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The Diffusion, Regulation and Governance of Closed-Circuit Television in the UK*

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Abstract

This article explores the introduction and diffusion of Closed Circuit Television (CCTV) surveillance systems in public places across the UK. In particular, it seeks to examine the diffusion of CCTV alongside the emergence of regulation and governance structures associated with its provision. By doing so, it is argued here, that the processes of diffusion, regulation and governance are inherently intertwined, that they have evolved together over time, and that we must place CCTV within its institutional and policy setting in order to have a good understanding of the reasons for its diffusion. Initially, it appears that the CCTV policy arena is relatively unregulated. This is surprising given the nature of the technology and its potential to be used as a tool for surveillance and control. However, a closer examination of its diffusion points to a variety of regulatory mechanisms emerging from within the CCTV policy environment and evolving alongside the development of policy networks. It is argued here, that whilst it may appear that regulation has emerged from within these networks, government, despite limited legislative intervention, remains the dominant actor in the policy process through its ability to shape and influence networks.

Introduction

It is generally agreed that in terms of Closed Circuit Television (CCTV) surveillance systems in public places the UK is the most heavily surveyed country in Europe (Fyfe and Bannister, 1996; Graham *et al*, 1996; Norris and Armstrong, 1999; Webster, 1996). But although the rapid introduction of these systems is well documented, there are other notable aspects of their diffusion that are not so well understood, for example, the lack of formal legislative and regulatory frameworks surrounding the technology.

The potential for increased surveillance, monitoring and control of citizens arising from the use of CCTV would suggest there is a need to establish formal rules to govern the use of these systems, as a means to protect citizens from their misuse and to dispel Orwellian fears of a 'big brother'

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surveillance society. It is therefore surprising that the introduction of CCTV has not been accompanied by national legislation or controls. However, in the absence of national control, CCTV systems have developed common technical standards and operational procedures through voluntary self-regulation. The emergence of these new voluntary measures, from within policy networks of service providers, suggests that traditional formal regulation may be unnecessary and that technological control, even for sensitive technologies like CCTV, can be achieved without formal regulatory mechanisms.

This article argues that the *process* of diffusion plays a key part in setting regulatory measures and procedures. This is because the actors and agencies involved in the diffusion of the technology are also involved in shaping the technology's emergent regulatory environment. For CCTV it is evident that the process of diffusion has been dominated by government agencies, agencies that might otherwise have been involved in establishing formal regulatory measures, such as the creation of specific CCTV legislation or the setting up of regulatory bodies. Consequently, the involvement of central government in these processes suggests that formal regulation, in the form of legislation and dedicated regulatory bodies, may be irrelevant in the contemporary polity.

This article presents a case study of the diffusion of CCTV in the UK. It presents a detailed account of the uptake of CCTV and relevant government policy associated with its uptake. However, this article is not just about CCTV technology, it also offers a commentary on the development of governance arrangements in a fast moving technological area. As such, this empirical study offers important insights to the diffusion and regulation processes surrounding all new technologies. Although the article is concerned with the regulation of a new technology it does not attempt to assess the effectiveness of regulation, but the existence of regulatory measures and their nature and type.

The rest of the article is split into five main sections. The next section explores the perceived lack of regulatory control of CCTV and the existence of common standards in CCTV provision. This is followed by a section which establishes the extent of CCTV diffusion in the UK. It highlights the significance of political rhetoric and the Home Office's 'CCTV Initiative' to the emergence of CCTV policy and systems. This is followed by a section which examines the development of regulatory measures governing the use of CCTV systems, and a penultimate section that discusses the development of networks of actors and institutions in the CCTV policy arena and the extent to which these have influenced the provision of CCTV, and its regulation. The final section offers concluding comments.

Common Approaches to Public Space CCTV Systems

Although the intrusive nature and monitoring capability offered by CCTV surveillance systems might suggest a technology that is subject to well defined formal regulation and control, this is not actually the case (Maguire, 1998). Organisations and citizens in the UK are relatively free to install and operate systems in any location, regardless of who is the subject of surveillance. Consequently, we have started to see the emergence of systems in a variety of locations, even

where the surveillance capability extends beyond the camera location into neighbouring properties or public places. Further to this, there are no controls about how systems are used, for example whether there is live continuous monitoring or just the recording of cameras images, or whether operatives conduct 'targeted' surveillance. This has led to a general perception that the technology is unregulated, that anybody can install any system, in any location, for any purpose.

Despite the apparent lack of regulation and control of CCTV provision, standard approaches to the provision and operation of CCTV systems in public places have emerged and are generally agreed. For example, there are common approaches to the *purpose* of systems, the *use* of systems, and the *technological specification* and components of systems. These are summarised in Table 1.

Most public space CCTV systems in the UK are installed with the intention of detecting, reducing and deterring crime, disorder, anti-social and undesirable behaviour, and reducing the fear of crime. Typically the success of these systems is measured by reductions in the levels of crime and the fear of crime, and increased detection rates. In this respect these systems have a common purpose and are clearly seen as tools to meet crime and disorder and community safety objectives.

Approach	Features
The purpose of systems	Usually to detect, deter and reduce crime, disorder, anti-social and undesirable behaviour.
The use of systems	Usually governed by voluntary code of practice, which states: who can control the cameras, who has access to footage, who can enter control room (etc).
The technical components and specification of systems	Systems usually consist of cameras, networked by dedicated infrastructure to a monitoring centre including monitoring, recording and storage equipment. The specification of cameras lenses and images is agreed by industry standards.

Table 1: *Common Approaches to Public Space CCTV Systems in the UK*

There are also common approaches to the way surveillance systems are used. For example, there are agreed working practices about how the operators should operate the cameras, about who has access to the control room and CCTV footage, about the location of signs alerting citizens to the presence of cameras, and about when the police should be alerted to an observed incident. These ways of working have been codified in voluntary codes of practice (Bulos and Sarno, 1996) and training programmes, with best practice disseminated by various interest groups, such as the Local Government Information Unit (1994, 1996) and the CCTV Users Group (1999).

CCTV systems normally conform to agreed industry configurations (BSI, 1999; BSIA, 1999), most incorporate a series of cameras networked via a dedicated infrastructure to a control room containing monitoring, recording and storage equipment. Common specifications have emerged covering the technological capability of the camera lenses, the capacity of the transmission

infrastructure, and the resolution and integrity of the images captured. These technical specifications are now specified as minimum requirements for CCTV images, if they are to be used as evidence in a UK court of law (BSI, 1999).

Whilst the spread of CCTV across the UK initially appears to be unregulated it is apparent that common approaches to the installation and use of systems have emerged and in effect regulate the technology. Of interest in this article is how standardised approaches have emerged and evolved over time, and the processes by which they have been promoted and agreed. Here it is argued that the *process* by which regulatory mechanisms emerge is significant in explaining why certain types of regulation exist and why others do not. For a new technology like CCTV, the emergence of regulation is closely related to the process of technological diffusion. This is because as the technology diffuses across society, so networks of interested parties, including both the surveyors and the surveyed, emerge and are active in shaping the uptake and regulation of the technology. In doing so these 'policy networks' (Marsh and Rhodes, 1992; Rhodes, 1997, 1996) are instrumental in shaping the regulatory environment.

The Diffusion of CCTV Systems

The recent proliferation of CCTV cameras is usually the starting point for most academic research on CCTV. Most published work focuses on aspects of control and power, with many authors critical of CCTV, seeing it as symbolic of a developing 'surveillance society' driven by advances in new information and communication technologies. Typically, the focus is either; comparisons with the Panopticon, as developed by Bentham and Foucault (Norris and Armstrong, 1999; Fyfe and Bannister, 1996; Lyon, 1994; Reeve, 1998; Crang, 1996), whether CCTV is effective as a crime reduction tool (Armitage, 2002; Ditton *et al*, 1999; Welsh and Farrington, 2003), or the processes by which CCTV is used as a surveillance and monitoring tool (Norris and Armstrong, 1999; Norris, Moran and Armstrong, 1998; STOA, 1998). Little is known, or published, about the political and policy processes underpinning the diffusion of these cameras, or the ways in which the regulatory measures associated with this technology have emerged. This article attempts to redress this imbalance.

To examine the link between the processes of diffusion, and the emergence of regulation it has to be established that CCTV has diffused sufficiently to be worthy of investigation. This can be achieved by reviewing current knowledge about the diffusion of CCTV and relevant government policy and rhetoric. Presenting CCTV in this way is useful because it identifies those agencies involved in developing CCTV policy and in implementing and operating systems.

'CCTV' is a widely used generic term to denote the use of video surveillance cameras and systems in public places where cameras are linked by dedicated telecommunications infrastructure to a control room containing monitoring and storage equipment. Of particular interest here are those systems that are located in places where the public have unhindered access, and where they are operated, promoted and financed by government agencies, including the democratic institutions of local governance. These 'public' systems are distinct from the multitude of 'private' systems installed in banks, shops, garages and other 'private' locations,

because they are installed and operated by government agencies as a public service for the benefit of the general public.

An interesting aspect of the CCTV phenomena is that despite its recent rapid diffusion the technology is itself not new. The different components of the technology, the cameras, video recorders, display monitors, and network transmission equipment, are well established and the convergence of these technologies into integrated systems is a relatively recent occurrence. Also, although the systems have the generic titles of 'CCTV' or 'video surveillance camera' systems they can broadly be categorised into three types of system, those that are proactive, those that are reactive, and those that are non-active. The key differences between each of these types are provided in Table 2.

Type	Features
Proactive	Live surveillance from a dedicated control room with recording, storage and playback facilities. Allows for an immediate response to incidents as they occur.
Reactive	Recording, storage and playback facilities. Provides access to footage of incidents after the event has occurred.
Non-active	No monitoring, storage or playback facilities. Acts as a visual deterrent by using fake 'cameras' to create the illusion of surveillance.

Table 2: ***A Typology of CCTV Systems***

This typology is a hierarchy of sophistication. The least sophisticated 'systems' are non-active systems that act as a visual deterrent through the physical presence of passive cameras. They are non-active because there is no monitoring or recording capability. Instead they create the illusion of surveillance because citizens feel like they are being watched when actually they are not. The reactive type links cameras to recording, storage and playback facilities allowing access to footage after an event or incident has occurred. With this type there is no live surveillance but they are seen as particularly for identifying the perpetrators of criminal acts and in providing evidence for prosecutions. The most sophisticated type of CCTV system are those that include an integrated dedicated surveillance and communications control centre. These centres are typically staffed by dedicated local authority or police operatives, have direct communications links with the local police force, and allow for real-time continuous surveillance. They are pro-active in that they allow an immediate response to events as they occur. Whilst all three types of system can be found in the UK most are typically proactive or reactive in technical configuration.

There are two observable patterns in the way that these systems have diffused. Firstly, they have diffused rapidly over a very short period of time, and secondly they have dispersed into a range of public places. So, whilst it is commonly accepted that CCTV has become a central part of daily life in towns and cities (Bulos and Sarno, 1994; Fyfe and Bannister 1994, Graham, 1996; Graham *et al*, 1996; Norris and Armstrong, 1999; Webster, 1996) it is also the case that diffusion has spread into schools, libraries, hospitals, health centres, parks, sports and leisure centres, railway and bus stations, and car parks (Webster, 2004, 1999a, 1996; Webster and Hood, 2001).

The number of CCTV systems currently operating in public places across the UK is open to debate. At the recent 'CCTV and Social Control: The Politics and Practice of Video Surveillance' conference at the University of Sheffield Clive Norris estimated that there were now over five million cameras in public places across the UK (Norris, 2004). However, the two most reliable sources of information about the extent of CCTV diffusion, the Home Office's 'CCTV Initiative'[2] (previously the 'CCTV Challenge Competition') (summarised in Webster, 1998a) and the 'First National Survey of CCTV Systems' (Webster, 1999a), both point to far fewer cameras and systems. Both sets of data are slightly dated, but to date they present the only detailed sources of information about the location, scope and purpose of existing systems. More recent data, collected as part of the 'Urbaneye'[3] research project, maps the location of CCTV cameras in seven cities across Europe. In London, for example, it is estimated that there are approximately 500,000 public space cameras (McCahil and Norris, 2002).

The 'national survey', conducted in 1999, provided the first, and to date only, national snapshot of all existing and planned systems installed by local authorities in the UK (Webster, 2004, 1999a). Data from the national survey provides insights into the extent and location of local authority CCTV uptake. This research shows that 86 per cent of local authorities had installed CCTV systems in public places and that 64 per cent intended to extend their existing systems.

The survey also provided detailed data on the location of existing and planned CCTV systems. In 1999, 78 per cent of local authorities had installed CCTV into town and city centres and 61 per cent into public car parks. Additionally, between 20 and 30 per cent of authorities had installed CCTV into recreation facilities, sports and leisure facilities, residential areas and schools and libraries. Furthermore, approximately 10 per cent of local authorities were planning to introduce CCTV into residential areas, recreational areas and schools and libraries. In total, the national survey estimated that there were approximately 1,300 surveillance systems incorporating some 21,000 cameras at a total capital cost of £180 million.

The CCTV Challenge Competition and CCTV Initiative

The main source of funding for CCTV in the UK has been the Home Office's 'CCTV Challenge Competition', which distributed funds annually on a competitive basis between 1994 and 1999, and its replacement, the 'CCTV Initiative'. Until 1999 the Challenge Competition distributed over £50 million to 700 new systems across the UK (Webster, 1998a). This was replaced in 1999 by the CCTV Initiative which was part of the new Crime Reduction Programme managed jointly by the Home Office, the Department of Environment, Transport and the Regions and the National Assembly for Wales. A summary of the initiative is presented at Table 3. Under the CCTV Initiative £153 million was made available to local 'Crime and Disorder Partnerships' in England and Wales to combat crime and disorder and to support the regeneration of local estates with high crime rates. In contrast to the Challenge Competitions the CCTV Initiative was not 'competitive' and instead offered a rolling programme of funding based on 'need'.

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[2] Details of the CCTV Initiative can be found at: http://www.crimereduction.gov.uk/cctvminisite1.htm

[3] Details of the Urbaneye research project can be found at: http://www.urbaneye.net/index.html

Features:	**Tackling crime and reducing the fear of crime in:**
- Defined applications process - Limited funds (£153 million) - Deadline for applications (December 2001) - Bid for up to 100% of capital costs - Running costs ineligible	- Housing estates - Car parks - Town and city centres - Crime 'hotspots' - Transport facilities - Rural areas - Small community shopping areas
Potential systems must demonstrate they:	**Bids for funds need to outline:**
- Are part of a partnership - Are part of a broader crime reduction strategy - Have set crime targets - Will evaluate performance against targets - Have a code of practice - Have public support	- Long term funding - Mechanisms for data collection - Links with other crime reduction initiatives - Consultation procedures - Operational requirements - Technical requirements - A project implementation timetable

Table 3: ***The Home Office CCTV Initiative 1999-2002***
(Source: adapted from Home Office, 2000)

The application prospectus of the CCTV Initiative (Home Office, 2000) is explicit in stating that the Home Office would support new systems in residential areas, community shopping areas, rural areas, in other potential 'hot-spots' including, community facilities, schools, hospitals and railway and bus stations, and car parks. The initiative funded up to one hundred per cent of the capital costs of CCTV, including cameras, lighting and other fixtures, transmission infrastructures, command and control systems, IT systems, and data storage and retrieval systems. Running costs were not eligible for funding.

Applications to the initiative had to be from Crime and Disorder Partnerships and be consistent with the local crime and disorder 'Audits' established under the Crime and Disorder Act 1998. The new systems were to be operated by the local authority and police force, in partnership. Potential bidders to the initiative had to demonstrate; what their systems were designed to achieve, how effectiveness would be measured, that the system had the support of the public, that long term funding had been identified, and that the technical and operational requirements of the system had been established. To support the initiative the Home Office produced a series of guidance documents setting out the types of bid and system that was likely to be awarded funding (Home Office, 2000). In doing so the Home Office was effectively prescribing the future type and location of new systems without creating formal regulation or legislation.

Public support and political rhetoric

Although the CCTV Challenge Competition and Initiative have been responsible for providing the funds for the rapid diffusion of CCTV, these systems could not have been installed without the support of the general public, as it is the general public that are the subject of surveillance. Despite the intrusive nature of CCTV surveillance the public have been very supportive of the technology and have encouraged the increased surveillance of their activities with the accepted view being 'if you've got nothing to hide then you've got nothing to fear' (Home Office 1994). Public support for CCTV can be seen in public perception surveys, conducted by the Home

Office (Honess and Charman, 1992; Brown, 1995), independent academics (Bennet and Gelsthorpe, 1996; Ditton, 1998), and for CCTV operators (see for example Crockard and Jenkins, 1998; Ross and Hood, 1998). All show that the majority of those surveyed support the introduction of CCTV and perceive CCTV to be a highly effective tool in reducing crime and the fear of crime.

Key to the public's support for CCTV is their belief that the cameras work. The public have not challenged the idea that the systems are effective and instead believe that crime reduction and prevention is inevitable following their introduction. This point is reinforced by Norris and Armstrong who observe "there is a common assumption: (that) CCTV actually produces the effects claimed for it…an unquestioning belief in the power of the technology" (1999: 9). This belief in the technology is despite legitimate concerns about the efficacy of systems and the extent of the link between CCTV use and crime reduction (Ditton *et al*, 1999; Short and Ditton, 1995, 1996; Welsh and Farrington, 2003).

The explanation for the public's belief in the power of the technology lies in the way that politicians and policy-makers have promoted CCTV as a 'state-of-the-art' tool in the 'fight against crime'. CCTV has become a core element of law and order policy, for both government and opposition parties, and politicians have been keen to promote the virtues of the technology. Consequently, the view that crime reduction follows CCTV provision has been successfully disseminated across society and has filtered down into the general consciousness of the population.

Although the overwhelming support for CCTV is unquestionable it is noticeable how the debate on the implications of using CCTV is limited (Webster, 1996; 1999b). Political rhetoric reinforcing the view that CCTV 'works' has placed it high on the law and order agenda and has tended to focus public debate on what can be achieved with the technology. Consequently, public discourse has concentrated on the success and benefits of the cameras and not on the more complex issues associated with extending the states surveillance capacity (Webster, 1999b). Absent from public debate is discussion about the appropriate use of CCTV, the implications of using CCTV in public places, and whether the technology should be regulated (Webster, 1998b). Questions about whether CCTV actually reduces crime, whether displacement occurs, whether CCTV is a threat to civil liberties, and whether there should be specific legislation governing the use of CCTV, are usually not asked.

Three CCTV Eras: Emerging Patterns of Diffusion

Having established that CCTV has diffused widely across UK public places and that this diffusion has been encouraged by government policy and rhetoric, it is possible to explain the diffusion in more detail, and to explore how, as these systems have diffused, so regulation has emerged. In addition to the speed of uptake there are a number of other diffusion patterns that can be observed. Previously I have identified the emergence of three particular trends in diffusion, the migration from private to public places, from metropolitan to other locations, and from simple to complex systems (Webster, 1998a). The importance of these trends is that they

signify an evolution over time as the technology develops and diffuses in society. These trends can be captured by three broad evolutionary stages or 'eras', the eras of innovation, uptake and sophistication. In these three eras it is possible to identify not just the evolution of the technology but also of the policy networks and regulatory systems that surround the technology. Table 4 offers a summary of each of the three eras.

The first era, 'the era of innovation', in the early to mid 1990's, captures the initial diffusion of CCTV systems in selected town and city centres and car parks. In this period there was no formal regulation governing the use of CCTV and limited technical information about the configuration of systems. Furthermore, to encourage the diffusion of CCTV central government removed the requirement for planning permission for installing CCTV equipment in public places and on buildings.

Era	Diffusion	Regulation
Era of Innovation Early to mid 1990s	**Initial applications** Located in town and city centres, and car parks	**Unregulated** No CCTV specific legislation No codes of practice Limited awareness of CCTV Few technical standards **Weak policy networks**
Era of Uptake Mid to late 1990s	**Widespread uptake** Located in a variety of public places	**Voluntary self-regulation** Self defined codes of practice Pro CCTV discourse Limited debate about impacts of CCTV Home Office funding established Formation of partnerships between police and local authorities **Policy networks emerging**
Era of Sophistication Late 1990's onwards	**Continued uptake** Computerisation of systems Systems integration and expansion Further innovations	**Co-regulation** Legislation (although not CCTV specific) Code of practice entrenched in Home Office funding mechanisms Agreed purpose / working practices / technical standards of systems Pro CCTV discourse reinforced CCTV provision via partnerships **Tightly knit policy networks**

Table 4: ***Three CCTV Eras: Emerging Patterns of Diffusion and Regulation***

The introduction of CCTV was seen as an attempt to find innovative solutions, based on new technology, to assist in the 'fight against crime'. In the innovative era CCTV systems installed by a few pioneer local authorities, including, Wolverhampton Council, Kings Lynn Council and Chelmsford Borough Council, varied in their technical capability, use and system type.

During this era little was known about how to implement and use these systems as few technical standards or operational guides existed. As a result the quality of images and working practices of systems varied. Some systems incorporated numerous powerful Pan Tilt and Zoom (PTZ) cameras and dedicated recording and storage capabilities, while others consisted of static cameras, with poor images, and no capacity to record or store images. Limited awareness about the technology extended to the complete absence of formal regulatory control concerning how, when or where these systems could be used.

Following this era is the 'era of uptake' in the mid to late 1990's. In this era there is widespread diffusion of technically independent CCTV systems in public places. Features of this era include voluntary self-regulation, the availability of central government funding, and greater awareness of and discourse about the technology. In this era, policy networks start to form around the technology consisting of service providers, the police, politicians and policy-makers. These networks become responsible for both operating new systems and for disseminating a positive message about the use and impact of the technology.

A feature of this period is the 'mobilisation of bias' in favour of CCTV. Politicians, in both central and local government, play an important role in disseminating a pro-CCTV message and in marginalising dissenting voices. To back-up the claims of politicians, local authorities and police forces operating new systems highlighted their effectiveness by attributing falling levels of crime to the use of the new technology. For example, in Chelmsford recorded crime fell by 20 per cent after the introduction of the town centre CCTV system (Crockard and Jenkins, 1998). Government support for CCTV in this era goes beyond political rhetoric to include policy advice on the citing and operation of systems (Home Office, 1994) and the availability of funds through the CCTV Challenge Competition. In the absence of formal regulation voluntary self-regulation emerges whereby CCTV operators develop their own codes of practice covering how the systems should be used. Areas typically covered in these codes include, the process of selecting surveillance 'targets', procedures for handling tapes, and action to be taken following observation of an incident. These codes are guides for practice and are not legally enforceable. They also varied considerable in scope and quality (Bulos and Sarno, 1996).

The adoption of rules in a codified form signals the growing significance of managing systems in this era. The introduction of this new local authority service area involves resources and activities that have to be accounted for. Consequently, service providers start to monitor, audit and control how the systems are used. In particular, evidence of reductions in crime, increased arrest rates and cost savings in terms of vandalism repairs. Additionally audit procedures are put in place to verify the validity of recorded images, to ensure operatives do not engage in unnecessary or inappropriate surveillance, and to confirm the view that systems are operated in the public interest.

Finally, from the late 1990's onwards is the 'era of sophistication' in which uptake continues alongside the integration, expansion and computerisation of systems (Norris and Armstrong, 1999; Webster, 1996). Notably the introduction of computerised 'recognition' systems make CCTV systems more 'intelligent' and less dependent upon human operation. Although this aspect of the technology is still being developed, the most sophisticated systems are being used

to recognise number-plates, individuals and movement, and can alert operatives to known criminals, and deviant or suspicious behaviour. Allied to the use of computers is the greater networking of systems. Existing systems have expanded, to include more cameras. For example, the systems in Chelmsford, Kings Lynn and Wolverhampton have access to over 250 cameras. Also in this era systems are integrated, so that through networked infrastructure a single dedicated control room can monitor and operate numerous cameras and systems from one location. Typically, these control centres are staffed by 'trained' operatives, have banks of monitors, permanent recording and storage capacity, a direct line to the local police command and control centre, and are usually located in secure facility.

Just as the technology becomes more sophisticated, so do the networks and the regulatory framework. Greater familiarity with the technology has resulted in CCTV provision in busy public places becomes the norm and not the exception. In this era the operation of CCTV systems is now well supported, with advice widely available from central government (the Home Office), user groups, such as the CCTV Users Group, and other local government advisory bodies, such as the Local Government Information Unit. Codes of practice have become widespread and are a formal requirement for applications to the CCTV Initiative. Non-specific legislation, such as the Data Protection Act 1998, now exists and is applicable to CCTV. Regulation in this era is characterised as 'co-regulation' as regulatory measures applied to CCTV are being developed by central government *and* CCTV operators together.

Breaking down the diffusion of CCTV into three eras highlights a time lag, between the initial use of the technology and the development of regulation. The eras also demonstrate that the emergence of formalised regulation mirrors the gradual development of networks. In the era of innovation there were few systems, no policy networks and very little regulation or legislation. But as we move through the eras so the policy networks become greater in number, more established, and regulation and legislation emerges.

Three CCTV Eras: Emerging Patterns of Regulation

The three eras of diffusion show the evolution of systems, regulation and networks of governance over time. They show that as the eras have progressed, where the focus of diffusion has moved, from town and city centres to other public areas, the nature of regulation has also evolved, from practically no regulation in the era of innovation, to voluntary self-regulation in the era of uptake, and most recently co-regulation in the era of sophistication.

The term 'regulation' is used to convey the variety of different mechanisms and procedures used to control and moderate activity, by those with the authority and legitimacy to do so (Baldwin and Cave, 1999). The regulatory mechanisms that now exist in the CCTV policy arena have emerged as the eras have progressed and have emerged from within the developing policy networks. The current regulatory mechanisms comprising of, non-specific CCTV legislation, codes of practice and technical standards, are the result of negotiation between the actors in the policy network, including central and local government, the police and numerous interest groups. In this respect regulatory mechanisms have not been imposed on operators by central

government, but have been developed by central government and operators together.

The term 'co-regulation' in the era of sophistication refers to the development of regulatory measures involving both those responsible for policy-making and those responsible for service delivery. Co-regulation implies a development of self-regulation. It implies the coexistence of traditional regulation and self-regulation in such a way that responsibilities about the provision of the technology are shared between the regulating and providing agencies (Gunningham and Rees, 1997; Just and Latzer, 2004; Marsden, 2000). Co-regulation therefore implies a new set of relationships in the policy arena, between government, industry and service providers, as all 'stakeholders' are involved in forming and implementing the rules that are to be applied as regulation. Co-regulation also allows for the possibility of formal and legislative regulatory measures. However, instead of formal measures being imposed on service providers it emerges from within the policy environment via negotiation with interested parties in the policy network.

In terms of formal regulation it is apparent that the proliferation of CCTV systems has not been accompanied by the enactment of new CCTV specific legislation (Norris and Armstrong, 1999; Maguire, 1998), the creation of a CCTV regulatory agency, and unlike many other European Union countries there is no legal regulation governing the use of photography in public places (Maguire, 1998). However, formal regulation now exists in the form of non-specific legislation. This legislation is non-specific, because it applies to CCTV despite not being specifically about CCTV.

Since 1998 the provision of CCTV has been subject to three separate pieces of legislation, the Data Protection Act 1998, the Human Rights Act 1998 and the Crime and Disorder Act 1998. These are summarised in Table 5 (overleaf). Under the Data Protection Act 1998 information systems that process data must be notified to the Information Commissioner, including CCTV systems. When registering a system the user must state what the purpose of a system is, and once registered compliance with a number of legally enforceable principles is required, including adoption of a suitable code of practice.

Local authorities and police forces are also bound by Article Eight of the Human Rights Act 1998 which demands that everyone has the right to respect for his or her own private and family life, his house and his correspondence, and that there shall be no interference with this right except when necessary in the interests of national security or public safety.

The purpose of the Crime and Disorder Act 1998 is primarily to make local authorities and local police forces to work together in devising strategies to combat crime and disorder in their areas. It requires the 'responsible authorities' to devise a Crime and Disorder Strategy, conduct a local Crime Audit, and form a Community Safety Partnership. It is through these partnerships that bids for funds from the CCTV Initiative can be made.

Together these Acts regulate the way CCTV can be used by public agencies. They are not CCTV specific because they apply to all technologies, but are clearly very relevant to the provision of CCTV. Potentially these Acts offer some degree of control over how systems are used and some protection to citizens from their possible misuse, whilst at the same time affording

service providers a degree of flexibility under the law.

Legislation	Requirements
The Data Protection Act 1998	Service providers are obliged to: • Notify the existence of systems • Comply with 'data protection principles' which govern how visual data is handled • Adhere to the Data Protection Commissioners 'Code of Practice' (2000)
The Human Rights Act 1998	Article Eight of the Human Rights Act requires public agencies to respect individuals' right to privacy.
The Crime and Disorder Act 1998	Requires local authorities and police forces to: • Create crime and disorder partnerships • Create crime and disorder strategies • Consult communities • Share information

Table 5: ***CCTV: The Legislative Position***

In addition to non-specific legislation a range of formal sources of best practice exist. These are summarised in Table 6 (overleaf), and include advice on technical, managerial and operational issues. Most systems have adopted informal codes of conduct that set out how their systems will be used. Bulos and Sarno (1996) found that these codes varied in style, content and length, and that there was a dire need for a national standard. This is provided by the 'legally enforceable' Information Commissioners 'CCTV Code of Practice' (Data Protection Commissioner, 2000) which states; that CCTV systems erect appropriate signage, that the data/images captured should be used for the original purpose intended for the system, that cameras be positioned to ensure they avoid capturing images that are irrelevant or intrusive, and that individuals have a right to a copy of any personal data held about them. Other codes of practice include those published by the Local Government Information Unit (1996) and the CCTV Users Group (1999).

A number of other interested groups have published material to encourage best practice in the design, provision and operation of CCTV by public agencies in public places. This material offers guidance on technical standards, operating procedures, managerial arrangements, legal requirements and how to ensure effectiveness and value for money. Organisations active in encouraging best practice include, the British Standards Institute, the Police Scientific Development Branch, the Local Government Information Unit and the CCTV Users Group.

Source of Best Practice	Covers
Data Protection Commissioners Framework Code of Practice (2000)	Sets out operating principles about the handling of visual data and procedures for complaint and redress
Police Scientific Development Branch (PSDB) guidance documents	Advice on location and configuration of technical apparatus
British Standards Institute BSI 7958/1999 guidance documents (1999)	Administrative procedures for the management of systems
Home Office 'CCTV Initiative' Application Prospectus (Home Office, 2000)	Funding guidance for the 'CCTV Initiative' (see Table 5)
CCTV User Group 'Operations Model Code of Practice and Procedural Manual' (1999)	Industry developed working practices
Local Government Information Unit Code of Practice (1996)	Model code from local authorities
Home Office Research Group Publications (e.g. Brown 1995; Home Office, 1994; Honess and Charman, 1992)	Illustrates the effectiveness of CCTV for potential users

Table 6. CCTV Networks: Sources of Best Practice

A notable feature of the regulatory environment surrounding CCTV is the extent to which the state 'machine' co-ordinates provision and use. Thus not only is the state involved in drawing up legislation, but also in generating sources of best practice guidance and advice. The Home Office is especially prominent and is responsible for a number of publications directly and indirectly via the Police Scientific Research Branch and the Crime Reduction Programme.

In a policy environment characterised by a patchwork of few legal rules, numerous national sources of best practice, and widespread voluntary self-regulation, government activity is focused on steering or co-ordinating as opposed to directly regulating, hence the term co-regulation. The distinction between co-ordination and regulation (Holznagel and Werle, 2002; Schmidt and Werle, 1998) has important implications for governance as it highlights the extent and nature of state intervention. Co-ordination, it is argued, takes place through negotiated agreements, while regulation implies political imposition by a legitimate authority. In the case of CCTV the development of formal regulation, centrally determined written codes, shaping instruments and technical specifications, has occurred alongside the development of professional networks and the spread of knowledge about the technology. Whilst such processes may be less formal they are equally important.

From the discussion presented here it is clear the emergence of new CCTV systems has coincided with the emergence of new policy networks to support the diffusion of the technology. Because CCTV is a new technology and a new local authority service area, these networks and the relationships embodied within them, are themselves new. The speed of network development and technological uptake suggests a highly co-ordinated, stable, influential, self-governing network. This argument is reinforced by the status of regulation, which appears to be the result of a negotiated order, both for legislation and codes of practice. Moreover, the degree of self-regulating control suggests a limited role for government, as there is no need for it to formalise regulation in legislation.

Networks of Governance

Governance approaches to understanding state and public sector activity point to the formation and significance of 'networks' as the primary mechanism through which policies are made and services delivered (Kikert *et al*, 1997; Kooiman, 1993; Newman 2001; Marsh and Rhodes, 1992; Pierre and Peters, 2000; Rhodes, 1997, 1996). And in the case of CCTV, it is argued here, that these networks are instrumental to the processes of diffusion and regulation. By definition a network consists of a number of linked components, including actors, institutions, rules, norms, etc., each fulfilling a different role in the networking process. In the CCTV policy environment a number of 'actors' and 'institutions' are engaged in networked activity. They include national and local politicians, central government departments, local authorities, police forces, the media, the CCTV industry and other interest groups. As part of the network all these actors have a shared interest in the provision of CCTV.

In the CCTV policy arena there is a demarcation of organisations involved in the formation of policy and those engaged in service provision. Setting the policy agenta takes place at the national level and involves government departments and Westminster politicians. Here we see the development of policy statements and documents (Home Office, 1994), the provision of funding, such as the Home Office's CCTV Initiative, and rhetoric designed to generate support for the policy.

At the service delivery level different aspects of the network are active. Typically CCTV is provided and operated by local authorities, local police forces, or through partnerships involving local authorities and police forces. Other partners can include, local community and residents bodies, citizens groups, Health Boards, the Crown Prosecution Service, the local Chamber of Commerce, local businesses and other public agencies. Typically these partnerships are responsible for the operation, maintenance and funding of individual systems, consulting citizens, and evaluating systems effectiveness.

Since 1998 the use of partnerships for providing CCTV has been entrenched in the Crime and Disorder Act 1998 and the Home Office CCTV Initiative (see Tables 4 and 6). The Crime and Disorder Act 1998 made the formation of a local Community Safety partnership, including the local authority and police force as members, a statutory obligation. These partnerships are obliged to create a local Crime and Disorder Strategy and to consider crime reduction initiatives, such as CCTV. Under the CCTV Initiative funding for new systems was only awarded to applications from partnerships, though this requirement did not preclude local authorities or police forces from acting alone.

While it is possible to separate the actors responsible for policy-making from those responsible for service delivery, this presents a simplistic view of the policy arena as it plays down the extent to which a network exists and the extent to which different elements of the network are dependent upon each other (Kikert *et al*, 1997; Rhodes, 1997). For example, CCTV service providers wishing to install CCTV are dependent upon central government for creating a policy environment amenable to CCTV diffusion. This involves presenting CCTV technology in a positive way, demonstrating that it is effective, creating demand for the technology, and by

making funding available. Equally, the policy-making part of the network is dependent on the service delivery organisations to provide the service. CCTV is delivered locally and therefore requires the involvement of local agencies, especially local authorities and police forces. The successful diffusion of CCTV is therefore dependent on different elements of the network working together. These elements are bound together by shared goals and values, with the key goal being the diffusion and operation of the technology, so as to improve society by reducing crime and the fear of crime. The key value shared by members of the network is that the application of the technology will make a difference in achieving these goals.

By revisiting the different 'eras of diffusion' it is possible to demonstrate how networked activity has developed over time and how these shared values and goals have emerged. In the era of innovation CCTV technology was an untested and unknown technology and unsurprisingly there were only very weak policy networks and no regulating forces. Local authorities in the UK have not traditionally engaged in the widespread visual surveillance of local citizens, so there were no traditions or established groups to support the introduction of the technology.

However, as the technology became 'recognised' as a useful tool for crime reduction, and supported by political discourse, networks started to form around the technology. As there is no history of regulation in this area the fledgling networks regulate themselves. The emergence of voluntary self-regulation is critical to the diffusion of the technology as it shows that the developing networks are aware of the sensitivities of using technology to survey the general public. Self-regulation in this instance is partly to allay the public's fears about the technology being misused.

As we move through the eras and the technology diffuses more widely, so the networks become more influential, and they are able to work with government in the formation of relevant regulation and legislation, so co-regulation emerges. If this account is accurate then the critical period for the diffusion of CCTV is the period between the introduction of the first innovative systems and the more gradual uptake. This is because in this period CCTV has to become recognised as a 'successful' and 'useful' tool that can be implemented without threatening individual's rights to privacy and freedom of movement. In this period, between the eras of innovation and uptake, language and discourse are critical, as only through the general acknowledgement of CCTV as positive valuable technology will its diffusion be accepted.

The development of networks around the provision of CCTV are creating new relationships between the various actors in the policy process, while at the same time being embedded in existing organisational activity. The emergence of regulatory mechanisms from within these networks demonstrates the extent to which networks are accepted by government, and have become part of broader governance arrangements (Newman, 2001). These networks should therefore be seen as flexible, multi-actor, multi-organisation, steering and co-ordination arrangements that have formed around the technology in pursuit of a shared vision – the diffusion of CCTV technology. They are responsible not just for the provision of policy and service, but also for creating the necessary conditions for policy and service to succeed, and for networks to flourish. In the case of CCTV these networks are critical for the successful diffusion of the technology.

Governance: Shaping the Process

The extent to which networks are self-governing entities or are controlled by government is a key point debated by governance theorists (Kooiman, 1993; Pierre and Peters, 2000; Newman, 2001). So while these networks shape the provision and regulation of CCTV it is also apparent that they themselves are being influenced and shaped by central government. Although the emergence of partnerships and co-regulation in the CCTV policy arena might suggest the growth of an independent self-governing network, these developments have been carefully steered and co-ordinated by key central government institutions. The evolving network relationships have been shaped by powerful institutional interests to secure the diffusion of the technology and to ensure that the diffusion of the technology and associated networks are in the interests of the state.

Processes and mechanisms used to shape the formation of networks and the subsequent diffusion of CCTV include, creating governance structures necessary for delivering the technology, shaping discourse via political rhetoric to create a common language in favour of the technology, co-ordinating network activity by providing guidance, advice, support and funding, shaping the diffusion of systems through selective funding, controlling use through the application of legislation, steering working practices by publishing codes of best practice, removing certain regulatory constraints, such as planning permission, and ensuring compliance with best practice by enabling networks to develop self-governing principles.

The Home Office and the Home Office CCTV Initiative have been instrumental driving forces behind the provision of CCTV and in steering and influencing the diffusion process. The initiative is the main funding mechanism for CCTV and has been utilised as an important tool in shaping network development and technological diffusion. It governs the purpose, use and location of new systems, it creates new relationships by requiring the formation of partnerships, and is the source of much positive rhetoric about the usefulness and effectiveness of CCTV. Without the CCTV Initiative, and its forerunner the CCTV Challenge Competition, the widespread uptake of CCTV would not have been possible.

The use of such a mechanism, stimulating demand for CCTV, and allied to political rhetoric, has encouraged the formation of new networks responsible for delivering CCTV. The extend to which the policy process has been 'managed' or 'manipulated' by central government is evident by the way in which those with alternative or dissenting views about the technology have been marginalised within policy networks (Webster, 1999b). The ease with which concerns about the technology have been brushed aside pertinently highlights the role of government in creating an environment malleable to the diffusion of the technology. This has been achieved primarily through the shaping and control of discourse and networks.

Conclusions

This article takes a policy perspective to understanding the diffusion of CCTV systems in public places across the UK. It charts the uptake of CCTV and the emergence of regulatory measures

associated with its use. It argues that in a relatively short space of time CCTV has diffused rapidly into a wide range of local authority settings and that as the technology has diffused it has moved from a period of virtually no regulation to a period of co-regulation. It also argues that a key feature of the CCTV policy arena is the emergence of policy networks supporting the technology and shaping its regulation.

The pivotal point of this article is that to fully understand the diffusion and regulation of CCTV the *processes* of diffusion and regulation must be accounted for. This involves examining the institutional setting of the technology and the governance arrangements responsible for creating the conditions necessary for successful diffusion. In the case of CCTV it is apparent that although CCTV is delivered and regulated through more decentralised governance mechanisms, and in particular by self-regulating local authorities, the ability of central government to control the policy process has not diminished with the rise of the networked polity. Instead, central government remains the dominant actor in policy-making and service delivery through its ability to govern and shape networks. And by doing so it retains the ability to achieve desired policy and political outcomes, in this instance the provision of CCTV.

The widespread diffusion of CCTV systems has been co-ordinated by central government by a variety of formal and informal shaping mechanisms. These include the shaping of discourse through political rhetoric, the encouragement of self-governing networks, and the control of funding programs. These activities highlight the role played by central government. Regulation is traditionally the preserve of the state and of law, and for technologies like CCTV, with the potential to be used for controlling citizens, there can be no doubt that some form of regulation is necessary. And in the contemporary polity it is apparent that the emerging regulatory framework combines formal regulation with the co-ordination of self-regulating networks of governance.

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