

# Surveillance in public transport

## Aims, effects and behavioural response

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# PREAMBLE

## **Abstract**

This paper gives a background on Foucault's theory on surveillance including the Panopticon watchtower from which the guards can supervise the prisoners without themselves being watched. State-of-the-art electronic surveillance systems in use in transport systems like electronic person-linked tickets and video cameras are discussed. The main focus is on CCTV (closed circuit television) cameras. The article reviews the stated aims and goals of the surveillance systems, and to what extent they have been reached. A close look is taken on the consequences for privacy and personal freedom with references to real-life examples. A critical reflection is made on how, and to what extent, the systems have changed the individual behaviour of the transport user and if a process of internalised self-discipline takes place when the individual is aware of surveillance.

## **Keywords**

surveillance, cameras, cctv, panopticon, privacy, public transport

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## FOUCAULT'S THEORY ON SURVEILLANCE

### **Social control in history – the example of leper**

Foucault (1975) uses the control of the leper as an example of early surveillance tactics. Guards were posted to check that no entry was made to homes plagued by leper. This type of control is characterised by a direct control that is always present in time and place. The leper gave rise to disciplinary projects with an organisation in depth through all of society. The binary division becomes very apparent: sick / healthy are the categories in this case, but later in history this form of categorisation in opposites develops to an array of dualities like normal / abnormal, dangerous / harmless etc.

### **The original Panopticon – a prison watchtower**

The techniques for disciplining the masses develop with time, and the direct control of the earlier style becomes outdated as it requires vast human resources to give total control. Bentham's idea of a Panopticon is presented by Foucault (1975) as a modern form of surveillance. Panopticon means 'fully visible' literally translated from Greek (Mahan 2007). Bentham describes the Panopticon as a central watchtower of a model prison. The tower is surrounded by prison cells in a building that has a curved circular shape. From the watchtower all prison cells can be supervised directly from control officers, as all cells have windows in the direction to the tower. However, the gaze is unidirectional – the inmates cannot see if someone is watching them from the tower, as the towers' windows are covered by venetian blinds.

### **Internalised self-discipline**

The result of the Panopticon is a type of surveillance much more effective than the earlier direct variant, because the prisoner disciplines himself, as he cannot know if someone is watching him at a certain moment. This process can be given the name internalised self-discipline as the individual senses and interprets an external discipline rigour and then translates it and starts to discipline his / her own behaviour. Vaz (2003) develops this thread further: with time the auto-disciplining behaviour moves from consciousness to subconsciousness as the disciplined starts to incorporate the value system of the vigilante apparatus. Self-surveillance starts to become a necessary and semi-automatic care of the self (like brushing the teeth) which also is part of belonging to the correct half of the binary pair of orderly / disorderly citizen.

### **The Panopticon as a general model of surveillance in a modern state**

With the Panopticon model the control is omnipresent in time and space. However it does not longer require a direct presence of the inspector. Put in other words, the discipline is becoming mediated and indirect, replacing the raw direct method. According to Bentham the principles of power should be visible and unverifiable, conditions which the Panopticon fulfils.

Panopticon should be seen as a general model and concept for the type of surveillance common to the modern society not only confined to prisons, but with a much wider use as for example a practice to supervise workers, confine the insane or analyse and correct behaviour of public transport users. Instead on being primarily based on direct power the fundamental discipline mode of our modern society consists of many micro-panopticon processes that intersect with our daily lives aiming to control us to behave as “good” citizens through our own internal subconscious repression.

## STATE-OF-THE-ART SURVEILLANCE SYSTEMS

### Aims of surveillance

In Wigan (2006 a, 2006 b) the basic goals of surveillance systems are outlined. Although primarily focused on CCTV cameras most goals can also be applied to other types of applications.

*Deterrence* can be one goal; for example in a certain tram stop in an immigrant suburb of Göteborg, Sweden the local public transport company Västtrafik has chosen to put up a sign stating “security camera” without an actual camera, apparently with deterrence as a goal. A problem with this aim is, as Wigan (2006 a) states, that surveillance tends to displace behaviour rather than prevent it.

*Prevention* could be a stated aim if resources are so abundant that action can be taken within the required time frame. *Detection* is much more common; to detect an action to later be able to continue with *investigation*. For example the police could be given access to recorded data in order to connect it to an ongoing investigation. *Retribution* could take place in for example court proceedings if the data is of so high quality (which is uncommon) that it can be used as evidence.

*Building of public confidence* is an interesting aim, because it is closely linked to making the inhabitants incorporate the value system justifying the surveillance in themselves – it is a sort of self-propaganda of the system. A great example is the security control in airports, a modern ritual of sorts. Wigan (2006 a)

*Self-discipline* is added by Armitage (2002) as a Foucaultian aim both by the potential victims (become aware of the risk and therefore change the behaviour) and the offenders (the fear of surveillance, independent of the actual occurrence of someone watching).

### Common methods

The perhaps most obvious system type in public transport is surveillance cameras, however other types of far less obvious nature also exist. Systems recently developed combine cameras and advanced computer technology to in real-time track individual movement through face recognition software. One example that is already common around the world are personalised transport cards. In addition to functioning as transport tickets for a certain period these cards can (or must) be registered and linked to a distinct individual. Storing the travel information in a large database allows for the retrieval and tracking of individual travel behaviour, in the same way that supermarkets through customer loyalty cards can track consumers' buying preferences.

### Camera supervision

The central railway station of Zürich is the largest of Switzerland and is used by 350,000 passengers daily. It has an advanced closed-circuit television (CCTV) system for supervising the travellers (Müller 2004), and is a specimen of the use of camera supervision in public transport. The oldest system from the mid-90s of black and white cameras has direct access to the police and works only in real-time. In addition, the railway company of Switzerland (SBB) has installed a newer system with about 20 colour cameras that in contrast have a continuous recording of events. (Müller, 2004)

SL, the public transport company of the Swedish capital of Stockholm, maintains another example of a CCTV system operating on public transport premises (Andersen 2006). The company plans to install 2,000 cameras on 80 underground stations that will send the video material to a central

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surveillance office. SL can take direct action if for example graffiti painters or homeless people are moving around at stations during the night. The captured video will be saved up to 36 hours, and the police can get access to the recorded material.

### **Face recognition**

The Stockholm public transport company SL prepares to install specially equipped cameras that will be placed near the escalators in order to get close-ups of the travellers' faces. SL has an expressed purpose of making the identification of persons suspected of damage and other crimes easier through the placement of these cameras. (Andersen 2006)

New technology makes face recognition real-time and fully automatic, which could enable the supervising agent to perform an instant search for a certain person in the whole public transport network using the stored characteristics of the individuals face in a computerised archive (i.e. a national passport database).

An Australian radio programme brings up this topic (Weber 2005) in an interview with the security company DTI, that is developing technology to detect abnormal behaviour in public transport through real-time computer analysis of the camera data stream. The technology is targeted for buses and could also be adapted to trains. When something happens that does not conform to the guidelines set to define normal behaviour a human controller can be alerted to make a review of the case in question. For example people that move from seat to seat in the bus are potential pick-pockets and could give rise to an alert. Right now the false alarm rate is too high to make the system work in practice, but professor Venkatesh thinks that the basic technology will be available in about three years (i.e. 2008 as the interview was made 2005).

### **Card ticket systems that tracks individuals**

The Oyster card marketed by Transport for London is an example of a personalised transport card, which gives access to public transport services within the Greater London area of United Kingdom. It is a contactless smart card and which can hold a variety of tickets. User registration is compulsory for monthly tickets. Usage data is stored both on the card and centrally by the transport operator (Transport for London) in a database, from which data has been approved to be given to the police 409 times in the period between August 2004 and March 2006. Data on passengers' movement is stored up to two years. (Oyster card 2009)

## ARE THE AIMS OF THE SYSTEMS FULFILLED?

### **Effectiveness in public transport for CCTV cameras**

The meta-analysis made in Welsh (2002) for the British Home Office evaluates the effectiveness of CCTV cameras in public transport. Three studies from subway systems of London and one study from the Montreal metro were meta-evaluated. Out of the four programmes two had a desirable effect, one had no effect and one had an undesirable effect on crime. The conclusion is that no statistically significant net effect can be found in reducing crime using surveillance cameras in public transport.

### **Stated aims contra fulfilled aims in general**

United Kingdom has probably the highest concentration of surveillance cameras in the world. By the end of 2002 the estimated total number was 40,000 throughout the country (Armitage 2002). The net total crime-reducing effect of using CCTV cameras in all types of public places is 4%, according to the study made by Welsh (2002).

Armitage (2002) evaluates the effectiveness of the schemes stated aim through comparing studies made on the subject of cameras in public spaces. CCTV seems to have a demonstrated effect on reduction of property crime (for example theft and vandalism), although the effect on personal crime (for example assault) was less clear. Out of four studies on the rate of personal crimes only one saw significant reductions in violence, and another one only partly (in smaller market towns but not to the same extent in bigger cities).

A general problem that can be seen in Welsh (2002) and that is more explicitly expressed in Armitage (2002) is the low scientific quality of many of the evaluations of the CCTV surveillance systems. Very few are methodically valid (Armitage 2002).

### **Effectiveness of cameras contra street lighting**

CCTV systems are costly to operate if the monitoring should be accurate, with an annual revenue cost per camera of circa £12,000 (Armitage 2002). It can therefore be enlightening to compare the earlier referenced crime-reduction result of 4% to that of alternative solutions. According to a study made for the British Home Office referenced in Armitage (2002) the effect of better street-lighting gave a crime-reduction effect of 20%.

Another study made by Painter (1999) investigated the effects on improved lighting in Stoke-on-Trent, United Kingdom. The report showed a 43% decrease of crime incidence in the experimental area, compared to a 2% decrease in the control area. The cost-benefit analysis showed that the savings of fewer crimes greatly outweighed the expenditures.

However these results are not reflected in the funding decisions of the authorities, at least not in United Kingdom. In the UK 75% of the funding on crime prevention by the Home Office is allocated to CCTV camera surveillance (Armitage 2002).

## EFFECTS ON PRIVACY AND PERSONAL FREEDOM

### **Function creep leading to privacy intrusion**

Although most of the current CCTV systems due to technological and organisational limitations do not reach the panoptical level of surveillance with automated storage of individual profiles in databases and alerts leading to immediate response, various players in the market of the surveillance industry are trying to reach the full potential of the technology (Norris 1997).

With the state-of-the-art CCTV technology face recognition in real-time is possible. The enormous data sets provided by the continuous and omnipresent monitoring of public transport systems could in this manner be linked to other databases on for example health information (Wigan 2006 a). This may seem like an Orwellian paranoia, but many systems that once had one defined goal have through so called 'function creep' or 'feature creep' started to being used for totally different purposes.

An example of function creep is the London Congestion Charge, consisting of a network of cameras with the original purpose of automatic charges of motorised vehicles entering into central London during daytime. During the first years of the system the police had no direct access to camera footage. However, 2007 the police got real-time access to the cameras. The Home Office of the British state assures that only the special anti-terrorism police will have access to the material. The cameras are on during both day and night, although during night-time they will not fulfil their original purpose of collecting tolls. (BBC News 2007)

Shortly afterwards it was revealed that the Home Office intends to give the whole police force access to all data, although the government wished to keep this intention secret (Page 2007). The Guardian (Travis 2007) also reveals that the government wants cameras nation-wide to be connected directly to the police.

All of these measures use terrorism as the base argument of justification. Terrorism is an extremely often used argument for increasing surveillance. However this argument is shown to be hollow when statistical investigations are made. In the USA, more persons have died from severe allergic reactions to peanuts than from terrorist acts in the last 40 years (Mueller 2005).

### **Privacy violations through data leakage**

Experience of large databases with personal data, indicate that leakage to some extent always occur. According to calculations made by BBC, referenced by King (2008), the government departments of United Kingdom lost the personal information of up to four million citizens during only one year. An Australian example shows how data leakage can occur in practice: a video of segments recorded from cameras at a casino in Perth was later aired by a TV station. The recording included "footage of zoom shots down women's blouses and up their skirts, as well as sexual scenes" (Law Reform Commission 2001).

### **Chilling unwanted behaviour also risks chilling creativity**

One of the claimed positive effects of CCTV systems is the chilling of unwanted behaviour. But there is also a risk that other positive and creative behaviour will be limited in its expression as well. Changes and development of society often take place through behaviour that initially is perceived as unwanted or unsocial. (Wigan 2006 a)



### **Anonymity is abolished**

An argument often used to justify surveillance is that “if you have nothing to hide you have nothing to fear”. However in many situations there are perfectly legitimate reasons for an individual to want to stay anonymous in a public setting. Peaceful activists that want to use the human right of free expression do not want the police to register their movements. Psychologists in highly charged cases in family courts may want to stay anonymous to avoid a link to their personal life. (Wigan 2006 a)

It is an implicit presumption in the design of surveillance systems that anonymity or pseudonymity always is linked to criminal behaviour. Card systems such as the Oyster card (as detailed earlier in this report) make it impossible or very cumbersome to stay anonymous in the public transport setting. Often the systems operators use the carrot and stick method to make the passengers register their cards. The Transport for London for example claims that it is voluntary to register the card for children, however children are only allowed to travel for free if the card is registered.

The Swedish transport operator Västtrafik's incentive for registration is that if the card is lost a new replacement card can be issued. However this feature could have been offered without the integrity loss; the transport operator could issue a separate receipt with a password code that the customer can store separately from the card, and if the customer loses the card the receipt simply could be presented. Västtrafik explicitly states that it wants a closer relation with its customers and therefore wants to add value to the customers that register their cards. (Andersen 2006)

### **Democratic rights can be threatened**

There are numerous examples from democratic countries that show that fundamental democratic rights have been violated by the misuse of surveillance. Although no evidence has been found linking the Oyster transport card used in London to police activities in monitoring citizens political activities, it is disconcerting that Transport for London in its large entry in the Data Protection Register states that it stores data in 28 categories about the passengers, including collecting “individuals' political opinions, religious beliefs and even 'sexual life'” (Rowan 2003).

### **Discriminatory surveillance of certain groups**

Without any concrete guidelines the CCTV operators tend to discriminate and select the groups they perceive to be more criminal for closer watch. A study by Norris (1997) found that 4 out of 10 surveilled persons were teenagers. Black youth were between one and a half and two and a half times more likely to be watched by surveillance cameras compared to their 'fair rate' according to their ratio of the population.

## BEHAVIOURAL RESPONSES

### Individual stances

The individual transport user could adopt widely different reactions to surveillance. Some persons *feel safer* with cameras nearby and their transport card registered. It makes them safer to the 'others' that can take their transport card or try to assault them. As Koskela (2003) discusses, surveillance increases the dual polarity between the 'normal' and the 'abnormal', being a powerful tool used to “exclude ‘suspicious’ youths, the homeless, political activists, people of colour, or sexual minorities”. Exactly this makes the persons on the other dual pole, that belong to the 'normal' majority feel safer seeing the cameras.

Another individual strategy is *ignoring the surveillance* pretending it not to be there. However, on an subconscious plane the surveillance (in case it is visible) arguably still could affect the individual's performances and acts in using the public space.

A third stance is that of the cam era (Koskela 2003) : the camera is seen as one element in a media repertoire where also programs like Big Brother belong. This means that the individual actually gets a positive benefit of the surveillance – “*I exist because I am seen*”.

Surveillance brings a multitude of often mixed feelings to the individual. He / she “*can feel guilty without a reason, embarrassed or uneasy, shameful, irritated or fearful*” (Koskela 2003). This guilt is the basis of the self-control that can also be defined as internalised self-discipline. The theme of individual feelings connected to surveillance is discussed in a more philosophical manner by Koskela (2000), analysing it in the matrix of Foucault and the changes of urban space.

The mode of functioning of a video surveillance system is based on that the objects start to regulate their own behaviour. As Foucault writes, referenced by Koskela (2000), an individual ‘becomes the principle of his own subjection’. This is also the argument behind installing CCTV cameras; the reason that is supposed to make it cost-effective. Unfortunately no studies of behavioural changes of 'innocent' persons (not involved in criminal activities) have been found. It is therefore uncertain if, and in that case to what extent, self-discipline exists in the context of CCTV surveillance.

Yar (2003) develops the theory that the cameras tend to become a part of the urban milieu; they might be “seen but unnoticed” as “expected background features” of the urban space. If this is consistent with the passengers real behaviour it could explain why such a low effect on criminal behaviour has been found as discussed earlier in this report.

### Subverting surveillance through creative resistance

As always there are forms for creative resistance. The group “Surveillance Camera Players” is a network of 23 groups in 8 countries. In 2002 the second International Day Against Video Surveillance was set up by this network. The group staged theatre plays or adaptation of literature such as Orwell's 1984 and Wilhelm Reich's The Mass Psychology of Fascism in front of surveillance cameras. Public transport cameras where one of the scenes of the performing acts. Through this action the group reverses the unidirectional relation of watching-being watched when the 'guardians' are themselves confronted and forced to moral judgement. Thus an increased surveillance does not have to lead to an increased internalised discipline. (Yar 2003) If the chess-pawns do not take the game seriously the king can be undermined.

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