked at 70% at the central level. The number of local-level CCTVs also settled at 49,295 in 2008 and then clocked up an increase to over 70,000 in 2009. The number of CCTVs at the local level increased by 30%, even though the rate of increase was lower than the rate of increase at central level. In conclusion, the incredible increase in the number of CCTV installations in recent years suggests that they are considered an important policy measure against crime and disorder - including antisocial behaviours - by both the central and local governments in South Korea.

**V. Misleading: CCTV Policy of South Korea against crime & disorder**

Many local governments of South Korea adopted CCTV cameras for crime prevention in their own public areas. Gangnam borough first set up 5 CCTV cameras as a means of preventing crime & disorder in 2002 and since then, many other autonomous boroughs of Seoul have set up CCTV systems to embody safer positions[2]. Recently the number of CCTV cameras rapidly increased in these borough governments(<Table 5>). There did not take long to put CCTV cameras up in their boroughs. In other words, boroughs of Seoul and Seoul's Police Agency regarded CCTV cameras as a panacea for prevention of crime & disorder[6]. Only 2 boroughs in Seoul did not introduce CCTV cameras, but the Police Agency ended up installing CCTVs in those two districts. Therefore, all of Seoul's boroughs have CCTV cameras.

Local governments(in autonomous boroughs) considered installation and operation of CCTV cameras as a core policy for prevention of crime & disorder in Seoul. In other words, the policy of Seoul for the prevention of crime & disorder focuses on CCTV installation in public places. Boroughs of Seoul set up many CCTV cameras after 2002(<Table 5>), but as we have mentioned before, CCTV does not work top prevent crime in Seoul.

<Table 5> The Number of CCTV Cameras and Serious Crimes in 25 Boroughs of Seoul

Districts	Number	Districts					Police(B) 2002-2009	Total (A+B)
		2002-2006	2007	2008	2009	Total(A)		
Gangnam	CCTV	372	40	110	80	602	522	1,124
	Crimes	-	6,967	7,610	8,394	22,971		
Gangdong	CCTV	30	10	21	21	82	62	144
	Crimes	-	3,729	4,072	4,078	11,879		
Gangbuk	CCTV	13	15	24	0	52	52	104
	Crimes	-	3,257	3,287	3,226	9,770		
Gangseo	CCTV	32	0	0	14	46	43	89
	Crimes	-	4,779	4,950	4,911	14,640		
Gwanak	CCTV	0	40	0	26	66	64	130
	Crimes	-	5,672	5,249	5,040	15,961		
Gwangjin	CCTV	66	45	54	44	209	208	417
	Crimes	-	4,681	5,264	4,645	14,590		
Guro	CCTV	0	32	0	21	53	53	106
	Crimes	-	4,717	4,686	4,527	13,930		
Geumcheon	CCTV	32	12	18	8	70	112	182
	Crimes	-	3,465	3,653	3,472	10,590		
Nowon	CCTV	42	10	10	10	72	72	144
	Crimes	-	4,796	4,115	3,980	12,891		
Dobong	CCTV	0	0	0	0	0	51	51
	Crimes	-	2,979	3,172	2,837	8,988		
Dongdaemun	CCTV	0	0	0	0	130*	125	255
	Crimes	-	4,276	4,075	4,088	12,439		
Dongjak	CCTV	0	0	0	0	0	67	67
	Crimes	-	3,121	3,247	3,225	9,593		
Mapo	CCTV	0	0	0	138	138	123	261
	Crimes	-	4,003	3,474	3,750	11,227		
Seodaemun	CCTV	20	8	0	45	73	111	184
	Crimes	-	5,939	6,003	6,486	18,428		
Seocho	CCTV	0	0	0	157	157	531	688
	Crimes	-	4,425	3,988	4,222	12,635		
Seongdong	CCTV	16	16	0	110	142	32	174
	Crimes	-	3,038	3,378	3,231	9,647		
Seongbuk	CCTV	9	31	10	14	64	94	158
	Crimes	-	3,781	3,859	3,882	11,522		
Songpa	CCTV	60	28	45	25	158	186	344
	Crimes	-	5,939	5,492	5,573	17,004		

※ Notice: The Police Agency released no details about the number of serious crimes in each district of Seoul.

※ \* means the number of CCTV cannot be dated.

※ \*\* contains the number of Dongdaemun district's CCTV(130 undated cameras)

<Table 6> The Number of Serious Crimes

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total	Number	154,828	147,340	144,263	120,243	112,315	103,487	107,380	106,609	114,423	124,447	132,939	137,725
	The rate of arrest %	76.7	86.4	85.4	82.2	85.5	86.5	87.8	86.1	87.9	74.5	64.3	60.0
Murder	Number	203	169	172	229	218	200	219	220	250	294	258	179
	The rate of arrest %	93.8	95.4	98.0	95.2	98.2	98.5	98.2	100.5	98.4	97.0	93.8	100.0
Robber	Number	1,874	2,134	2,841	1,655	1,478	1,201	1,077	948	1,512	1,029	956	570
	The rate of arrest %	75.3	94.3	104.5	87.3	85.2	92.7	91.2	86.3	94.8	89.4	82.5	96.3
Rape	Number	1,631	1,481	1,584	1,737	1,806	2,071	2,087	2,221	2,393	4,939	5,252	4,908
	The rate of arrest %	89.8	90.6	92.4	92.4	93.8	96.9	96.1	93.7	97.2	92.5	89.1	84.2
Theft	Number	52,237	61,709	57,744	36,240	34,006	29,261	29,977	28,914	37,189	49,387	54,412	61,436
	The rate of arrest %	51.5	80.7	75.2	55.6	63.4	63.6	67.0	60.9	72.0	53.4	36.9	31.2
Violence	Number	98,983	81,847	81,922	80,382	74,807	70,754	74,020	74,306	73,079	68,798	72,061	70,632
	The rate of arrest %	89.6	90.5	91.7	93.8	95.3	95.5	95.8	95.7	95.5	88.0	82.8	83.0

※ Source: [25].

Furthermore, the borough government and Police agency in Seoul spent a great deal of money to install CCTVs for crime prevention in the last few years(<Table 7>).

<Table 7> The Proportion of the Crime Protection Budget Expenditure on CCTVs

	2002	2003	2004	2005	2006	2007	2008	2009	Total
The number of CCTV*	5	40	264	234	323	473	611	1,038	3,118**
5 Serious crimes	147,340	144,263	120,243	112,315	103,487	107,380	106,609	106,222	947,859
Installation budget(A) £	41,683	327,944	4,587,413	1,640,646	1,836,034	3,715,589	3,940,888	6,774,514	22,864,714
Maintenance budget(B) £	-	-	289,292	604,674	794,002	1,093,746	1,508,626	1,485,495	5,775,834
Budget for crime protection(C) £	-	-	13,000,000	13,237,778	3,395,556	3,612,778	2,260,555	0,961,667	76,468,334
A+B /C %	-	-	37.5	17.0	19.6	35.3	44.4	75.4	37.5

※ Source: [25][26].

※ Notice 1: \* means the number of boroughs' CCTV cameras. \*\* includes undated installation of CCTV cameras in Seoul's borough(Dongdaemun-130cameras).

※ Notice 2: The Seoul metropolitan government set up 288 CCTV cameras in 2010, putting the total number of CCTV cameras now found in the Seoul Metropolitan area at 6,850

※ Notice 3: 1 pound(£) = 1,800KW

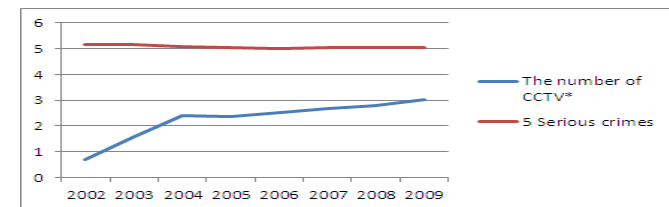
Borough governments and the Police Agency absorbed over three quarter of all budget

expenditure for preventive measures of crime & disorder in Seoul. However, these governments implemented many CCTV systems for this purpose, and so far without satisfactory results. While installation of CCTV cameras may seem to have effected a decline of crime in Seoul, the intensification of patrols and the reinforcement of police officers are also major factors. Moreover, while the number of CCTV cameras has sharply increased in the last few years, crimes have risen slightly in Seoul. Thus, it can be said that the CCTV policy of these governments and Police agencies had little effect on crime prevention in Seoul, even though these governments have spent a great deal of money and effort on CCTVs since 2002. Metropolitan Seoul is consisted of 25boroughs as an autonomy local government, and Gangnam is one of Seoul's boroughs.

This study analyzed the effect of CCTV cameras in Seoul metropolitan areas against 5 serious crimes and disorder between 2001-2008. By the result of statistical analysis, a correlation coefficient between CCTV and serious crimes presented -0.72. The results informs that CCTV affects the prevention and reduction of serious crimes. Proliferation of CCTV cameras is not at the moment greatly affecting the prevention and reduction of crime(<Table 8> and <Fig 2>). In other words, the CCTV cameras have not brought change to the prevention and reduction of crime, as the government expected, but CCTV led to rise the rate of arrest. CCTV cameras did not conform to the purpose(the prevention and reduction of crime), because a criminal in most of the crimes acknowledged the installation of CCTV cameras and avoided the areas. Most of the crimes had originated elsewhere(non-installing CCTV), which called 'displacement effects'. Therefore, the proliferation of CCTV did not affect the prevention and reduction of serious crimes in Seoul.

<Table 8> The Correlation Coefficient between CCTV and Serious Crimes

	The number of CCTV*	5 Serious crimes
The number of CCTV*	1	-0.72
5 Serious crimes	-0.72	1



<Fig 2> The Correlation Graph between CCTV and Serious Crimes

## VI. Conclusion

CCTV sits at the meeting place of the 'old' and the 'new' criminal policy. CCTV also fits easily with the new 'responsibilisation strategies' purposed by the central government, which encourages local government involvement in crime control[27][28]. However, the CCTV diffusion of central and local government is not about the state 'off-loading' the responsibility for crime prevention and reduction[29]. Similarly, while the expansion of CCTV in the public space is driven by 'beyond-the-state' interests of loss prevention and commercial image, these systems can be easily and routinely co-opted for traditional policing.

Proliferation of CCTV affects the prevention and reduction of serious crimes in Seoul Metropolitan areas. In particular, robber, theft and violence definitely decreased since 2004(<Table 6>). Nevertheless, there is no difference murder and rape for same period. A common goal of most CCTV systems has been the prevention and reduction of crime and disorder through deterrence. Therefore, proliferation of CCTV systems definitively led to cut some serious crimes(robber, theft, and violence), but CCTV systems did not affect the other serious crimes such as murder and rape in Seoul. Overall, CCTV can only ever be a tool, it is not a panacea[4].

The UK's experience can teach South Korea a lesson on CCTV policy for protection and the reduction of crime & disorder. The five CCTV myths set out above also raise significant questions for CCTV policy and practice, but CCTV still remains an important and popular policy[30]. Questions about CCTV set an excellent example to other countries. Specifically, the CCTV policy of local government in South Korea was led astray by misleading direction such as from the UK, even though some researchers argue vigorously in support of CCTV policy as the programme of prevention and reducing crime & disorder. More exactly, CCTV policy has had little impact, over against its enormous cost, on the prevention and reduction of crime and disorder.

Therefore, future CCTV schemes should employ high-quality evaluation designs with long follow-up periods and should pay attention to the methodological rigor of the evaluation designs. Moreover, future developments in technology, such as license plate recognition, facial recognition, and algorithmic image interpretation to alert operators to unsanctioned events will also need to be monitored and evaluated, in terms of both their impact on reducing crime and their social control of citizens, particularly those who are already marginalized[28].

Although CCTV cameras failed to achieve expected purpose on the prevention and reduction of crime and disorder in Seoul, these cameras was a little contribution such as criminal arrest and displacement effect of crime. Therefore, it is necessary to switch the

CCTV policy for the prevention and reduction of crime and disorder. This study present few viable policy alternatives. First, CCTV cameras should be used as a complementary with hotspot system. Local government and police agency have to install CCTV cameras in the frequency of high crime area. Second, it is necessary to increase the budget for crime prevention and reduction and reinforce patrol personnel significantly. In other words, the police agency should make a proactive decision to hire more cops to patrol the streets in high-crime areas before installing CCTV. Finally, local government and police agency have to introduce the high-definition CCTV and equipments in high-crime area.

Meanwhile, this study presents few limitations, even though the study has achieved a meaningful results from analysis of CCTV's effect in Seoul metropolitan area. This study focused on the correlation between CCTV and serious crimes without crime displacement effect. Furthermore, the study did not consider the other variables about the prevention and reduction of crime and disorder. Therefore, subsequent research should consider these limitations.

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