

**On the Threshold to Urban Panopticon?
Analysing the Employment of CCTV in European
Cities and Assessing its Social and Political Impacts**



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Summary

1. Video surveillance (Closed circuit television – CCTV) is a multifunctional technology to be found in almost every sphere of life for various uses, but its dominant use is the management of risks: traffic jams, fire, accidents and crime. Given the social control potential of CCTV painted in dystopic visions by warning voices it may be described as “risk technology”¹ – created to tackle risks being a risk itself.
2. Although CCTV has been present in public space since its inception its public presence exploded not only in the UK but in many European countries since the 1990s by utilising cameras against street crime. By this development CCTV as instrument of social control has “left” private and semi-private space to which it was confined from the 1970s till the mid-1980s.
3. Standard evaluations of CCTV, usually carried out by operators of a system, highlight crime statistics in order to justify the efficiency of CCTV. They usually have a high authorial impact on the public and political decision making processes. However, their scientific value is questionable. Not only is the explicit focus on changes in crime rates insufficient but the statistical procedure itself is often weak. The British criminologists Pawson and Tilley point out that most standard evaluations are “post hoc shoestring efforts by the untrained and self interested practitioner” (quoted in Norris/Armstrong 1999: 94).
4. Scientific evaluations, taking statistical problems into account, show that “CCTV is not a universal panacea” (Ditton/Short 1999: 217) to combat crime. The findings of these evaluations show inconsistent outcomes. There are success stories next to examples of mixed as well as negative outcomes. Different contexts of CCTV employment lead to different outcomes. The outcomes depend among others upon the management of a CCTV system, the integration with the police work and organisation and the social and spatial shaping of targeted space.
5. The deployment of CCTV against street crime was initially advocated by conservative parties. But meanwhile it has been adopted as law and order strategy by parties of all political affiliations. In the UK Tony Blair’s “New Labour” follows the course of John Major’s Tory government and continues funding CCTV schemes. In France local authorities headed by Gaullists as well as Socialists order the installation of cameras. In Germany’s largest state North Rhine-Westphalia a coalition government

¹ The term is used in regard to genetics by Lemke (2000).

of Socialdemocrats and Greens paved the way for video surveillance in public space by revising the police act in 2000 (Berliner Zeitung, 14.4.2000). Thus, the rapid proliferation of CCTV is a common trend in private as well as public space all over Europe largely independent of the general political conditions.

6. However, the modes of regulation vary greatly across the continent. While the rise of CCTV in public space was promoted in the UK by the deregulation of planning processes (Graham 1998: 91), it has been the revision of police and public order acts in Germany which paved the way. In France the registration of video surveillance systems in public accessible space is compulsory while the same is true in Spain only for public systems and in the UK "there was no statutory basis for systematic legal control of CCTV surveillance over public areas until 1st March 2000 when the Data Protection Act came into force"². In some countries strict regulation exists in regard to private CCTV systems, other countries regulate mainly public systems.
7. European politics shape CCTV by technical standardisation, market intervention and legal norms. In particular, Article 8 of the European Human Rights Convention, the European Convention on the Automated Processing of Personal Data of the Council of Europe and the Data Protection Directive (95/46/EC) of the European Union touch video surveillance. But although CCTV surveillance by public authorities needs a legal basis according to the Human Rights Convention it is not affected by European data protection provisions. Its regulation remains the realm of national legislation. The same is true for private-operated systems without intermediate storage or with analogue image data storage without additional possibilities of evaluation.
8. In recent years bodies of the European Parliament and the Council of Europe have discussed the issue and pointed out the need for further action and regulation. In particular, they stress discriminatory patterns of surveillance practice and the crucial development of automated algorithmic surveillance such as facial recognition or intelligent scene monitoring.

² CCTV Code of Practice from the UK Data Protection Commissioner: <http://www.dataprotection.gov.uk>

1 The rise of closed-circuit television in Europe

Since the 1950s when the first cameras were installed for traffic management purposes we witness a rapid proliferation of closed-circuit television (CCTV) in the industrialised and industrialising world.³ After the invention of the Video Cassette Recorder in 1956, which provided a cheap and simple method of recording and storing images, suppliers launched video surveillance systems for banks and shops selling luxury items.⁴ Even though these systems had been primarily deployed for the deterrence and apprehension of robbers and shoplifters they were soon found to be useful instruments for consumer surveillance in order to rationalise business resources, e.g. by devising "shopping routes" that could be found more stimulating.⁵ In the subsequent years CCTV was especially refined for workplace surveillance: it became possible to improve the control of equipment security, regularity of labour performance and quality. During the 1980s its usage was also increased in urban public transport for crowd management and combating vandalism. (Buttarelli 2000)

The market survey 2000 from Euralarm (2001), the Association of European Manufacturers and Installers of Fire and Security Systems, indicates the market volume for security systems in 14 European countries at 5.2 billion Euro (end user value of total sale). Although Euralarm does not provide an overall figure for CCTV, its share in individual national markets for security systems amounts between 15 and 30 per cent. Given these figures it sounds credible that Wege (1999) estimates the annual revenue of the European CCTV market in 1997 at around 1.1 billion Euro, with assumed growths rates of 10 to 15 per cent.

Thus, at the edge of the new century video surveillance has penetrated everyday life⁶ in Europe: Today cameras can be found in residential areas and social infrastructure

³ Massive video surveillance is in particular reported in the big cities of the "newly industrialising" South East Asian tiger nations, such as Singapore, Taipeh or Hongkong. Even Indian megacities, such as Mumbai, Delhi or Bangalore are approached by overseas CCTV suppliers (see: <http://www.cctv-systems.com/CCTV-international.html>).

⁴ In the UK the first system for the retail sector was launched by the company Photoscan in 1967 (Moran 1998: 279)

⁵ It may be worth mentioning that IBM developed the infrared-based system "Footprints" to study consumption patterns. Company speaker Howard Sacher notes that the system respects the customer's privacy since it only tracks "warm bodies". (Archiv Forschung und Technologie, 03-1/00)

⁶ Besides surveillance of everyday life the use of CCTV in extraordinary contexts such as prisons, nuclear plants safety, border guarding and other military contexts should be mentioned: For instance, German checkpoints at the iron curtain have been surveilled by cameras in the 1980s (Weichert 2000), the border between Israel and Lebanon is equipped with CCTV in order to control Hizbullah activities (<http://www.virtualjerusalem.com/articles/542001.htm>, 10.11.2000). CCTV cameras were used for disarmament control in post-Gulf-War Iraq (Nogala 1998: 110). Usage of electronic surveillance devices including cameras is also increasing in border regions to combat illegal immigration.

facilities, such as hospitals, schools and universities, in public transport systems, in railway stations and airports, at mass events and in mass private property, such as sport stadia, entertainment parks and shopping malls, and increasingly on roads, motorways and in public streets and places.

1.1 Places of CCTV

Surveillance of **residential areas** is "commonplace" in the United Kingdom particularly on estates run by local authorities, e.g. in several Boroughs of London, in Hull, Bristol and Birmingham (Norris/Armstrong 1999: 43). But examples are also reported from other major cities such as Berlin where entrance areas of many private buildings with concierge systems are controlled by cameras. The local public house building corporation GSW offers tenants the opportunity to watch their children's activities on nearby playgrounds via cable TV (Berliner Zeitung, 1.9.1998) and it plans CCTV systems in 13 large estates in order to provide "service, safety, cleanliness"⁷ (Sethmann 2001).

Hospitals took the initiative for the installation of CCTV systems in British cities such as London or Hull (Norris/Armstrong 1999: 49f.). Similarly the Hospital Neukölln in Berlin decided to install cameras after the abduction of a new-born infant in another hospital despite interventions of the head of the local health administration (Berliner Zeitung, 30.9.1999).

CCTV in **schools** is funded by the British government since 1996 with implementing systems in over 100 schools (Norris/Armstrong 1999: 44). Danish school authorities in cities Odense, Århus and Aalborg also opted for electronic access cards and surveillance cameras in order to fight theft and vandalism (Copenhagen Post, 18.2.2000). The German parents association recently demanded surveillance cameras for schools after a seven-year-old girl was raped in a school toilet in Munich (Die Welt, 23.10.2001).

To tackle problems of theft, vandalism and sexual harassment many **universities** employ video surveillance. In the UK examples of CCTV systems monitoring university campus are found in Edinburgh, Cardiff or Dundee. The largest German university located in the city of Cologne installed 18 cameras in its central building in 2000. The Berlin Humboldt University runs cameras in a dozen computer rooms, four auditoriums and a picture gallery – some of them relicts of the former GDR secret police (Schöps 2001). Other examples are the Universidade Portucalense in the city of Porto which employs CCTV as

⁷ All German quotes are translated by the authors.

part of a building security system realised by Philips Projects ⁸ or the University of Eindhoven in the Netherlands with its security and access control system.⁹

Cameras have been present in **public urban transport** for more than 30 years but their number exploded in the last decade. The London underground started a programme to deploy CCTV systems across its 260 station-network. Until 1996 the company Sony alone had installed 5,000 cameras (Norris/Armstrong 1999: 47). The Parisian Transport Authority RATP has installed 2,500 cameras on municipal busses to identify criminal acts as they occur (Nieto 1997). In 1999 the Danish railways network DSB announced plans to step up video surveillance in S-train stations around the capital Copenhagen, in an effort to crack down crime against employees (Copenhagen Post, 2.11.1999). The lines and each of the 13 stations of the Amsterdam metro are controlled by a system integrating CCTV, lift and elevators control, intercom systems etc.¹⁰ In Berlin where underground stations are in part already monitored the public transport corporation will expand a "successful" pilot project and plans the installation of cameras in 50 busses, 30 trams and around 100 underground trains in 2002 (Berliner Zeitung 19.9.2001). Similar programmes exist in other German cities such as Stuttgart where around 180 cameras monitor the streetcars of the tramway (Stuttgarter Nachrichten, 11.10.2001). Other examples can be found in Norway where the national railways NSB started CCTV in 7 Oslo S-train stations in 1999 ¹¹, in Stockholm where Storstockholms Lokaltrafik ordered 150 metro trains equipped with video surveillance by the Danish company Focon in 1998 ¹², or in the underground systems of Bucharest ¹³, Brussels and Vienna. The next stage of public transport surveillance is tested in underground stations in London, Paris and Milano where the smart vision application "Cromatic" aims to detect undesirable events like accidents (Mazoyer 2001).

Video surveillance in **railway stations** has become a usual affair. As the Danish DSB or the Norwegian NSB the British Railtrack started on a major security initiative with the installation of 1,800 cameras at 16 of the Central London mainline stations. (Norris/Armstrong 1999: 47). In Ireland the private security company Group 4 Securites relies in CCTV to protect the country's public and commercial rail system and its storage

⁸ see: Philips Projects Reference System: <http://www.tycois.com/ProjectReferenceSystem/FPRS.htm>

⁹ see: Mavix. Reference of sites: <http://www.mavix.com/faq/general.htm#1>

¹⁰ see: eMation customer solutions. Amterdam Metro:
http://ita.emation.com/solutions/casestudies_amsterdam.html

¹¹ see: Mavix. Newsletter 12: <http://www.mavix.com/press/nl-11-3.htm>

¹² see: New big orders to Focon Electronic Systems, Press release 14.1.1999, in: <http://www.focon.com>

¹³ see: Mavix. Reference of sites: <http://www.mavix.com/faq/general.htm#1>

facilities (Nieto 1997). The German railways Deutsche Bahn was "honoured" by civil rights groups with the national "Big Brother Award 2000" for the video surveillance of more than 40 stations within its 3-S-system (Big Brother Awards Deutschland 2000). Panoptic railway stations are also known from Italy and France, e.g. Santa Maria Novella in Florence or the Gare du Lyon in Paris (Sattler 2001).

At **airports** CCTV is indeed a preferential instrument but not only for security matters. For instance, an Ethernet system of 700 digital cameras at the Brussels International Airport which "can be used by the police, fire services, baggage handling and Customs and Excise for a variety of different purposes, at different places and all at the same time" will be set up by a private consortium (IndigoVision 2001). The hub in Frankfurt is reported to be equipped with around 2,000 cameras (Gössner 2001: 26). The international airport of Barcelona employs an integrated system for monitoring passenger terminals, platforms and carparks.¹⁴ In Athens the airport Eleftherios Venizelos which opened in March 2001 combines 260 conventional analogue video cameras with digital software control via a dedicated Ethernet system using Plettac open security architecture (Intersec, 10/2001: 322). After the terrorist attacks of September 11th it is discussed the use of walk-through scanners such as the Rapiscan Secure 1000 which detects metal as well as non-metal items by virtually undressing the scanned persons.¹⁵

Mass events and mass private property are frequent targets of video surveillance. Since the 1980s surveillance cameras have been installed in every professional football ground in Britain due to the rise of hooliganism (Armstrong/Giulianotti 1998). But even the noble Wimbledon Tennis Stadium is monitored by 24 high performance colour cameras for safety, security and crowd control purposes since 1998.¹⁶ Other examples can be found in the gigantic Amsterdam Arena giving place to 51.000 people, the multipurpose Kölnarena in Cologne monitored by 60 cameras or the Steau Stadium in Bucharest.¹⁷ At the Expo 2000 in Hannover around 18 million visitors were monitored by CCTV (Gössner 2001: 99). In Munich the police announced to monitor the entrances of the famous Oktober Festival after the terrorist attacks against the Twin Towers (Münchner Merkur, 18.9.2001). Major entertainment parks and centres such as Disneyworld Paris or the Sony Centre in Berlin are monitored by cameras as well as most of the new shopping malls which mushroom in many European countries.

¹⁴ see: Mavix. Barcelona Airport installation: <http://www.mavix.com/installations/barcelona.htm>

¹⁵ To get an idea see: Secure 2000: <http://www.rapiscan.com/documents/Secure.htm>

¹⁶ see: Philips Projects Reference System, op. cit.

¹⁷ *ibid.*

As already mentioned, the visual surveillance of **public space** started more than forty years ago for traffic management purposes. For instance, in Germany the first cameras were installed in 1958 in Munich. They were followed by a system in Hannover in the subsequent year. Hannover was also the first German city which installed remote-controlled pan-tilt-zoom cameras in 1976 (Weichert 1998). Today monitoring traffic on roads and motorways is widespread: For example, the Brussels Ring Road is watched by more than 100 cameras since 1993.¹⁸ At the busy A20 in the South of France 250 cameras monitor traffic flow.¹⁹ On the Meridionale Freeway connecting Naples with Salerno which is used by 150.000 cars per day each of the 13 tollway plazas is observed by CCTV.²⁰ In Lisbon the city police and motorway traffic controllers monitor all the main roads and the Ponte 25 de Abril bridging the Tejo.²¹ Major tunnels in the Alps, the Scandinavian countries and in Spain are monitored by cameras in order to prevent serious fire accidents, such as in the Øresund Tunnel connecting Denmark and Sweden, the Guadarrama Tunnel between Madrid and La Coruña or the reopened Montblanc Tunnel connecting France and Italy (ADAC press releases, 26.4.2001 and 24.10.2001).

Many CCTV systems initially installed for traffic management purposes were found to be a useful instrument for social control as well. While speed control almost suggests itself, the early systems in Hannover, Hamburg or Munich have been soon deployed for the observation of social fringe groups (Weichert 1998). The first 145 traffic control cameras installed in London in 1974 were quickly used by the police for the surveillance of political demonstrations (Norris/Armstrong 1998b). In the German town Regensburg traffic control cameras of the local transport corporation have been used by the police for a pilot project on CCTV as law enforcement instrument in 2000/2001, and although no criminal act has been captured on tape the police noticed that it helped containing the presence of Punks in the town centre (Polizeidirektion Regensburg 2001: 4). The mutability of traffic control systems was proven recently also in Genoa where they have been used by the police to monitor the protests against the G8 summit (Sunday Herald, 30.9.2001). Sophisticated systems like the "Ring of Steel" around the City of London integrate digital cameras and automated licence plate recognition software to control vehicle movements in an effort to combat terrorism (Norris/Armstrong 1999: 45). But even in the city of Zurich such an automated system compares license plate numbers of

¹⁸ see: Mavix. Brussels Ring Road: <http://www.mavix.com/installations/brussels-1.htm>

¹⁹ see: Philips Project Reference System, op. cit.

²⁰ see: Mavix. Meridionale Freeway, Tollway Installations: <http://www.mavix.com/installations/tollway-1.htm>

²¹ see: Lisbon looks to Pinacl: <http://www.videocodec.com/docs/Portugal.pdf>

cars driving past with a database of the Swiss Ripol computer (Neue Zürcher Zeitung, 5.11.2001).

1.2 Open street CCTV in European countries

Most advanced is the observation of public roads, streets and places for reasons of social control and combating street crime in the **United Kingdom**, with the British being described as "the most surveilled population in the world" (Norris/Armstrong 1999: 39). Since 1985 when the first public pilot scheme with open street CCTV started in the small coastal town Bournemouth it spread with nearly exponential growth rates. In October 1994 the Tory Home Secretary Michael Howard announced the first tranche of central government money for CCTV (Norris/Armstrong 1999: 35) Until March 2002 the central government will have spent probably more than 300 million Euro for the funding of such local schemes. In 1998 at least 440 town and city centre schemes existed, and today almost all major cities with more than 500.000 inhabitants run CCTV networks (Coleman/Norris 2000: 150). In face of the rise of CCTV in the UK Graham points out the similarities between the recent process and the initial development of networked utilities such as gas, electricity, water and telecommunications in 19th century cities which are now ubiquitous and taken for granted. Thus, he predicts CCTV "over the next twenty years, to become a kind of a fifth utility" (Graham 1998: 108). In line with this argument Norris and Armstrong see, with the integration of systems and the growth of algorithmic surveillance systems capable of intelligent scene monitoring, automated license plate identification and digital facial recognition, the "architecture of the maximum surveillance society" (Norris/Armstrong 1999: 12) in place. Although critiques pointed out that the rise of CCTV proceeded without much hindrance from any legal or other means of regulation (Maguire 1998: 229), supporters believe the safeguards to be sufficient. In particular, they refer to the new Data Protection Act passed in 1998 in order to give effect to the European Data Protection Directive (e.g. Henderson 2001). Nevertheless, the growth of surveillance continues: In August 2001 the "New Labour" government announced a new investment in CCTV worth 125 million Euro for the funding of 250 further schemes – the largest single allocation of CCTV money ever made in the UK (BBC News, 21.8.2001).

In **Ireland** the Department of Justice authorised surveillance cameras to reduce crime in several downtown areas of the capital Dublin and other selected town centres in the mid-1990s (Nieto 1997).

Front runner in continental Europe is **Monaco**, the tiny but affluent playground of European VIPs, which has covered its two square kilometres by an integrated system of

60 pan-tilt-zoom-cameras watching indoor areas such as car parks, casinos or hotel lifts as well as outdoor areas (Vitalis 1998, Nogala 1998: 110).

Although other European countries are far away from this dimension of video surveillance many of them catch up. **France** started the observation of public space by cameras in 1994 in the Parisian suburb Levallois-Perret (Nogala 1998: 111). In January 1995 the French parliament passed a controversial security act which allows among others video surveillance of public (accessible) space for the protection of public buildings and institutions and at locations with a high risk of theft and assaults (Vitalis 1998). The bill has been introduced by the conservative Home Minister Charles Pasqua after a series of violent social protests in spring 1994 (Die Tageszeitung, 8.10.1994). Systems have to be approved by the Prefect of each Département after the consultation of a special local body, the so-called Commission Départementale de Vidéosurveillance. Between 1997 and 1999 more than 200 cities received the approval for the installation of CCTV in high risk locations and 259 others for the protection of public buildings such as town halls, public libraries, schools and museums (Ocqueteau 2001). For instance, the business and financial district of Paris is monitored around the clock by 160 cameras (Nieto 1997), Lyon runs a 12-camera-network in a socially disadvantaged quarter since 2000 plus an additional system with around 50 digital cameras watching the city centre since 2001 (Mazoyer 2001, France Télévision 2001: 49), and the neighbouring town Vaulx-en-Velin won the French "Big Brother Award 2000" for its 9 cameras (France Télévision 2001: 48).

In **Spain** a law on video surveillance by police forces came into effect in August 1997. Since then police surveillance has to be approved by the local Interior Ministry office issued on the basis of a report from a commission chaired by a justice of the High Court of the relevant Autonomous Region. Footage has to be deleted after one month if it will not appear as evidence in legal proceedings. Citizens have the right to view tapes on which they are recorded and may demand their deletion if no charges have been brought against them, but the police may refuse for defence or national security matters (Statewatch Bulletin, July-October 1997, Vol.7, No.4-5). One main intention was to make organisers of any demonstration responsible for damage caused during it (ibid., September-October 1996, Vol.6, No.5). Thus, video cameras having been installed in public places of Basque cities in order to combat vandalism committed by groups of ETA sympathisers (Nieto 1997) gained subsequent legitimisation. But besides these measures which are part of larger efforts to contain militant Basque separatism video surveillance of public space can be found in other contexts as well: In September 2001 the

administration of La Laguna, second largest town of the island Tenerife, received the approval to install 8 cameras in the local nightlife district.²²

In **Belgium** it was reported in 1998 that the country was following the French trend. Cameras are surveilling areas of the city centre of Brussels as well as the tiny municipality Sint-Joos-Ten-Noode. Whether these measures are in line with the Belgian laws was a contentious issue (Nogala 1998: 111). Public area CCTV is a rather new trend in the **Netherlands** where several local governments reacted to increasing crime rates in nightlife areas by the installation of surveillance cameras in the recent past. In February 2001 between 20 and 30 out of 500 municipalities were reported to run such schemes. (Offens 2001)

Although **Finland** discussed a law on CCTV in "intimate locations" such as public toilets in 2000 video surveillance of public space remains "de facto" unregulated and cameras are deployed by both government agencies and private companies (Koskela 2000). **Sweden** passed a law which facilitates the use of CCTV in public spaces in 1998. According to this law the County Administrative Board – as a rule – has to grant permission for setting up CCTV systems and is responsible for their supervision. Three years later Hårdh estimated that at least 30.000 cameras monitoring the public can be found, with at least some deployments being illegal due to missing public notice (Hårdh 2001). Oslo, the capital of **Norway**, started with an open street CCTV pilot project around the city's central station in 1999. Although it got mixed reviews by local business the police claimed it a success worth to be extended to pub and club areas of the city (Aftenposten, 18.9.2000, 15.8.2001). In **Denmark** which has a special law on CCTV since 1982 (revised in 1998/99) the private monitoring of public space is explicitly prohibited but police surveillance for crime prevention purposes may even be conducted without public acknowledgement.²³

In **Germany** – which was named three years ago a "developing country" in regard to CCTV (Nogala 1998: 110) – the first open street system was installed in 1996 in the city of Leipzig (Weichert 1998). In May 2000 the Conference of German Home Ministers declared CCTV at "crime hot spots" to be a suitable instrument for the support of law enforcement (Ständige Konferenz der Innenminister 2000). However, one month later experts invited to a hearing of the Committee of Home Affairs of the Federal Parliament

²² Videoüberwachung im Vergnügungsviertel von La Laguna, in: Canarias24.com, 30.9.2001: <http://www.canarias24.com/news/de/arc8-2001.shtml>

²³ see: Danish law on the prohibition of video surveillance, unauthorised German translation by Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein: <http://www.rewi.hu-berlin.de/Datenschutz/DSB/SH/material/themen/video/videogdk.htm>

agreed that public street CCTV touches privacy²⁴ and therefore employment needs a legal basis (Frankfurter Rundschau, 6.7.2000). At the end of 2001 all German states except Berlin have amended their police or public order acts with special provisions in regard to video surveillance for accommodating data protection rules. Today around a dozen public systems are at work, and the German Central Association of the Electrotechnical Industry ZVEI estimates that CCTV schemes are planned in around 200 cities (ZVEI 2001a). Not amazingly the ZVEI also reported video surveillance to be the fastest growing sector in the German security market with an annual growth rate of more than 10 per cent (total turnover 2000: 140 million Euro) in 2000 (ZVEI 2001b).

1.3 Public resistance

Although the rise of CCTV in Europe proves the growing demand and opinion polls often indicate high public acceptance its rapid proliferation has caused **public resistance** in many countries. Established organisations raising the issue such as Privacy International which initiated the "Big Brother Awards"²⁵ exist besides loose networks such as the UK CCTV Surveillance Regulation Campaign²⁶ or the Surveillance Camera Players²⁷ engaged in entertaining bored controllers by short performances in front of cameras. Others such as several branches of the German Chaos Computer Club²⁸ follow the example of the New York Civil Liberty Union²⁹ and try to map surveillance cameras in public space by interactive online databases.

22 of these groups collaborated in the first so-called "International Day of Action Against Video Surveillance" organising a variety of events to rise public awareness in seven countries around the globe at 7 September 2001. According to the supporting Electronic Frontier Foundation (2001), an US-based organisation for the protection of civil liberties related to technology, "it is in France, Belgium, Germany and Italy that the anti-video-surveillance-struggle is the most visible at the moment".

²⁴ According to the judgement of the Federal Constitutional Court regarding the controversial last census the first article of the German Basic Law guarantees the so-called "right of informational self determination".

²⁵ see: Privacy International – The Big Brother Awards. <http://www.privacyinternational.org/bigbrother>

²⁶ see: Watching Them, Watching Us – UK CCTV Surveillance Regulation Campaign. <http://www.spy.org.uk/home.htm>

²⁷ Groups are indexed at New York Surveillance Camera Players. <http://www.notbored.org/the-scp.html>

²⁸ e.g. Chaos Circuit Television in Cologne. <http://koeln.ccc.de/projekte/cctv> or Aktuelle Kamera in Bremen. <http://www.aktuelle-kamera.org>

²⁹ see: NYC Surveillance Cameras Project. <http://www.mediaeater.com/cameras/index.html>

For instance, in Germany the first pilot project in Leipzig was followed by the installation of one camera in an area populated by an alternative subculture, punks and house squatters. This measure caused a series of demonstrations and violent confrontations with the police even after the removal of the camera. In October 2000 around 2.500 people from all over Germany demonstrated in Leipzig against video surveillance - escorted by 1.700 policemen (Die Welt, 16.10.2000).

2 CCTV in European politics

European politics shape the landscape of CCTV in three ways: by technical standardisation, by market intervention and by legal regulation.

The Comité Européen de Normalisation Eléctrotechnique (CENELEC) which assembles representatives of 18 national committees aims to harmonise national electrotechnical standards at the level of the European Union and the European Economic Area. Several Euronorms regarding interference or environmental auditing touch CCTV. In particular, it is the Technical Committee TC-79 which is responsible, and at the moment it is developing the common European norm EN 50132 for video surveillance technology. This norm, probably coming into force within the next years, shall outline minimum standards for all components of CCTV such as cameras, monitors, recording devices or the transmission of image data (Gwozdek 1997: 82-84).

The European Commission is involved in (co-)funding both research and development activities and the installation of CCTV networks. The above mentioned „Cromatica“ project was financed by Brussels with 1.65 million Euro within the 4th Framework Programme. Similar projects developing and testing applications involving CCTV have been “Invaid” for automatic incident detection and “In-Response”, an integrated telematic solution for detecting and responding to unexpected motorways incidents which was funded with 6.38 million Euro.³⁰

At least for the UK it is known that the Commission was involved in funding CCTV schemes, and it was probably this fact that the Committee on Employment and Social Affairs of the European Parliament led to the recommendation not to accept CCTV “as eligible for funding under URBAN [a Community initiative to promote sustainable urban development] as long as such measures are not integrated in a strategy which aims principally at preventing urban decay and social exclusion.” (McCarthy 2000: 14).

2.1 Legal regulation

In regard to the legal regulation of CCTV Weichert (2000 and 2001) and Buttarelli (2000) name four European norms – two international treaties between the 43 Member States of the Council of Europe and two supranational rules of the European Union and its 15 Member States:

³⁰ The data have been collected via the Cordis database: <http://www.cordis.lu>

1. **European Human Rights Convention:** Convention for the Protection of Human Rights and Fundamental Freedoms ³¹ of the Council of Europe of 4 November 1950 (ETS. No.5)
2. **European Convention on the Automated Processing of Personal Data:** Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data ³² of the Council of Europe of 28 January 1981 (ETS No.108)
3. **European Data Protection Directive:** Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the Protection of Individuals with regard to the Processing of Personal Data and the free Movement of such Data ³³
4. **Charter of Fundamental Rights of the European Union** ³⁴ proclaimed by the European Council in Nice on 7 December 2000

The **European Human Rights Convention** guarantees by its Article 8 the right to respect for private life, which is therefore suable at the European Court of Human Rights as last instance. According to the second paragraph of Article 8 every interference in private life by public authorities need for a law and a concrete justification which may be given by national security, public safety, the economic well-being of

European Human Rights Convention

Article 8

Right to respect for private and family life

1. Everyone has the right to respect for his private and family life, his home and his correspondence.
2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.

of the country or the prevention of disorder and crime. In regard to "the protection of privacy, the judiciary concerning Art. 8 EHCR has moved more and more towards the national judiciary concerning the right to informational self-determination. As far as the processing of personal data is concerned, this protection is treated the same and this does not go any further. This means that at least video surveillance operated by authorities needs a legal regulation according to Art. 8 EHRC." (Weichert 2000)

The **European Convention on the Automated Processing of Personal Data** specifies the general provisions of the Convention on Human Rights and regulates – as a rule – the

³¹ see: <http://conventions.coe.int/Treaty/EN/WhatYouWant.asp?NT=005&CM=8&DF=11/12/01>

³² see: <http://conventions.coe.int/Treaty/EN/WhatYouWant.asp?NT=108&CM=8&DF=11/12/01>

³³ see: http://europa.eu.int/eur-lex/en/lif/dat/1995/en_395L0046.html

³⁴ see: <http://ue.eu.int/df/docs/en/CharteEN.pdf>

“processing of any personal data relating to natural persons that have been collected in connection with surveillance activities” (Buttarelli 2000), which are performed in part by video surveillance. But according to Article 3 any member state of the Council of Europe may declare that it will not apply the convention to certain categories of data (e.g. in connection with state security) or that it applies the convention to artificial persons, such as associations or foundations, and to manual processing operations. Thus, the convention does not regulate the monitoring or storing of image data filmed by video cameras, and even if such image data undergoes processing it is dependent upon each country’s decision whether such an operation is regulated by the convention. However, if a country has decided to accept regulation of such data processing it falls within the scope of application of Article 5 (quality of data), Article 7 (data security), Article 8 (right of access), Article 10 (penalties and remedies) and Article 12 (transborder data flow) (Buttarelli 2000).

The **European Data Protection Directive** which came into force in October 1998 is binding for all Member States of the European Union. According to Article 3 the directive is applicable if personal data are stored in a “file” except for the case that the processing affects public security, defence, state security and the activities of the state in areas of criminal law. Article 2 defines a “file” as “every structured collection of personal data which is accessible to certain criteria”. Given these pre-conditions the directive does not apply to video surveillance by the police in general and “simple camera-monitor-systems without intermediate storage and with analogue picture storage without additional possibilities to evaluation” but it does apply to “digital video systems which use at least an intermediate storage” (Weichert 2000). For such digital systems Article 10 (information in cases of collection of data from the data subject) rules that affected persons must be given information about the identity of the person in charge for the processing, the identity of the processing body and the purpose of processing, information on further recipients and the rights of the affected. In addition Article 12 (right of access) guarantees the affected the right to obtain detailed information on the storage of their own data, “of the logic involved in any automatic processing”, and the right to correction, deletion or obstruction. While these provisions may contribute to a transparent usage of digital-based CCTV there might be practical problems in realising the provisions of Article 14 (the data subject’s right to object) if the data collection happens automatically as is often the case. Article 15 (automated individual decisions) will become relevant if biometrical methods of identification are used because nobody shall be “subject to a decision which produces legal effects concerning him or significantly affects him and which is based solely on automated processing of data

intended to evaluate certain aspects relating to him". Finally, Articles 20 (prior checking) and 21 (publicising of processing operations) need to be applied if processing operations are determined to be "likely to present specific risk to the rights and freedom of data subjects". Such methods have to be subject to a prior checking and information has to be made available (under certain circumstances only on request) about the person in charge of processing, the purpose of processing, a description of the categories of those affected and the data recipients as well as a general description of the measures taken to guarantee the data security.

The **Charter of Fundamental Rights of the European Union** guarantees the respect for private life by Article 7 in correspondence with the rights guaranteed in the European Convention on Human Rights. In addition, Article 8 guarantees the protection of personal data on the basis of Article 286 of the treaty establishing the European Community, the European Directive for

Charter of Fundamental Rights of the EU

Article 8 - Protection of personal data

1. Everyone has the right to the protection of personal data concerning him or her.
2. Such data must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law. Everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified.
3. Compliance with these rules shall be subject to control by an independent authority.

Data Protection, Article 8 of the European Convention on Human Rights and the European Convention on the Automated Processing of Personal Data. The right to protection of personal data may be limited under the conditions set out by Article 52 of the Charter which sets the scope of the rights guaranteed.³⁵ The Charter is not binding the Member States but is as an obligation by the European Council, the Commission and the Parliament. Thus, it serves as a rule for the bodies of the European Union and the Member States are only concerned when they apply European laws. Whether video surveillance is touched by the Charter remains to be seen.

2.2 The European discussion

In recent times parliamentarians at the European level have highlighted the problematic nature of video surveillance. "When travelling people are filmed by video devices in their host countries and thus, their fundamental rights are violated." says Jo Leinen, socialist member of the European Parliament and its Commission on Constitutional Affairs. Therefore, he demands CCTV to be a "top issue" and criticises that it had not been on

³⁵ For explanations relating to the complete text of the Charter see:
http://ue.eu.int/df/docs/en/EN_2001_1023.pdf

the agenda when discussing the European Charter of Fundamental Rights proclaimed by the European Council in December 2000 in Nice. (Frankfurter Rundschau, 26.1.2001)

However, it has been the Scientific and Technological Options Assessment panel (STOA) of the European Parliament which requested the Manchester-based Omega Foundation to prepare an interim study on technologies of political control (Wright 1998). The study which was presented to the STOA panel itself and the Committee on Civil Liberties and Internal Affairs in winter 1997/98 discusses besides crowd control weapons, prison control systems and torture techniques new developments in surveillance technologies. It points out the dramatic changes in the art of visual surveillance by the increasing capacity to store and process images, predicts that "the revolution in urban surveillance will reach the next generation of control once reliable face recognition comes in" (p.17) and therefore recommends that

1. CCTV systems in the Union should be subject to a common and consistent set of codes of practice in order to guarantee regular assessment and audit of their use and ensure adequate complaints systems.
2. Explicit criteria should be agreed for deciding who should be targeted for surveillance and who should not, how such data is stored, processed and shared
3. New surveillance technologies are brought within the appropriate data protection legislation with special reference to Article 15 of the European Data Protection Directive.
4. Given that data from digital monitoring systems can be seamlessly manipulated, new guidance should be provided on what constitutes admissible evidence
5. Regulations should be developed covering the provision of electronic tapping devices to private citizens and companies.

Although the most discussed topic of the report was the NSA-led global interception network "Echelon", the issues CCTV and algorithmic surveillance formed the first two chapters of an updated executive summary³⁶ which was prepared as background document for a part-session of the European Parliament in September 1998 in which electronic eavesdropping was on the agenda.

The issue was again on the programme with the publication of two subsequent reports in summer 2000. Both, "Crowd control technologies" (Omega Foundation 2000) and

³⁶ the updated executive summary can be found at http://www.europarl.eu.int/stoa/publi/166499/execsum_en.htm?redirected=1

"Prison technologies" (Mampaey/Renaud 2000) consider among other issues the effectiveness and impacts of CCTV in various contexts. The appraisal of CCTV as a less damaging alternative to crowd control weapons such as CS-gas or water cannons concludes: "To effectively deploy these systems would mean putting the whole of society under continuous surveillance which would be assuming a continuing benign level of political stability which rarely exist in the long term, not even in Europe. Nevertheless, Crowd control options using biometric systems based on face recognition systems could still play a powerful role in preventing public disorder occurring at fixed locations such as enclosed sports stadia, where there are inevitably considerable public safety considerations" (Omega Foundation 2000: viii). The report on prison technologies which mostly follows the recommendations proposed by Wright even suggests that the "European Union should be seen as a democratic leader in video surveillance" and "European Parliament should ensure urgently that a debate takes place on the introduction of videosurveillance within Member States, as much within as outside jails." (Mampaey/Renaud 2000: 51)

Although members of the European Parliament announced that they would raise the issue in the committees and the plenary (e.g. Jo Leinen, see: Frankfurter Rundschau, 26.1.2001) it was the Council of Europe – particularly committed to the protection of human rights in its 43 member states – which first took the initiative at the European level. In March 2001 an inter-party group of parliamentarians led by Wolfgang Behrendt, head of the German delegation, took action in the Parliamentary Assembly of the Council. The ten MPs from the Czech Republic, Finland, Germany, Sweden and Switzerland presented their "Motion for a recommendation on video surveillance of public areas". It argues that the Parliamentary Assembly should recommend that the Council of Ministers call upon the member states to initiate the assessment of video surveillance, create provisions of law counteracting its uncontrolled spread, guarantee its transparent and democratic use and define the ways in which this kind of data is to be recorded, stored and used. (Behrendt et al. 2001) Although the Committee on Legal Affairs and Human Rights appointed the Portuguese MP Monteiro in June as referee on the matter a final decision is pending.

Already in December 2000 the Council of Europe launched an expert report on (video) surveillance written by Giovanni Buttarelli, the Secretary General of the Italian Data Protection Authority. Buttarelli refers to the fear "that modern society may inadvertently tend to replace or supplement control with the incitement to self-control and the repression of impulses" and suggests as a consequence to consider "the extent to which surveillance causes a breach of privacy" and to evaluate "the effects resulting from the

widespread use of surveillance as regards citizens' freedom of movement and behaviour." Although he points out the relevance of the European Convention on the Automated Processing of Personal Data to the processing of any personal data collected in connection with surveillance activities he concludes that "twenty years after the adoption [...] what really matters is for the Council of Europe to let its authoritative voice be heard once again". In addition to these general recommendations he outlines a list of eleven basic principles designed to be taken into account when preparing specific legislative provisions on data protection with relation to video surveillance. They include principles of proportionality, fairness, transparency, relevance of the data in relation to the image and enhanced protection in face of specific dangers such as intelligent analysis, facial recognition or the profiling of data subjects. (Buttarelli 2000)

3 Towards a socio-political assessment of CCTV

Taking the political will and the above mentioned recommendations into account, how can CCTV be adequately analysed and assessed? In order to provide a basis for a suitable and efficient yet democratic and transparent use, an assessment of CCTV has to confront a range of scientific problems. There are three particular problems:

- How to evaluate the effectiveness of CCTV?
- How to examine unwanted and unintended side effects of its employment?
- How to compare the results in order to outline strategies for regulation at the European level?

In regard to this complexity, it is useful, and even necessary, to build on the current variety of evaluations and assessments in terms of methodology and findings. Three levels can be differentiated: First, standard evaluations usually carried out by the operators themselves, e.g. police departments, second, scientific evaluations carried out by criminologists and third, sociological studies. The standard and scientific evaluations share the aim to inform and guide policy makers and the public about the efficiency of CCTV as a law enforcement instrument. However, both differ significantly in their approaches and therefore in their outcomes. While standard evaluations usually prove the effectiveness of CCTV in order to legitimate further employment, scientific evaluations taken as a whole show inconsistent outcomes, positive, negative as well as mixed findings. The radically inconsistent results of evaluation research raise questions about an universal effectiveness of CCTV. Thus, CCTV is no panacea for crime control.

On the basis of a fundamental critique of evaluation research, Ray Pawson and Nick Tilley developed a framework of "realistic evaluation", which takes the inconsistency of findings into account. "Realistic evaluation" implies a methodological step from evaluation to socio-political assessment of CCTV. "Realistic evaluation" raises the question how and to what outcome CCTV works within the contexts of its employment, such as space or police resources (Pawson/Tilley 1997). It also provides the means for testing and developing social theory. "Realistic evaluation" opens the perspective of analysis to issues beyond CCTV's effectiveness in combating crime. This is the third level of assessing CCTV. Recent studies have already focussed on issues such as practice of surveillance, the transformation of urban landscapes and state power (e.g. Norris/Armstrong 1999, Bannister et.al. 1998, Coleman/Sim 2000) . This latest level of studying CCTV makes answering how to regulate more complicated. However, the outcomes of these studies emphasise the importance of regulation.

3.1 Does CCTV work? Standard evaluation

Video surveillance is often introduced as an instrument to reduce crime. On the one hand, it is argued that CCTV prevents crime, and therefore strengthens the people's feeling of security. On the other hand it is sold as a tool to help to catch offenders and reduce criminality repressively. Existing standard evaluations are mostly based on these intentions, which is often emphasised to the public. Consequently, standard evaluations concentrate on changes in crime rates related to the employment of CCTV. Their main methodological tool is to evaluate crime statistics in order to prove whether CCTV 'works' or not. This implies that the focus is on the success of the surveillance technology to deter and reduce crime.

Standard evaluations of CCTV are known so far from the UK and Germany. Two key points must be borne in mind reading them: Standard evaluations highlight statistics in order to justify the efficiency of CCTV. They usually have a high authorial impact on public debates as well on political decision making processes. Often they are influenced by those who ask for the evaluation. Tilley points out that "sadly, many really only want evaluations for self or political or organisational or civic aggrandisement, even when purporting to want an independent piece of work" (1998: 149). This concern can also be underlined by an example from Germany.

Over the last years there have been several pilot projects in Leipzig, Halle and Regensburg in which the employment of CCTV was evaluated. The Regensburg project provided the legitimisation to change the Bavarian police law on 1 September 2001. The report claims a decrease of 13,7% in street crime at seven monitored locations for one year in the inner city and concludes that "video surveillance at public accessible streets is a rational measure at focus points in order to deter criminals and to strengthen the personal feeling of security." (Polizeidirektion Regensburg 2001: 5). Nevertheless, referring to the report as a whole, the outcomes remain vague. But beyond this, the report suggests that crime activities might have been very low from the start of the CCTV measure. One of the main reasons to install CCTV had been that the rate in street crime was higher than the average of the Bavarian state. Bavaria has one of the lowest crime rates in Germany. The apparent dramatic reduction of 13,7% in crime based on a mere 25 cases, may be an example of what Tilley criticises as the "*Floor Effect*: Where there is a very low crime rate to start with, there is of course not far for it to fall." (1998: 150). This is especially apparent when results are expressed as percentages.

The scientific value of standard evaluations is questionable. Pawson and Tilley point out that most of the time standard evaluations have been "post hoc shoestring efforts by the

untrained and self interested practitioner" (quoted in: Norris/Armstrong 1999: 94). Not only is the explicit focus on changes in crime rates insufficient but the statistical evaluation procedure itself seems often to be very weak. It is doubtful how professional the crime statistics evaluations are.

Taking crime statistics as a basis for evaluation poses several problems, because recorded crime does not reflect criminal activity accurately: Not all criminal offences are reported to the police, not all reported offences are recorded by the police and not all recorded offences are not brought before courts and convicted as crimes. This discrepancy probably increases due to CCTV because of the enhanced visibility of certain crime types. The Scottish criminologist Short and Ditton (1995: 12) have outlined five problems regarding the evaluation of crime statistics:

- 1) The before and the after periods are often not long enough to enable the researchers to address random fluctuations caused by seasonal effects and long-term trends in crime, both of which could influence the results.
- 2) Different crime types are often aggregated into one overall figure. However, they have to be distinguished according to different crime forms in order to assess the impact of CCTV adequately. An increase in certain crimes can be seen as a failure, in regard to other types it can be seen as proof for the efficiency of the adamant camera eye.
- 3) There are often no appropriate control groups used by standard evaluations to compare crime trends in the target area and the wider area without CCTV employment. Long term crime trends can show that a decrease first assigned to the presence of CCTV lays in the reduction of crime in the whole area.
- 4) There is hardly any discussion on displacement to adjacent areas of criminal behaviour caused by CCTV. A detailed analysis of the crime activities in the adjacent areas is necessary. Coleman and Norris (2000: 158) have identified six types of displacement. Next to the geographical displacement, there also is temporal, tactical, functional displacement as well as target and perpetrator displacement.
- 5) Presentation of percentages leads to erroneous conclusions regarding standard evaluations.

Furthermore, simultaneous applications of additional crime preventing instruments are of importance and have to be considered in the presentation of an evaluation (see also Coleman/Norris 2000: 153-155). Often video surveillance is only a part of a whole package of safety measures. In his critique, Tilley even gathers nine aspects which can lead to inadequate measurement (1998: 150-151).

Finally, standard evaluations referring solely to crime statistics are questionable, because they operate with certain presumptions. They presume first, that the technology does really work and second, that crime prevention is the only intention of the employment of CCTV. Contrary to those critics and promoters of CCTV who take the functioning of the CCTV technology for granted, a rigorous assessment of CCTV requires that the functionality of the technology itself be first put in question.

3.2 Mixture of outcomes: Scientific evaluation

Great Britain has the most experience investigating how to evaluate video surveillance on a more rigorous basis. After the first open street system has been installed in 1985 in South-England Bournemouth, criminologists as Tilley, Ditton and Short started in the 1990s to re-think existing evaluations methods. Meanwhile many other researchers have adopted their critical perspectives to evaluate CCTV (see the different contributions on British evaluations in Norris et al. 1998 and in Painter/Tilley 1999).

3.2.1 The Airdrie Case

The first Scottish CCTV system was set up in 1992 in a little town named Airdrie. According to Short and Ditton, the initiative resides with a police officer concerned about the increasing vandalism in the inner city (Short/Ditton 1996, Ditton/Short 1998 and 1999). Local merchants suspected members of a neighbourhood youth club. The officer investigated. A young girl from the club suggested to install a camera within the club in order to rebut the suspicion. The officer transferred her idea to the public street. On a wide basis of a public-private partnership twelve cameras have been put into operation since November 1992 in the Airdrie town centre. The responsible police officer advanced to an expert in demand establishing further CCTV systems and five months later a London press conference was told that total crime in Airdrie had been reduced by 74% (see Norris/Armstrong 1998a: 14),

This figure is contrasted by the findings of Short and Ditton, which however state that CCTV in Airdrie has been a success. Their evaluation show that the crime rate decreased about 21% or 772 cases caused by the employment of the cameras. The analysis of the 24 months previous as well as after the point of first employment enabled a significant differentiation of the general view and in regard to individual crime forms. The interpretation detected a 48% decrease in "crimes of dishonesty" due to the employment of CCTV. Furthermore, not the failure but the effective possibilities of CCTV could be documented by the increase of 33% in "crimes of public order" made visible by the "unforgiving eye". Also these figure have stayed constant and they surpassed the

expectations taking long-term crime trends into account. Further analysis could detect only slight effects of displacement (Ditton/Short 1998: 169).

3.2.2 The Glasgow Case

As much as these findings attest that CCTV has an effect on deterring crime, it remains contentious if it is possible to generalise these effects. Therefore a comparative evaluation of another CCTV scheme on the basis of the same critical methodology would be necessary.

Correspondingly, in a second study Ditton and Short analysed the crime prevention effects of a system in Glasgow. In the beginning, a local development agency encouraged the Glaswegians to employ video surveillance in the city centre in order to improve the reputation of Glasgow, then seen as a dangerous city in decline. One hoped for potential inward investment for the former shipbuilding city, and the creation of 1500 jobs, as well as the ability to attract more tourists. The results so far have however, been disappointing. Ditton and Short used the same technical description methods as in Airdrie. Data for the period before installation was collected and evaluated for two years. From the starting point of CCTV employment it has been impossible to prove an effective decrease of crime caused by the 32 cameras in the inner city of Glasgow. Instead, after a decline up to the point when CCTV was installed, there was an increase in crime of about 9%.

A comparison of both systems shows that CCTV does not have the same effects regardless of where it is installed. The effects of a successful employment at one site cannot be generalised to another. In their overview of the evaluations Phillips (1999) as well as Coleman and Norris (2000) have underlined that up to now it was not possible to compile consistent results about the employment of CCTV as an instrument of combating crime. Next to the success stories there are examples of mixed as well of negative effectiveness. „We conclude“, state Ditton and Short (1999: 217) "open-street CCTV can ‚work‘ in limited ways, but it is not a universal panacea. It works in different ways in different situations and future evaluation might choose wisely to concentrate on ‚how‘ rather than ‚if“.

3.3 How does CCTV work? The “realistic evaluation” approach

As the main goal of CCTV evaluation is to inform the thinking of the public and the decision makers in many policy areas, such a variety of results is unsatisfactory. Different contexts seem to lead to different outcomes, and therefore assessing CCTV asks for an approach which takes the complexity of the employment of CCTV into account. Ditton

and Short even oppose the possible assumption one could extrapolate out of their results that CCTV works in Airdrie because it is a small town while it does not work in Glasgow because it is a big city. Many diverse circumstances of CCTV employment must be analysed together for an adequate evaluation.

In their fundamental critique of evaluation research, Pawson and Tilley have introduced the importance of context into evaluation matrixes. The authors outline their examination with the argument that most evaluations so far have been not realistic. The reason for that lays in the silent "epistemological assumptions about causation and their lack of fit with the nature of social programs" (1997: 30). It has to be highlighted, as Pawson and Tilley pointed out, that most evaluations are based on a rationalistic sight of reality which ignores the diverse contextual conditioning as a whole in which a social program takes part. Instead, such concepts construct a casual relationship between a program and an outcome but in the end the outcomes are assertions without any substance. The causal aspect is constructed. "The bottom line, as they say, is to show that it really was the program which was responsible for changing the subjects' lot" (1997: 31).

Correspondingly, these evaluations often describe outcomes, but they forget to ask *why* and *how* programs work in to achieve certain results. The consequence is to be confronted with inconsistent results without knowing - or more than that - without wanting to know the reasons. They are blind to the circumstances within the assumed (causal) relationship between program and outcome, what is familiar as the *black box problem*. i.e. to leave unexamined or even to obscure the inner mechanism of a research program as well as the whole evaluating approach including his pre-assumptions. One refers to a causal model that reduces the diverse process in operation to the question whether a program can be seen as a "success" or not.

In order to open up the black box of social programs the authors have invented a framework for a so-called „realistic evaluation“. This model attempts to consider social reality as a whole. The aim is to include the implicit processes as well as the surrounding contexts of a social program when informing policy makers and the public about a proposed social measure. In opposition to the success-oriented idea of causation, the authors are arguing for a generative model. They outline it in five explanatory levels:

Levels of „realistic evaluation“

1. Embeddedness
2. Mechanisms
3. Contexts
4. Social regularities
5. Social change

The first level, "embeddedness", can be understood as the philosophical basis of the "realistic evaluation" model. It argues for a change about how reality is understood. Pawson and Tilley emphasise that reality is made of different incongruous layers and therefore often appears contradictory. They state: "Realists refer to the embeddedness of all human action within a wider range of social processes as the stratified nature of social reality." (1997: 64) A social concept is more than a concept: "a program *is* its personnel, its place, its past and its prospects." (1997: 65)

The fourth and the fifth level concern the two goals of realistic evaluation. The first goal is to explain "regularities", the second goes beyond this. It also reconsiders "changes" in social life, since realistic evaluation aims to include the diverse dynamics of contextual conditions of a social program. To become aware of these processes, level two and three take the question of *how* a program works into account. They refer to the "mechanisms" of a program, and above this to the "contexts" on which the mechanism depends.

The assumption of the stratified nature of reality leads Pawson and Tilley to develop a term of "mechanism", which causes reactions in social programs. But the idea of realistic evaluation does not mean that mechanisms are variables which can be substituted by others in order to change the outcome, as for example in an closed architecture of a scientific experiment. Mechanisms in terms of social programs are not fixed, they are part of changing processes. They therefore can be characterised as propositions which can be rejected, for example when the contextual condition changes and with it, the outcome. To identify a mechanism means to notice the sum of propositions which provoke a certain effect. "A mechanism is thus not a variable but an *account* of the make-up, behaviour and interrelationships of those processes which are responsible for the regularity. A mechanism is thus a theory - a theory which spells out the potential of human resources and reasoning." (Pawson/Tilley 1997: 68)

Mechanisms, making a program work, can be understood even as regulators. They depend, as mentioned, however on the context of the program. The inner dynamic of mechanisms refers to this dependency of the surrounding reality. The context in itself is unfixed and often contingent. "In realist terms it is the contextual conditioning of causal mechanisms which turns (or fails to turn) causal potential into a causal outcome." (Paswon/Tilley 1997: 69) It follows that the context is the crucial point when it comes to explain the "successes and failures of social programs", as Pawson and Tilley say. They draw attention to the fact that social programs are always set into the pre-defined conditions of others. The experimental field in itself is in motion. This applies not only to physical conditions: "By social context we do not refer simply to the spatial or geographical or institutional location into which programs are embedded. So whilst

indeed programs are initiated in prisons, hospitals, schools neighbourhoods, and car parks, it is the prior set of social rules, norms, values and interrelationships gathered in these places which sets limits on the efficacy of program mechanisms." (1997: 70)

All in all "realistic evaluation" can be brought into the formula that an outcome of a program is due to the mechanisms plus context. In their book Pawson and Tilley illustrate the model by referring to Tilley's evaluation of a CCTV measure in order to prevent car crime commissioned by the British Home Office (Tilley 1993). On the basis of this investigation they carry out typologies for mechanisms, context and outcomes. As Pawson and Tilley programmatically state incompleteness, it is acceptable to cite a couple of mechanisms for demonstration (see: Pawson/Tilley 1997: 78-79)

- The 'caught in the act' mechanism. CCTV might reduce car crime by increasing the chances that current offenders are seen on screen detected committing their crimes and arrested, taken away, punished and deterred.
- The 'you've been framed' mechanism. CCTV might reduce car crime by leading potential offenders to avoid the perceived risk that they might be caught and convicted because of the evidence on tape.
- The 'effective deployment' mechanism. CCTV might enable security staff to be deployed more quickly where suspicious behaviour was going on. They then act as visible guardians.
- The 'publicity' mechanism. CCTV and signs announcing its installation might symbolise efforts to take crime seriously and to reduce it. Potential offenders might want to avoid the perceived increased risk.
- The 'time for crime' mechanism. Offenders might calculate that car crimes taking a long time risk their being caught on camera and they might decide only to commit those car crimes that could be completed very quickly.
- The 'appeal to the cautious' mechanism. Cautious drivers sensitive to the possibility that their cars may be vulnerable to crime may use car parks with more security devices and displace less cautious drivers to other car parks. The high level of security of the car park users may make it difficult for offenders successfully to commit their crimes.

In addition to these mechanisms, some contexts the authors have noticed are (see: Pawson/Tilley 1997: 79-80):

- The 'lie of the land' context. Cars parked in CCTV blind spots will be more vulnerable if the mechanism is increased chances of apprehension through evidence on video tape [...] but not if it is through changed attributes or security behaviour of customers.
- The 'alternative targets' context. The local patterns of motivation of offenders, together with the availability of substitute targets, provide the context for potential displacement elsewhere.
- The 'resources' context. In isolated car parks with no security presence and no police near to hand the deployment of security staff or police as a deterrent [...] is not possible.

Coleman and Norris (2000: 169) underline the theses of Painter and Tilley: "Realistic evaluation refocuses attention on the processes that produce the particular outcomes rather than just on the outcomes themselves." Taking the contextual conditions into account shifts the focus from a viewpoint of the technical efficiency to questions of the practice and management of CCTV. "Realistic evaluation" is "mechanism-context driven", as the inventors argue. Thus, "realistic evaluation" must be seen as a path from evaluation to social theory, which as argued, rethinks the model of social change. Because there is an entire range of contingent conditions, this framework also suggests to ask more questions regarding the efficiency of CCTV. It also provides the impetus to look out for other methods of evaluation than solely reviewing crime statistics.

The application of a CCTV system implies certain interrelated processes within in a socio-technical system. A rigorous evaluation, or better, what we will call a "socio-political assessment" of CCTV, requires the detailed description of the single system including the physical and social circumstances of the monitored location. Furthermore, a "socio-political assessment" requires the researcher to consider the spatial configuration of the surveillance technique, the use alongside parallel and combined operations of single technical system-components, the personnel organisation of the surveillance, the embeddedness of the whole complex of security as well as the legal regulation of it. The complexity of the levels requires a considerable methodological effort, including a detailed description of the system's context as indicated above and different kinds of 'interviews'. For example Ditton and Short point out, in order to study effects of displacement an 'offenders talk' "offers the only route to possible disproof" (Ditton/Short 1998: 163). One central methodological approach for this advanced level of assessment is to clearly bring the way in which people are observed by the CCTV operators at the CCTV control centres into discussion. The CCTV technology, the observers and the

observed all affect each other. It is inaccurate to study any of them in isolation. In addition, it is key to the method that various urban contexts under CCTV surveillance are compared with each other and build toward not an objective view of the imaginary whole, but patiently assemble an awareness of various tendencies at work. Only then will other underlying mechanisms, as well as other contexts, that would otherwise never be detected or considered, arise out of the black box of CCTV.

3.4 Within the black box: Watching the watchers

The first study opening the black box of CCTV was carried out by Norris and Armstrong (1999) who carried out their research funded by the British Economic and Social Research Council. The methodological core of their study was a non-participant observation. In order to study the social dynamics of CCTV, e.g. how target selection is socially differentiated by age, race and gender, the researchers accompanied the daily work of surveillance for 592 hours from May 1995 until April 1996 in three CCTV systems. To study mechanisms and outcomes under various circumstances they chose systems within three different urban contexts:

- Metro City: a commercial centre of a major city with a population in excess of 500,000
- County Town: the market centre of a affluent county town with a population of nearly 200,000
- Inner City: a run down but busy high street in a poor inner-city borough with an ethnically diverse population of nearly 250,000

The findings suggest that the working rules developed by CCTV controllers for the interpretation of the mass of images are mainly based on subjective assumptions on likelihood of deviant behaviour: particular social groups, particular behavioural displays and people not matching to the observer's normative conceptions of certain locations and daytimes have been targeted more often than others. In addition, Norris and Armstrong showed that the level of intervention as a result of this arbitrary surveillance was rather low and depended on the integration of the CCTV systems with the police deployment systems.

Thus, they conclude: "The two central features of the Panopticon, an inevitable and rapid response to deviance and the compilation of individualised records, were seen to be largely absent from our systems. [...] As we have seen, CCTV in its operation and its effects is contingent on a host of social processes which shape how the technology is

actually used. We simply cannot know in advance what CCTV is, means and does, since it is dependent upon its organisational implementation." (Norris/Armstrong 1999: 200)

However, Norris and Armstrong argue that the panoptical potential of CCTV may be realised by forthcoming developments. For this, they draw on James Rule's concept of "surveillance capacity" and its four components:

1. size and scope of files in relation to the subjected population
2. centralisation of those files
3. speed of information flow
4. number of points of contact between the system and its subject population.

With the spread of CCTV, the increasing integration of systems and the rise of automated algorithmic surveillance they see the capacity for "maximum surveillance" and point out that a benevolent usage of such power should not be taken for granted.

Thus, besides the conditions for an effective employment of CCTV in terms of "risk management", it needs to be pointed out under which circumstances CCTV becomes a risk for human rights and justice itself in order to outline strategies for regulation. By raising these questions which go far beyond crime prevention the research needs to address other issues.

First, the role of CCTV in the restructuring of urban landscape and for the phenomenon of "fortress cities" where (public-)private management transforms urban space into mere places of consumption (see: Davis 1990, Christopherson 1994) should be of interest.

Second, it should be questioned how the rising employment of CCTV is embedded in the change of state authority which at least some observers fear to be a transformation "from a welfare to a penal state" (Wacquant 1997), an authoritarian "national competition state" (Hirsch 1998) or a "new type of police state" (Kutscha 2001).

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