**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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Geographies of Visibility. Zooming in on Video Surveillance Systems in Oslo and Copenhagen

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Table of Contents

TABLE OF CONTENTS 1
1 BACKGROUND AND CONTEXT 2
2 INTRODUCING OSLO AND COPENHAGEN 4
2.1 PRESENTATION OF OSLO, THE CITY AND THE SURVEY AREA 4
2.2 PRESENTATION OF COPENHAGEN, THE CITY AND THE SURVEY AREA 8
3 METHODOLOGY 11
3.1 METHODOLOGY IN THEORY 11
3.2 METHODOLOGY IN PRAXIS 13
Standard questionnaire with additional "Scandinavian questions" 13
The field work along the high streets in Oslo and Copenhagen 15
Analytical and presentational choices 17
Methodological problems and comments 20
4 RESULTS 22
4.1 ZOOMING OUT: VIDEO SURVEILLANCE AT THE MACRO LEVEL 22
CCTV with city- and nation-wide relevance:
The public record of the Norwegian Data Inspectorate 23
CCTV with city-wide relevance 28
4.2 ZOOMING IN: VIDEO SURVEILLANCE AT THE MICRO LEVEL 32
Excursus: The geography of video surveillance 44
4.3 SCENARIOS 50
The "Tourists' High Streets" 53
The "Pensioners' High Streets" 57
The "Yuppies' High Streets" 59
The "Job-Seekers' High Streets" 61
The "School Youths' High Streets" 64
Summing up. 65
4.4 TYPOLOGIES 67
Technical and organisational characteristics
as criteria for a typology of CCTV systems (Intensity) 68
Characteristics of the institution as criteria for a typology of CCTV locations 68
5 REFERENCES AND OTHER SCANDINAVIAN LITERATURE 70

1 Background and Context

This article[1] is the second in a series of national reports for Norway and Denmark within the international comparative project "UrbanEye – On the Threshold to Urban Panopticon?"[2]. The purpose of this phase of the project has been to map locations and systems of video surveillance systems (closed circuit television, CCTV) in selected urban areas in the capitals of the participating countries. In the larger project context, one goal of this phase is the development of a cross-national typology of video surveillance. As an empirical exercise in its own right, the aim is to describe geographical and social variations in surveillance video visibility: Who is on camera, how much, and where in the areas studied?

In our first report[3], from the national frameworks phase of the study, we tried to answer the question whether CCTV in Denmark is more highly and more restrictively regulated than in Norway. The claim that Denmark was more restrictive than other European countries[4] had led to the inclusion of Denmark in the overall study. We identified some differences in how the two countries have structured their laws and organisations for regulating video surveillance. Nevertheless, we concluded that these differences only constituted a clear restrictive/permissive dimension for specific areas. For instance, video surveillance of street-side cash dispensers was strictly forbidden in Denmark but not in Norway[5]. We also found that in following up their respective (and in many ways similar) laws, Denmark and Norway were following different strategies: Denmark a strategy of public debate and Norway a strategy of formal regulation. We found it difficult to categorise these differences in terms of a restrictive/permissive dimension or to explain how they came about. They may be due to cultural differences, or they may have arisen more or less by chance, e.g. depending on which courses individuals in crucial positions opted for at critical moments in the countries' surveillance histories.

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1 This report has been co-produced by the authors and other collaborators. Wiecek gathered the Oslo data and macro-level data. Wiecek and Sætnan together gathered the Copenhagen data. We thank (anonymously, as promised) all our collaborators in the field: from shopkeepers and staff who answered our brief questions, to security managers, public officials, and researchers in neighboring projects who took the time to offer more in-depth comments. Data in hand, Wiecek drafted sections 1 through 4.2, Sætnan sections 4.3, and both together 4.4. Wiecek developed the maps in collaboration with Benedikte Oksrød at the Crime Analysis Unit, Centrum Police Station Oslo, Norway. Together, and following consultations with the international project group, Wiecek and Sætnan achieved a consensus on the final version and conclusions.

2 UrbanEye is a comparative European research project on video surveillance in public accessible space. It is conducted by a multidisciplinary team of researchers from seven European countries and funded within the 5th Framework Programme by the European Commission. For details and findings see: http://www.urbaneye.net.

3 Wiecek & Sætnan 2002

4 Wright 1998

5 This is no longer the case. Since 3. May 2002 video recording devices are permitted in cash dispensers in Denmark. See the legal text in Danish at www.jm.dk/wimpdoc.asp?page=document&objno=61776

In contrast to the previous work package, our analyses here will not focus on the hypothesis of a more or less restrictive practice in one of the two countries. Nevertheless, we hope to present updated and more concrete data about the reality of video surveillance in the two countries that might give new insight into the question whether CCTV in Denmark **in practice** is more restricted than in Norway (or the other participating countries).

The object of this work package is basically to get a better understanding of the daily reality of video surveillance in the two Scandinavian capitals. One of our findings in the research process so far has been that it is quite difficult to get a realistic overview of the CCTV marked in Norway and Denmark. The analyses of two selected areas in Oslo and Copenhagen, together with additional data (e.g. from the updated public record of the Norwegian Data Inspectorate), will contribute to a more realistic understanding of video surveillance in the two countries. Additionally we hope that our empirical data will enable us to develop a typology of CCTV locations and systems, thus laying groundwork for further research in the coming work packages.

In fact, the research carried out in this work package has several links to further work packages. Our next work package is to be an observational study of work practices in surveillance video control rooms. In Denmark, the current work package also helped us locate control rooms we might later study. In contrast to this, the choice of a control room in Oslo was fairly clear and the research area for the current work package was chosen so as to give surveillance-geographical context to the area where the likely candidates are located. This is also one example of the recurrent fact that we are not able to handle the research topic in both countries entirely equally. While we carried out quite similar studies of the legal framework and the current debate in the previous report, this article is less symmetrical. Given the time schedule and the geographical distance our research was more extensive in Norway.

Due to the fact that most of our future research in this project will focus on the capitals in the participating countries we found it useful to begin this report with a short introduction of the cities (chapter 2). Here we will also include a short presentation of the selected research areas, two high street areas in Oslo and Copenhagen. After the presentation of Oslo and Copenhagen, we will have a look at the methodology used in this work package (chapter 3), including some of the problems encountered. Our findings will then be presented in four different ways (chapter 4): After a presentation of more general findings on a nation- and city-wide level, the identified CCTV systems in the high street areas will undergo a deeper analysis. In Denmark, we focus on our findings along the high street area in Copenhagen. In Norway, we include additional data from other institutions nearby as well as the public record of the Data Inspectorate. Building from there, we will then develop a typology of CCTV systems and present of a number of surveillance scenarios.

2 Introducing Oslo and Copenhagen

Our first report included a short presentation of Norway and Denmark in which we showed a number of similarities of the two Scandinavian countries[6]. This is also the case when we now focus on the city level and compare the two capitals, Oslo and Copenhagen. As capitals with somewhat similar populations, they show a lot of similar characteristics, for instance relatively many work places in the fields of public administration and finance, as well as services for businesses and institutions. Given the fact that much of our coming research will focus on these two cities we will start this report with a short introduction of Oslo and Copenhagen. The following presentation of major core facts and figures is mainly based on information from the Statistical Department from the two municipalities.[7]

2.1 Presentation of Oslo, the city and the survey area

The city of Oslo founded about 1000 years ago is the oldest of the Scandinavian capitals. After the great fire in 1624 it was rebuilt under the Danish king Christian IV, who renamed it Christiania[8] in his own honour. During the period 1814 – 1905, when Norway was in a union with Sweden, Christiania flourished both politically and financially. Local self-government was established by law in 1837. Today Oslo is the only municipality in Norway that exercises both municipal and county authority. There are three main levels of government in Norway: the municipalities (*kommuner*) at local level, county authorities (*fylkeskommuner*) at regional level, and the state government at national level. Some large cities, including Oslo, also have distributed various government functions to districts within the municipality. In 1986, Oslo introduced a parliamentary model of government with Oslo's City Parliament has the supreme authority of the City of Oslo. The Parliament's popularly elected representatives elect the City government. As an executive body Oslo's government answers to the city parliament just as a national government answers to a national parliament. The city's parliament decides major issues (e.g. budget, urban development and services provided to the citizens). Since 1988 the city has been divided into 25 districts, each with responsibilities mainly regarding social and health services. Each district has a district council and a district administration.

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6 See Wiecek & Sætnan 2002: 3.

7 See "City of Oslo", Chief Commissioner's department and Information section (2001): Oslo facts and figures (www.oslo.kommune.no/dok/felles/publ/brosjyrer/ok-presentasjon/engelsk/default.asp, www.oslo.kommune.no/dok/felles/publ/brosjyrer/oslotall/oslofacts.pdf), and "Copenhagen in figures" and "Copenhagen city – Statistical ten-year review 2001" (www.sk.kk.dk/english/publikationer.htm)

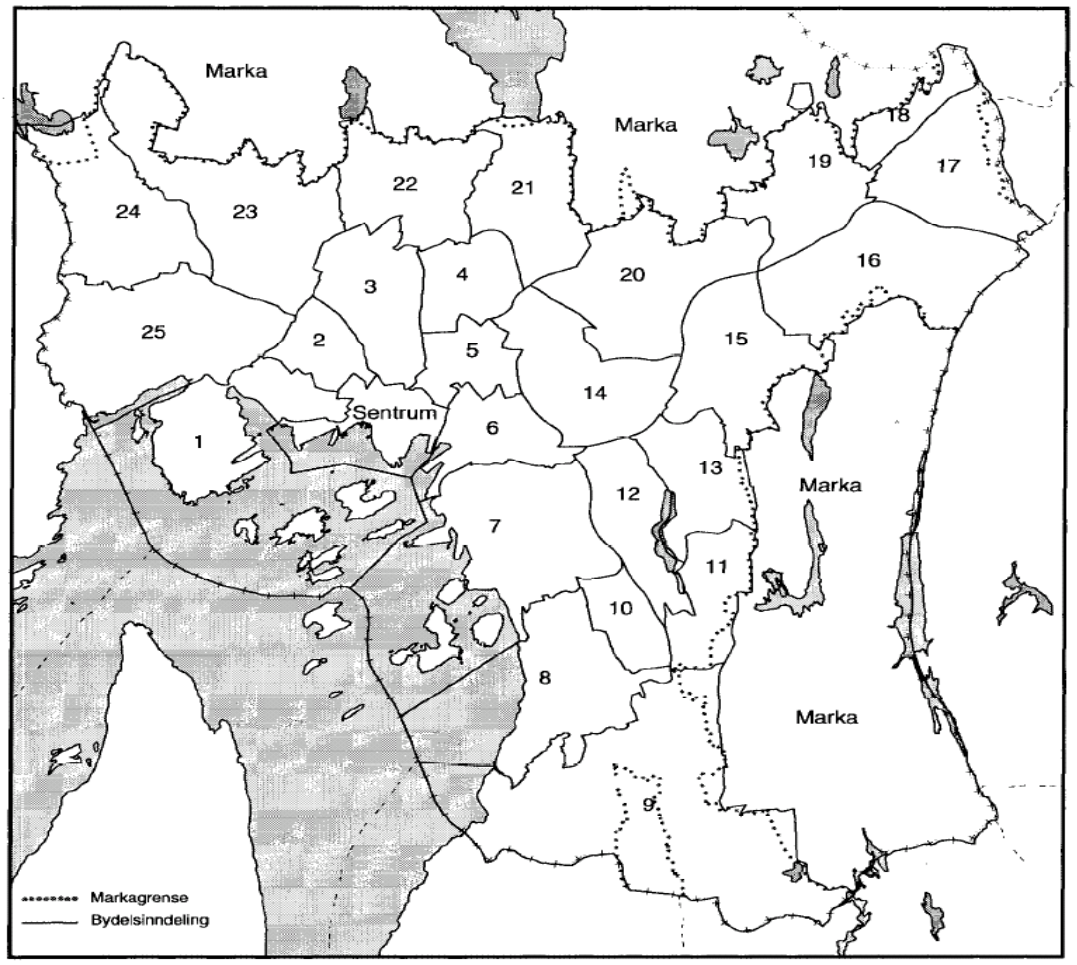
8 The city was renamed Oslo again in 1925.

The total area of the municipality of Oslo as shown in figure 2.1 covers 454 km^2. With 40 islands, waterways, and about 300 km^2 forest within its administrative boundaries, the built-up area of the Norwegian capital covers just about 115 km^2. And even within this built-up area there are open spaces amounting to about 22 km^2. Hiking, sailing, skiing and fishing are considered urban activities here, along with concerts, theatre, café life, etc.

The total population of Oslo differs somewhat dependent on how we define Oslo. As a consequence of a rapid urbanisation process in recent decades in Norway, as of 1.1.1999, 37.3% of the country's population lived in the 10 largest cities. Oslo represents the largest Norwegian city and according to the official definition, Oslo as "urban settlement" represents a population of more than 750,000 people[9]. However, the "urban settlement" definition does not include the whole commuter catchment area of the capital. But taking a narrower definition of the city, only slightly more than 500,000 live within the boundaries of the municipality of Oslo. This latter figure gives an overall population density of about 1100 persons per km^2. Given the differences in population and size between the 25 districts, this average does not say very much about the real density in the districts, which range from 1,705 (district 9) to 10,822 inhabitants per km^2 (district 2). In all there are only five districts with a population density higher than 3800, of which only two have more than 10,000 inhabitants per km^2 (district 2 and 5). If we exclude the rural areas with a population of 1647 persons distributed over 300 km^2, we find the lowest population density in the inner city area (459 inhabitants per km^2). In this most central part of Oslo with less than 1200 inhabitants spread over 2.6 km^2, we find our research area, the high street *Karl Johans gate*.

[9] See "Oslo facts and figures". Independent of administrative boundaries, "urban settlements" are here defined as agglomerations having at least 200 residents and a distance between houses not exceeding 50 meters, see Statistics Norway: www.ssb.no/english/yearbook/tab/t-020110-052.html.

Figure 2.1 City map, Oslo[10]



Norwegian terms

Sentrum (centre), Marka (rural areas), Markagrense (rural area boundaries), Bydelsinndeling (district boundaries)

Districts

01 Bygdøy-Frogner
02 Uranienborg-Majorstuen
03 St. Hanshaugen-Ullevål
04 Sagene-Torshov
05 Grünerløkka-Sofienberg
06 Gamle Oslo
07 Ekeberg-Bekkelaget
08 Nordstrand
09 Søndre Nordstrand
10 Lambertseter
11 Bøler
12 Manglerud
13 Østensjø
14 Helsfyr-Sinsen
15 Hellerud
16 Furuset
17 Stovner
18 Romsås
19 Grorud
20 Bjerke
21 Grefsen-Kjelsås
22 Sogn
23 Vinderen
24 Røa
25 Ullern

[10] Source: Map *Bydelsinndelingen* [District boundaries]. Copyright Municipality of Oslo (www.fin.oslo.kommune.no/dokumenter/statistikk/planxogxanalyseseksjonen/statistikk/statistiskxxrbokx2001/Stataarbok_2001_innledning.PDF).

Oslo's function as a capital is mirrored by the city's job distribution. There are more than 360,000 jobs in Oslo, of which municipal employees numbered 55,899 as of October 1999. In all, public services accounted for 33.2% of the workforce, followed by business services (22.8%), trade (20.2%) and transport and warehousing (9.7%). Employees in "industry, mining and quarrying" and "building and construction/power and water supply" accounted for 8.1% and 5.8% respectively. Primary industries had lost all importance for the labour market in the capital (0.2%), and unemployment stood as of October 1999 at 2.6% of the workforce. Of course, these figures are dynamic from day to day and in longer-term trends.

As of January 2001, foreign nationals represented 19.4% of Oslo's population[11], while the immigrant population accounted for 6.3% of the entire population of Norway[12]. While only 10% of the Norwegian citizens live in Oslo, 1/3 of the immigrant population and nearly half of those from non-Western countries have chosen the capital as their home. Furthermore, within Oslo the immigrant population, especially the non-Western population, is concentrated in the former working class districts to the east and north within the city, whereas districts to the west and southwards along the fjord were once and remain still primarily the domains of the upper and upper-middle classes. In terms of these social divisions, *Karl Johans gate* stands in the middle, neutral ground of the relatively de-populated downtown area. It is a street shared by all classes, age groups, and nationalities – including tourists – but still with some echo of the east-west social dimension of the city. Western (upper) Karl Johan has a higher frequency of high-priced shops than does eastern (lower) Karl Johan[13]. Lower Karl Johan is a pedestrian mall. Upper Karl Johan is a trafficked street, bounded on one side by a park. It is this street, from the central railway station (Oslo S) in the east to the university in the west then turning south down Roald Amundsens gate to the City Hall, that we chose as our primary survey area for this study. The area is about 1 km long and covered 204 addresses with public access.

This area was chosen explicitly with an eye to building contextual data for the next project phase when we will be studying the daily workings of a video surveillance system. In Oslo we had already decided that we will study one of the systems at or near the Oslo S railway station, either the open street system operated there by the Oslo Police Department[14] or a system at one of the adjacent malls.

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[11] www.oslo.kommune.no

[12] Currently about 65 % of the immigrant population have backgrounds from non-Western countries. "Immigrant population" mean persons with two foreign-born parents (i.e. first-generation immigrants born abroad, and second-generation immigrants born in Norway). For more information see Statistics Norway: www.ssb.no/english/subjects/02/sa_innvand_en/

[13] "Upper" and "lower Karl Johan" are in common usage and refer to a physical hill. The terms may or may not also echo the social dimension in people's minds.

[14] See Winge 2001

2.2 Presentation of Copenhagen, the city and the survey area [15]

Founded in 1167 by bishop Absalon, Copenhagen has not always been the capital of Denmark, but it was always one of the most important localities in the Kingdom. Thus, the city's history is closely connected to the history of the country.[16] Copenhagen's importance can be read clearly in its face. The city still bears the stamp of many Renaissance buildings and houses and mansions built by rich citizens of the 1700s and the industrialisation of the 1800s.

Despite being a major capital, Copenhagen is still a small city. The area within its administrative municipal boundaries is somewhat similar to the core area of the municipality of Oslo. The City of Copenhagen covers 89.6 km^2, while the built-up area in Oslo, not counting open/rural areas, amounts to 93 km^2. However, the functional area of Copenhagen Region extends to 2870 km^2. The Greater Copenhagen capital area plus the 10 next-largest cities account for 32.4% of the Danish population. Even if Denmark has a somewhat larger population in a much smaller total area, and thus a much higher overall population density, the degree of urbanisation is roughly similar to that of Norway. The 499,148 inhabitants of the City of Copenhagen represent 9.3% of the population of Denmark, as of 01.01.01. Here again we find similarities between the two countries, regarding the absolute population of their capitals as well as the cities' percentages of the countries' populations as a whole.

The City of Copenhagen is divided up into 15 districts, each of which is different in many ways, also with respect to population and size[17]. Given the smaller area of the City of Copenhagen, population density is much higher in the 15 districts of the Danish capital than in the 25 districts in Oslo. On average, Copenhagen has an population density of about 5600 persons per km^2. The most densely populated city districts are Indre and Ydre Nørrebro (see table 3.1).

It is a characteristic demographic trait of Copenhagen that a large part of the population is comprised of students and foreigners. Foreign nationals represented 11.5% of the population in the capital, but only 4.8% in the whole country.

Each day 170,000 people cross the city limits in order to work in Copenhagen.

Unemployment has been decreasing for a number of years. In recent years the decrease has been greater in the capital than nationally. As of 1 January 2000 Copenhagen had 3.4% unemployment (Denmark 3.3%). In 2000, there were 46,712 social assistance

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[15] Statistical information about Copenhagen is from www.sk.kk.dk/data2001/Kbhital01/Kbhital01uk.pdf

[16] For more facts about Copenhagen's history, see www.kbhbase.kk.dk/kbhbase/kbhbase.nsf/all/26E7FC20B47AC832412567D3004E53D7?OpenDocument.

[17] A map of the districts of Copenhagen can be found on the homepage www.sk.kk.dk/tal_og_fakta/c_befolkning1b.htm

recipients. In Copenhagen, crime is more frequent than in the country as a whole. In recent years, however, the number of criminal code violations has been falling.

Table 2.1: Population within Copenhagen's 15 districts[18]

District	Population		
	absolute	%	per km^2
Indre By	26,283	5.25	5,700
Christianshavn	9,577	1.91	2,800
Indre Østerbro	45,954	9.18	6,700
Ydre Østerbro	35,587	7.11	7,000
Indre Nørrebro	31,271	6.25	18,200
Ydre Nørrebro	41,669	8.32	19,700
Vesterbro	35,344	7.06	9,400
Kongens Enghave	15,695	3.14	3,500
Valby	46,265	9.24	5,200
Vanløse	36,229	7.24	5,400
Brønshøj-Husum	39,999	7.99	4,600
Bispebjerg	39,819	7.96	7,400
Sundbyøster	48,417	9.67	5,600
Sundbyvester	38,190	7.63	7,300
Vestamager	7,495	1.50	500
Others	2,737	0.55	
Copenhagen	500,531	100.00	5,600

In Copenhagen we had not yet chosen a CCTV system for the observational study in the next project phase. Our choice of area for the current project phase was therefore aimed at two concerns: comparability with the area chosen for Oslo, and the possibility of finding a CCTV case to study in the next work package. We therefore focused on an area similar to Karl Johan street, a multi-use high street collectively referred to as *Strøget*, a series of streets linked in the zig-zag pedestrian mall of about 1.5 km. The pedestrian mall runs from *Kongens Nytorv* (Kings Newmarket) square at one end to *Rådhustorvet* (City Hall Market) square at the other. At the *Kongens Nytorv* end, we continued around one corner of the square as far as the Royal Theatre (theatres being one of the urban level institutions we were supposed to supplement should our high street not cover them). This corner also included a department store whose surveillance system was a possible candidate for our study object in the next project phase. At the *Rådhustorvet*

[18] Copenhagen City, Finance Administration, Statistical Office (www.sk.kk.dk/tal_og_fakta/c_befolkning1b.htm, modified)

end we similarly continued to one corner of the square and also included the City Hall in the centre of the square – again one of the supplementary institutions on our list.

The two survey areas were chosen with an eye to their similarities, but are also in many ways different. Both are multi-use high streets, frequented by various categories of local citizens as well as by tourists. Both are, at least in large part, pedestrian streets. Both include some number of urban institutions, such as City Hall, a church, a national theatre. But not all institutions represented on the one can be found on the other. And perhaps more significantly, Copenhagen is more of a European metropolis than Oslo. Its major pedestrian shopping mall reflects this in that it contains more brand-name European fashion shops.

3 Methodology

3.1 Methodology in theory

The objective of this work package was to map locations of CCTV systems in selected urban areas, thus, trying to identify owners/operators, intentions and core features of the systems in order to develop a cross-national typology of CCTV. To reach this goal, it was agreed that the data collection was to be carried out in two parts:

At the micro-level we mapped CCTV systems along a high street in a multifunctional central district. The plan was to cover about 1.5 km between two metro stations of this street door-to-door. The street itself and each ground floor institution with free access, including shopping malls and gallerias, was to be inspected for cameras. For each location, adequate respondents were to be solicited to answer a questionnaire regarding key technological and organisational aspects of the location's CCTV surveillance system. We thus attempted to get an overview about the surveillance in this particular part of the city.

In addition, we tried to answer whether certain institutional settings use video surveillance systems. Discussions at the previous project meeting had yielded a list of 32 categories of such institutions (see table 3.1). These categories were not arrived at on the basis of some theory of what a capital city "is." Rather, they came up willy-nilly as examples of different facets of city life – facets that we collectively intuited might relate to different types and degrees of risk, different expectations of privacy, different clienteles, and different patterns of ownership. We decided to include at least one specimen of each category on this list. If a given institution was not found on our high street, we attempted to include the institution in that category nearest to the centre of the high street area. For these we were to use the same questionnaire as for the institutions on the high street.

Some further institutions of city-wide relevance – airports, ports, train stations, bus stations, motorways, public transport, metro/underground, busses, taxis – could not be located by this technique and/or would not easily fit into the questionnaire format. Taxis, busses, and trains, for instance, are mobile. Which one would we say is nearest the high street? Motorways might extend to the far end of the country, with video surveillance perhaps miles away from the city. The airport might be in another city entirely. Therefore, information about these institutions was gathered by reviewing existing literature and media reports, interviewing security managers and other local experts. In this context we also looked for open street CCTV systems operated by public authorities or public-private partnerships. The questionnaire served here as a general guide, but not always as a fixed form for data registration.

Table 3.1: Types of institutions, Oslo and Copenhagen.
(* Institutions located outside the high street area.)

Type of institution	Oslo	Copenhagen
Hospital	*	Missing
Kindergarten	*	*
Public school	*	Missing
College/university	1	Missing
Police station	*	Missing
Social welfare office	Missing	Missing
Unemployment office	*	Missing
Other local authorities (City hall)	1	1
Public library	*	Missing
National government building	1	Missing
Embassy	*	Missing
Religious centre	1	1
Cemetery	*	Missing
Metro/underground station	1	Missing
Big car park for at least 50 cars	*	Missing
Public toilet	*	1
Shopping mall/ galleria	3	1
Small shop / corner store /grocery	78	109
Chain store/large retailer	51	73
Prescribing pharmacy	3	Missing
Bank	7	14
Post office	1	Missing
Hotel	2	*
Museum	*	1
Cinema/Theatre	2	1
Gas/petrol station	*	Missing
Restaurant	18	15
Pub / bar / café	22	14
Park	*	Missing
Stadium	*	Missing
High-density residential area	*	Missing
Others	12	4

We had also, in advance of conducting the study, agreed on one analytical tool and presentation form. A number of scenarios, each representing a certain pattern of urban behaviour, would be used to present our findings, telling the story where and how often

different categories of actors were likely to be caught on camera. In order to cover categories of insider/outsider roles, class, gender and age we included scenarios for tourists, pensioners, yuppies, job seekers/unemployed and school youth.

3.2 Methodology in praxis

In Norway, we managed to complete the data collection as planned. We inspected the high street and contacted all categories of supplementary institutions outside this area. As a further supplement, we include an update of information from the public record of the Norwegian Data Inspectorate. While our Norwegian data is quite comprehensive, in Denmark we had to limit our data collection to the high street area and have only limited data about CCTV in other sites. Table 3.1 shows which functions from the institutional "check-list" were covered in the two cities. The location of institutions outside the high street areas will be shown in figures 3.1 and 3.2.

Standard questionnaire with additional "Scandinavian questions"

The standard questionnaire in this work package comprised 20 questions. A data sheet was designed for all project participants to register their data, this with an eye to later merging of data into a file for cross-national comparisons. For **a number of reasons we added some features** to the standard questionnaire. In the Scandinavian context, some standard questions seemed to be difficult to answer while other aspects of interest were not covered fully by the shared questionnaire. Having agreed not to change the standard questionnaire, we decided to use some additional questions.

First, we added some questions regarding notification signs. Signs notifying the public that an area is under video surveillance seemed pretty much universally required, but specifications of sign size, placement, and contents varied from country to country. The solution for the shared questionnaire was to ask whether signage met with local legal requirements. But assessing the legality of the signs can be tricky, both for our respondents and ourselves. In general the relevant rules, e.g. within the data protection acts need to be interpreted. Is, for instance, the clear visibility of monitors (or even cameras) notification enough to qualify as a sign? In addition, we had to deal with two countries, and with two laws in one of our countries. In Denmark, according to the *Law on the ban against TV-surveillance*[19] the party responsible for the video surveillance has to be named on the notice/sign. The information requirements in the Danish Personal

[19] Lov om forbud mod tv-overvågning mv., jf. lov nr. 278 af 9. juni 1982 med de ændringer, der følger af lov nr. 1016 af 23. december 1998 og lov nr. 939 af 20. december 1999 [Law on the ban against TV-surveillance etc., see also law No. 278 of 9 June 1982 with those changes that follow due to law No. 1016 of 23 December 1998 and law No. 939 av 20 December 1999] (http://www.retsinfo.dk/_GETDOC_/ACCN/A20000007629-REGL)

Data Act (PDA) go even further[20]. Therefore, in cases where the rules of the Danish PDA are applicable, it is not only the responsible party's identity but also the purpose of the video surveillance that needs to be mentioned on the sign. Not being legal experts, we did not feel competent to assess whether the PDA applied in each case and thereby whether a particular CCTV sign is in accordance with national law. Instead of answering (or even asking) as to the legality of signs, we decided to note whether a sign was visible and whether the responsible data controller and/or the purpose of the surveillance were mentioned. Even the issue of visibility was very often a question of ones personal judgement. Nor was it always easy to determine whether a party mentioned on a sign was the party the responsible for the video surveillance, or whether a sign not mentioning a responsible party could be assumed (as some informants claimed) to imply that the shop at that address was itself responsible. In the end, assessment of legality seemed to be a task for the professionals from the Data Inspectorate and we did not attempt to use our supplementary data on sign content to go back and fill out the shared questionnaire variable on sign legality.

The next area where we added some questions to the standard questionnaire was "type of institution." In the standard questionnaire the list of values referred to the 32 categories of institutions discussed above. The list was a hybrid response to several anticipated needs: a need for a check list to see where we had to supplement the institutions encountered on the high street, and a need for relevant categories from which to develop typologies. Furthermore, it was impossible to know in advance what categories would address this latter need. The pre-coded responses, therefore, were neither mutually exclusive nor collectively comprehensive. We saw most of our research objects ending up in classes such as "small shops", "chain stores" or "others", while more specific categories would only contain a single case or two (see table 3.1 above). We decided that more detailed information about the locations might prove useful in many ways, for instance in selecting locations for the various scenarios and/or in flexibly developing typologies of locations according to different types of criteria. Furthermore, local regulations (discussed in the previous work package) might call for local categories of locations. If, for instance, we wanted to check whether video surveillance of cash dispensers in Denmark was not only forbidden but actually non-existent, we had to note cash dispensers as a type of location separate from banks (the only option on the standard questionnaire). Another example: Our research process in Oslo was somewhat influenced by the one and only Norwegian open-street video surveillance system. This open-street system is in an area with a reputedly high rate of drug-related crimes, including crimes perpetrated to finance drug habits (prostitution, theft); and, as mentioned before, the area includes part of our survey high street. One expectation,

[20] Act on Processing of Personal Data (Personal Data Act, PDA), Act No. 429 of 31 May 2000 (http://www.datatilsynet.dk/eng/index.html)

therefore, was that this particular area of the high street might be covered with more cameras than other parts. But of course, there might be a number of other reasons for the existence of CCTV systems at one particular place – for instance the number of banks (which all tend to have CCTV) as opposed to, say, hairdressers (which tend not to have CCTV). A more detailed description of the locations would be useful in interpreting the CCTV data we collected. Therefore, we broke down some of the broader categories of locations into additional groups, e.g. not only "banks" but also cash dispensers and money exchanges, not only "small shops" but also book stores, textile shops, travel agencies, hairdressers, and so on. In the end, we wound up using our detailed descriptions rather more than the pre-coded categories on the questionnaire, and in retrospect we sometimes felt a need for even more detail than we had gathered.

Finally, we classified the **size of the institution/business** in order to relate for instance the number of cameras to this value. Two cameras within a small kiosk represent a very different camera density than two cameras in a big department store. We categorised the locations roughly into five different classes: Very small, small, medium, big and very big. The cash dispenser or the kiosk might be a good example for a "very small" location, while a multi-story department store would be a typical "very big" location. While this was necessarily impressionistic (we did not ask our informants for actual square footage), we nevertheless hoped to give a more precise description of the observed places (location type) and spaces (size).

The field work along the high streets in Oslo and Copenhagen

In **Oslo** and **Copenhagen** our survey areas were approximately 1 and 1.5 km. respectively. As planned, we went from door to door in the chosen high street areas in Oslo and Copenhagen, including the ground floor shops and shared spaces of malls and gallerias fronting the high street. The Norwegian high street area included 204 cases, in Denmark 236. This excludes shops that were temporarily closed for renovation or unoccupied. Where our on-site informant was unable or unwilling to answer the entire questionnaire, or where we were unable to find an on-site informant, we noted address and business name and if possible also the name of a contact person. We then used phone and/or e-mail to try to fill in the blanks. Data about the city-wide video surveillance in Oslo was also mainly collected by phone and/or e-mail. These city-wide functions were not included in the data file as they often consist of data that are structured differently, e.g. surveillance policies and/or statistics for whole categories of locations rather than specific data about a single such location.

The data file for the Norwegian and Danish high streets includes altogether 440 cases. Of these, there are fewer than ten cases in each country where we did not get any information about the place and/or system in question. Therefore, at the first glance we have over 95% response rate and the data sheet for the two Scandinavian countries seems to render possible a quite comprehensive analysis of video surveillance along the

two streets. However, a closer look at the data file reveals large numbers of missing values, especially for certain variables. This is due to a number of reasons:

Very often the respondents were not able, in some cases not willing, to answer all our questions. Unfortunately we have not always noted where the respondent declined to answer our questions. Because we inspected the cases door by door, we could get some data even at those places where no one was willing to answer. Therefore, the number of cases where respondents were unwilling to answer is not easy to estimate. One hypothesis that we have is that the position of the respondent influenced our data collection in that lower-level employees often demurred to respond, either because they lacked the information requested or were not authorised to release it. But there are also examples where we did not get the information even though we contacted the management level of the institution. E.g. two similar institutions located close to each other and both with video surveillance: The bigger one had a security department where we got professional information and answers to all of our questions. Of course the place had signs about CCTV. At the other, smaller institution we spoke to the manager and were told that he was only required to give information to the Data Inspectorate, no one else. Ironically, this place did not even meet the Inspectorate's official requirement of a sign. Another shop owner said that she couldn't talk about their system because of the customers in the shop.

Table 3.2: Respondents along the high streets, Oslo and Copenhagen (50 missing)

	Oslo	Copenhagen	Total
Employees	102	99	201
Manager	68	66	134
Owner	19	17	36
Security staff	9	10	19
Total	198	192	390

To us it seemed that both inability and unwillingness to answer our questions had to do with the subject but also the very persons we talked to. We classified the respondents generally in four classes: managers, owners, employees, and security staff. We did not get the information about the respondent's position in all cases and the above-mentioned terms have different meaning in the various shops. The head of a section in a big department store was coded as a manager, as was the person in charge of a small shop. The latter was often the one with the personal responsibility at that time we were carrying out our fieldwork and the one or two other employees present referred us to him/her. In Norway about half of the respondents (49%) were employees, 41% were managers/owners and only about 4% were security experts.

Given the technical context and the security aspect within our survey, it is no wonder that many employees were unable or unwilling to answer our questions. An example might be the question regarding the multiplexing/time compression recording system. 86% of the Norwegian employees who answered this question did not know whether "their" shop used a multiplexing recording system. Even about half of the Norwegian managers/owners who answered this question did not know which technical system they used to record images[21]. This in itself gives a telling image of the surveillance systems we encountered in this work package. One can question the intensity of surveillance when the observers know so little about their technical instruments. In contrast, when we were directed to a security department manager (altogether 19 cases, 4.2%), the picture changed. Among the cases where our respondent was a member of the shop's security staff, the percentage of existing systems was much higher than the average for the data as a whole. In Norway nearly 80% of the cases where we collected data from security experts had video surveillance; the overall average was 39%. And all of these informants were familiar with the technical recording system they used.

Another question where we have no answers is the total running costs of the system. Of the first 100 cases in Oslo, only one respondent was able/willing to give us figures about the annual running cost of the CCTV system. After a while we simply decided to drop that question as it was generating more embarrassment than information.

Finally, we did not get many answers regarding the maximum number of observers, simply because in most of the cases the question did not make sense in the context of the local surveillance system. The "observers" were the employees working in the shop. Their number varied with the time of day and day of the week, and much of the time it was not possible to say if any would happen to look at the monitor at all.

Analytical and presentational choices

The overall aim of this work package was to map locations of video surveillance systems both for descriptive reasons and in order to develop a typology of CCTV systems. We chose to analyse the data and to present our results with the help of scenarios and maps.

With the help of thematic maps one can visualise the phenomena of video surveillance in a certain way. Special-purpose maps can illustrate a particular topic such as surveillance coverage/density by presenting a single category of information (statistical variation of objects in space)[22]. Given the geographical interest in our research objects, we used prints of the technical base maps of Oslo and Copenhagen while doing our data collection. These digital maps visualise detailed terrain information, for instance all

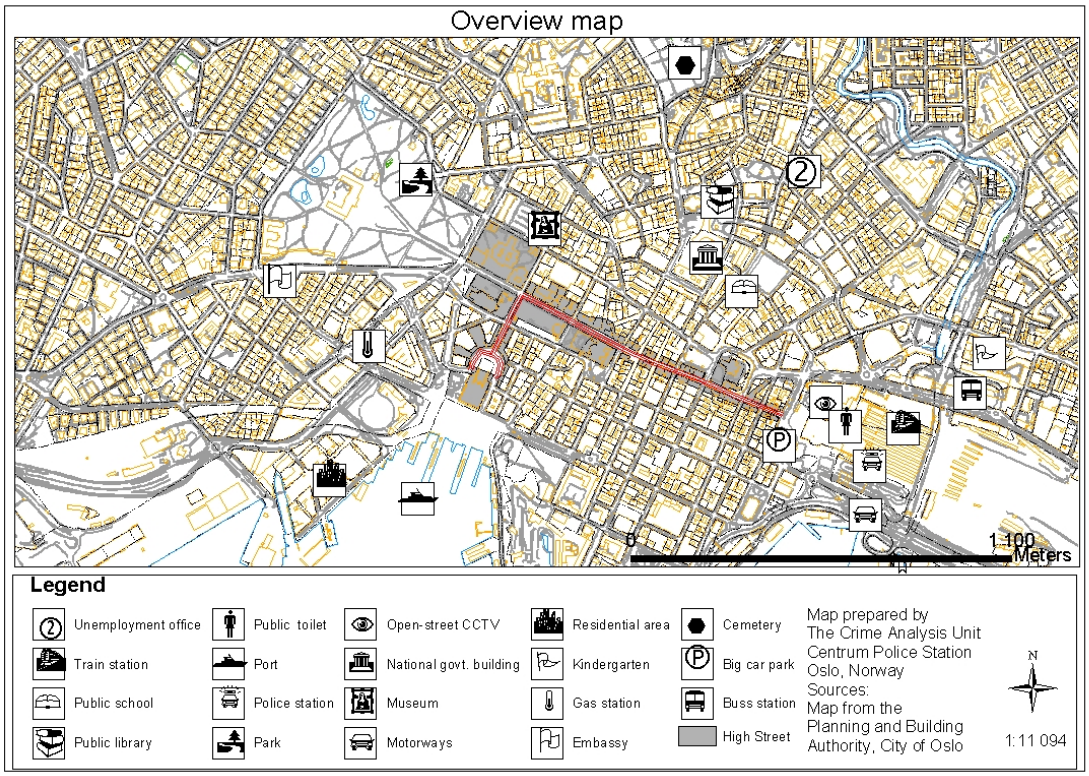
[21] We found we could elicit more responses to this question by using hand gestures and everyday language to explain the concept, but didn't feel sufficiently technically competent ourselves to follow up that route.

[22] Johnston et al 2000

buildings and roads, and land information with boundaries and parcel identification for the whole built-up area of the cities. Additionally the technical base maps contain text information (parcel numbers, addresses and place names) and were therefore suitable tools to locate the institutions along our high street areas. Here we used maps in the scale 1:2000 to 1:2500 to get a realistic picture of our research area. This seemed to be important not least because we had some geographical hypotheses in mind while we carried out the survey. Therefore, it was necessary to locate all the institutions, offices and shops that were included in this work package.

Although we could locate each case separately on our map base, we grouped the cases right from the beginning into "CCTV street blocks". This was both a necessity and a methodological tool within our data analyses. We guaranteed the respondents to treat their responses confidentially; thus, we cannot attribute the data directly to individual institutions. By classifying the findings per street block we are able to provide some degree of anonymity. The location within a certain street block along the high street could then function as geographical data regarding the question whether the existence of CCTV showed a geographical pattern.

Figure 3.1: Overview map, Oslo

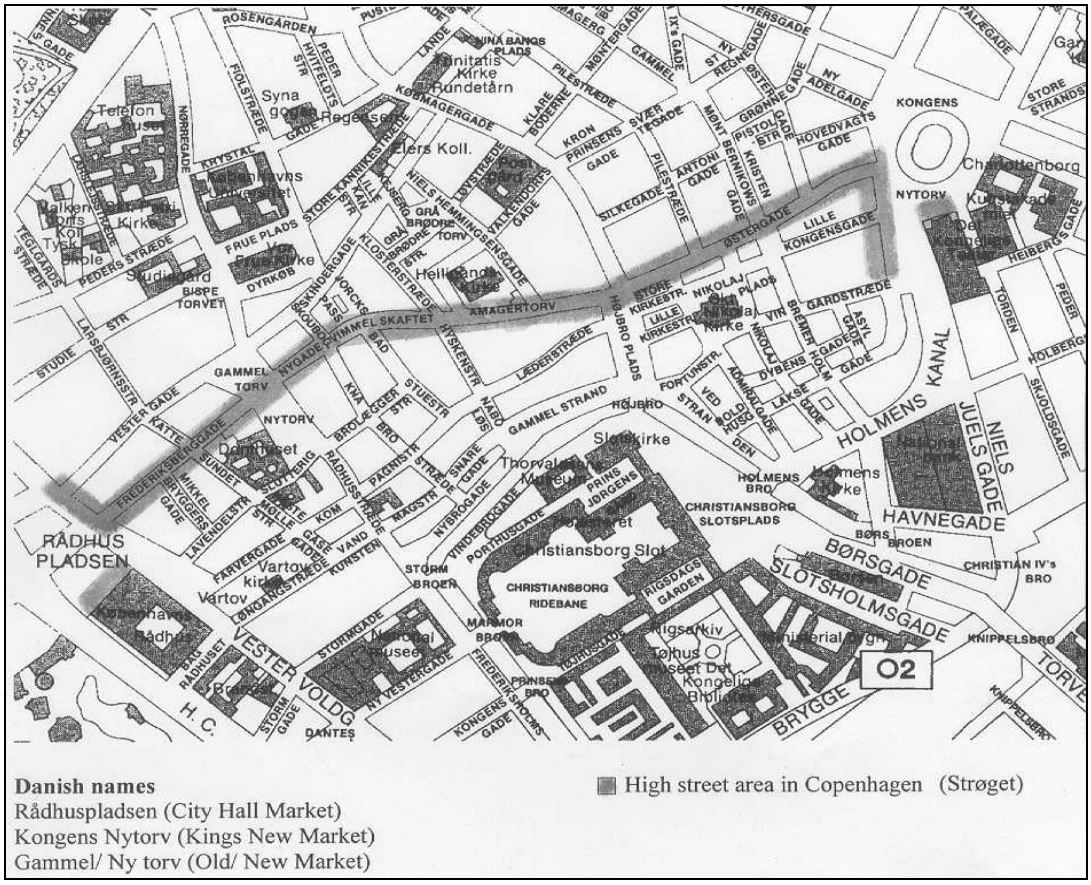


The overview map in figure 3.1 shows the high street in Oslo, grouped into 23 street blocks. In addition it shows the location of a number of institutions outside the high street area that were included in our empirical work (see table 3.1).

The definitions of the street blocks along the high street were mainly based on the physical structure of the area itself. This was the easiest way to cluster the cases in a geographical way. But as block lengths and ownership structures vary, this has the consequence that the number of locations per street block varies from 1 to 33 institutions. Obviously, where a block contains only one institution, grouping into blocks does not provide anonymity for that institution. However, as it happens these are public institutions and the information we provide at block level is by law public information. Therefore the block-grouping move still seems feasible. This grouping of the institutions along the high street is the base for the other Norwegian maps about CCTV systems, cameras and recording devices. In Copenhagen we were not able to carry out the same map presentations as in Oslo, although we worked in a similar way, for instance all the cases along the high street were grouped into blocks (see figure 3.2).

In the scenarios in section 4.3, we have analysed the data in terms of social spaces. The underlying idea here is that a physical structure of intersections and buildings may also represent more than one social structure of inhabitants and agendas. The overall images of, say, camera densities block by block may be a sum of many "lived" blocks sharing the same physical space. Our choices in how to pick out these lived blocks from the physical whole will be discussed and critiqued in section 4.3.

Figure 3.2: Survey map, Copenhagen[23]



Methodological problems and comments

As mentioned above we included some additional questions in our Scandinavian survey. Nevertheless, we identified a number of problems within the empirical phase of this work package. Some are related to concrete aspects around the data collection in WP3, while others have more general character. Given the fact that Urban Eye is a very empirical project, we thought it might be useful to add some comments regarding the methodological challenges in our report.

There are some aspects that we did not cover in our questionnaire. One example of data that we actually didn't register within this survey was the historical starting point of each CCTV system. Of course, one can question the possibility to get information about the histories of the systems, but theoretically this would have given the opportunity to include an historical analyses in this work package and might have been revealing in terms of changing understandings of the role of surveillance. Another point, which we

[23] Map basis: København [Copenhagen], Stadskonduktorembedet [Engineer office], Building and Construction Administration, 1993. Scale 1:10.000. Copyright Municipality of Copenhagen (http://www.se.kk.dk/www2se.htm).

see in retrospect would have been quite easy to collect, had to do with our respondents. Carrying out our door-to-door and telephone survey, we came into contact with more than 400 members of the business community in Oslo and Copenhagen. Unfortunately we did not include questions about the respondent's attitudes towards CCTV, thus missing the chance to get a first opinion poll "for free." But even if we missed that opportunity for a systematic opinion poll, in some cases we did make note of spontaneous comments by the respondents. We will mention some of these where relevant, not least because they may help us develop instruments for the later work package where we are to conduct such opinion polls.

Another methodological challenge lies in the very data collection and the presentation of our findings, the use of maps and scenarios. Mapping something like the existence or coverage of a certain security system such as video surveillance systems can be quite difficult. As discussed above, it is not always that easy to get reliable data about a technical system that deals with security issues of individual institutions. Even if the information about the very existence of video surveillance at publicly accessible spaces is public information[24], there are a number of limitations to what we could present on maps. First we guaranteed the respondents that our findings will be presented in such a way that individual locations and security system cannot be identified. In addition, we came over a number of juridical problems regarding the use of digital maps within our report. In the end it proved to be quite difficult to present our findings on maps.

The last self-critical comment that is of more general character and therefore maybe the most important one, has to do with the very design of the data collection. Carrying out an international research project about video surveillance is a challenge in many ways. The topic is broad and the field dynamic. Due to the wish to secure or even increase the comparability within the project we agreed on using one standard questionnaire. Using exactly the same questions in so different countries such as England, Hungary, Denmark etc. carries the risk that one cannot accurately portray the circumstances in each country. In this context, we got the impression that the standardised questionnaire, certainly some technical questions, fit better with open street and mall systems in an English context than with the small shop systems that we mostly encountered in our Scandinavian field work.

[24] In Norway data controllers are obliged to send notification to the Data Inspectorate and one can check on the Inspectorate's homepage (www.datatilsynet.no) whether a given institution has operates a CCTV system.

4 Results

In this chapter we will present general findings about the existence of video surveillance along the two high streets and a broader overview of surveillance in Oslo. We focus mainly on the survey in the two high street areas, but will also include some results from other data sources (city-wide surveillance and the public record of the Data Inspectorate in Norway).

4.1 Zooming out: video surveillance at the macro level

To get a general overview of CCTV in sites of city-wide relevance we were supposed to collect data from institutions such as airports, ports, train and bus stations, motorways and so on. As mentioned above we do not have very much data about CCTV on city level in Copenhagen. We included only a few institutions with city-wide relevance that we came into contact with when collecting data along the high street area. Thus, our data about CCTV in Copenhagen includes only 12 of the 32 different institutions that were mentioned in our questionnaire[25], and it will be presented together with the data from the high street in Oslo in sections 4.2 and 4.3.

In Oslo however, we have data for all but one of the institutions that we were supposed to include in this work package. For a number of institutions we not only included the location(s) on or nearest to the high street, but also acquired more comprehensive data, for instance about nearly all petrol stations in Oslo, by contacting key persons within the different sectors. We identified more than 320 cameras at about 20 institutions outside the high street in Oslo, and it was actually here where we found the most intensive CCTV systems. In terms of open-street CCTV systems, we mentioned in our last report that we found no open street systems in Denmark. The one and only open street system in Oslo (or in Norway, for that matter) is the six cameras operated by the police in the area around the main railway station, Oslo S. [26] While much of the information regarding CCTV with city-wide relevance will be presented in the scenarios in section 4.3, we will give a short overview about our findings for groups of institutions in section 4.1.2. But first we look to the updated public record from the Norwegian Data Inspectorate for some city- and nation-wide context.

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[25] See table 3.1. Missing institutions in Denmark are hospitals, public schools, colleges/universities, police stations, social welfare and unemployment offices, public libraries, national government buildings, embassies, cemeteries, underground and train stations, big car parks, prescribing pharmacies, post offices, petrol stations, parks, stadiums, busses/bus station, motorways.

[26] See the map about the coverage of the open-street system in figure 4.3 and an English newspaper article about its popularity within the police administration on the following homepage of the Norwegian newspaper Aftenposten: http://tux1.aftenposten.no/english/local/d162741.htm. See also a system evaluation report: Winge 2001.

CCTV with city- and nation-wide relevance: The public record of the Norwegian Data Inspectorate

In our first report we mentioned the importance of the Norwegian Personal Data Act (PDA) for video surveillance in Norway and introduced the agency responsible for the enforcement of this law, the Norwegian Data Inspectorate (*Datatilsynet*). We specially pointed out one of the Inspectorate's functions, the one to *"keep a systematic, public record of all processing that is reported...or for which a licence has been granted"* [27]. When we first got to know that this official Norwegian record includes CCTV systems, we hoped it might provide an easy overview of video surveillance in Norway. But we soon realised that the record was far from mirroring the reality of CCTV systems. We accounted in detail what is registered in the record, and what is missing, e.g. information about the size of the systems and their technological features and management.[28] Another problem was that the section about video surveillance within the Norwegian PDA included a new set of rules that were not really "in practice" at that time. Even if surveillance operators had been required since 1 January 2001 to notify the Inspectorate of all video surveillance of public places, for a number of reasons the record was far from complete. Consultants in the Data Inspectorate assumed that it might take years before the public record finally will give realistic figures about the distribution and coverage of video surveillance in Norway. Nevertheless, we shared the Data Inspectorate's hope that due to incoming notifications the record would gradually become more complete and thus more precise. In addition, we hoped that the Inspectorate would soon have the tools to carry out statistical analyses of the registered notifications.[29]

When we contacted the Data Inspectorate in May 2002 we feared that the administration still was not able to sort notifications regarding CCTV into separate lists. But happily, the Inspectorate had not only carried out a number of inspection visits at CCTV locations in spring 2002, but was now able to find the relevant CCTV notifications in the record. Some hours after the phone call we had a number of data sheets including all the notifications that were registered in the public record as of 2. May 2002. As previously stated we have doubts that all those notifications that we counted as "CCTV notifications" really deal with phenomena falling under the topic of our project. We can only repeat that the notification form enables the data processors to choose between "TV surveillance" and "image recording." While the Data Inspectorate confirmed that they intend the first term to stand for CCTV without, the second for CCTV with recording, we still have our doubts especially regarding those "image recording"-

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[27] Personal Data Act, section 42 *Organisation and functions of the Data Inspectorate,* point 1

[28] For instance, the record does not include information about the number of cameras or systems. For details see Wiecek & Sætnan 2002: 13-15.

[29] This wasn't the case when we finished the data analyse within the last work package at the end of December 2001. At that time we had to check the notifications manually to identify those that where relevant for our survey. We managed only to include the first 1700 of about 2400 notifications.

notifications. We still believe that a considerable number of enterprises have misunderstood the form on this point and that a lot of notifications regarding image recording refer to still photography.[30]

Anyway, what does the updated official overview say about video surveillance in Norway and Oslo? In all there were 4839 notifications registered as of 2. May 2002 and out of this 1304 notifications had crossed off for "TV surveillance" and/or "image recording". Compared with our last survey from December 2001 the percentage of video surveillance among other reported data collection methods increased from then 24.12% to now 26.95%, confirming the general extent of video surveillance. Table 4.1 shows that the distribution among different observers and the observed was corroborated, too. Even more, the predominance of observers from the two sectors "Industry and commerce" (66.26%) and "Finance, insurance and accounting" (10.81 %) and of the targeted group "Customers, clients, users" (59.28 %) were strengthened.

The geographical distribution of video surveillance still gives an indication that most surveillance is undertaken in cities, mainly in the capital. But while the data from the sample we used in our last report indicated that about one third of all video surveillance was carried out in Oslo (nearly 40% if we include the surrounding region of Akershus), the updated information from the Data Inspectorate gives a slightly different impression. Oslo is still the dominant area, but together with the region of Akershus it stands for only a bit more then 30%. Nevertheless, the tendency that most of surveillance is undertaken in cities can still be identified in other Norwegian regions with larger cities, e.g. Rogaland (Stavanger), Hordaland (Bergen) and Sør-Trøndelag (Trondheim).

In contrast to our last analysis of the Inspectorates public record, this time we could get a more detailed description of the data controllers' business sector. Within the notification form there is the possibility to define which part of the above-mentioned 11 categories (see table 4.1) the enterprise is engaged in. Using that information it might in the long run be possible to give a more detailed picture of the sectors where it is more usual to use video surveillance. This includes spatial and time related information. Given that we previously have analysed the record on the basis of the first 1700 notifications, one could for instance ask what might be the reason for the increasing number of notifications in the finance sector. At this stage we will restrict ourselves to the following list that gives the number of notifications for a few examples of observers. This list is another example what the database of the Inspectorate might be used for in the future. Not surprisingly, among "others" (516) it is first of all the area of "sale/marketing of own

[30] This might be the case certainly within the sectors *Health, social affairs, child welfare authorities and social security/national insurance* and *Education, research and culture* where those notifications constituted the vast majority of cases (71% and 81.7%). Other indications were that 95% of all "video surveillance" of patients was carried out with image recording and that out of all the "CCTV notifications" more then 80% of all CCTV notifications crossed off for "TV surveillance", whereas only half of them mentioned "image recording", see table 4.1.

products" (437) and the "bank/finance" sector (128) that constitute the biggest subgroups, followed by the "research" sector (79) and what is called "health service/help" (40). But it may for instance come as a surprise that less then 12% of all the notifications from the bank and finance sector were sent from observers in Oslo, and it might be even more interesting to have a closer look at other actors like those engaged in "passenger transport" (17), or actors like "lawyers" (13), "police" (4), "law courts" (1), "prisons" (1), or "day-care centres" (3).

Tab 4.1 Who is targeted, where, by whom and how? Data from the public record of the Norwegian Data Inspectorate[31]

Data Controller/Enterprise	Notifications (absolute)	CCTV notifications in %	
	02.05.02	02.05.02	31.12.01
Industry and commerce	864	66.26	62.93
Transport and communication	40	3.07	5.37
Finance, insurance and accounting	141	10.81	3.41
Working life/employment	15	1.15	0.49
Organisations	24	1.84	2.68
Health, social affairs, child welfare authorities and social security/national insurance	63	4.83	7.56
Justice	30	2.30	2.20
Planning	3	0.23	0.24
Churches and faith communities	3	0.23	0.49
Defence	2	0.15	0.00
Education, research and culture	119	9.13	14.63
Sum	1304	100.00	100.00
Registered object/person			
Employees/staff	187	14.34	9.27
Access control	88	6.75	7.07
Pupils, student, kindergarten children	48	3.68	7.07
Members	5	0.38	0.73
Patients	37	2.84	5.12
Customer, client, users	773	59.28	57.07
Random sample	130	9.97	10.24
Selective sample	36	2.76	3.41
Sum	1304	100.00	100.00
Method/Equipment[32]			
TV surveillance (Observation)	1058	8.13	32.20
Image Recording	679	52.07	28.05
Observation and recording	1304	100.00	39.76
Sum	1304	100.00	100.00

[31] Source: Information from the public record of data processing in Norway, including video surveillance, see www.datatilsynet.no

[32] The updated overview follows at this point a slightly different classification: *Observation and recording* stands for all notifications that crossed off for either "TV-surveillance", or "Image recording" or both. Whereas The 1058 notifications under *TV surveillance (Observation)*, and 679 notifications in the category of *Image recording* include all cases where "TV surveillance" or "Image recording" respectively was crossed off, either alone or together.

Tab 4.2: Geographical distribution of video surveillance systems in Norway[33]

Region	Notifications (absolute)	Percentage of CCTV		Percentage of population
	02.05.02	02.05.02	31.12.01	01.01.00
Oslo	314	24.08	30.73	11.33
Akershus	104	7.98	9.27	10.43
Østfold	50	3.83	3.90	5.54
Hedmark	25	1.92	2.44	4.18
Oppland	54	4.14	2.44	4.08
Buskerud	54	4.14	2.93	5.29
Vestfold	61	4.68	2.93	4.75
Telemark	50	3.83	3.17	3.69
Aust-Agder	24	1.84	0.73	2.28
Vest-Agder	37	2.84	2.44	3.48
Rogaland	144	11.04	10.24	8.33
Hordaland	116	8.90	7.56	9.72
Sogn og Fjordane	24	1.84	1.46	2.40
Møre og Romsdal	39	2.99	2.44	5.43
Sør-Trøndelag	81	6.21	7.56	5.87
Nord-Trøndelag	20	1.53	1.71	2.84
Nordland	58	4.45	3.17	5.34
Troms	35	2.68	3.41	3.38
Finmark	14	1.07	1.46	1.65
Total	1304	100.00	100.00	100.00

Given that our own data within this work package is limited to a particular area in Oslo (and Copenhagen), the data from the public record seemed to be an interesting supplement within this report. Nevertheless, it is somewhat difficult to build a bridge between the official data of this record and the data we collected ourselves. There are some meeting points, and in some cases we actually identified systems in the official data record that we came over within our empirical work even on the micro-level in Oslo.[34] But due to the fact that this record does not include technical and organisational details about the CCTV systems, to us the notifications functioned just a verification of what we knew from our inspection. However, the public record is of no little importance

[33] Source: Information from the public record of data processing in Norway, including video surveillance from www.datatilsynet.no and numbers of population pr 01.01.00 from www.ssb.no/emner/02/aktuell_befolkning/200010/T-1.html

[34] For instance, after several telephone calls and e-mail we finally had to accept that we would not get any information about one of the bigger CCTV systems within our research area in Oslo. Because we knew the organisation number of the data controller, we were able to find the notification in the public record of the Data Inspectorate.

within the work of the Data Inspectorate, as it enables them to carry out more detailed inspections at these (officially) known CCTV locations. In addition, the record gives a broad orientation about the development of CCTV in Norway in sectors such as "Education, research and culture", "Transport and communication", "Finance, insurance and accounting", "Health, social affairs, child welfare authorities and social security/national insurance" etc. Let's now have a look at our own findings in these sectors at the city level in Oslo.

CCTV with city-wide relevance

The institutions included in our survey were grouped into 32 categories. In this chapter we present an overview of our findings for all those institutions, while we describe the systems in detail in section 4.2 about the micro level in Oslo and Copenhagen.

While the public record of the Norwegian Data Inspectorate includes a number of CCTV systems in the sector of "Education, research and culture" (see table 4.1), we could not identify much video surveillance in kindergartens, schools and colleges/universities. The nearest **kindergarten** had no video surveillance and the respondent did not know of any kindergarten in Oslo with CCTV. The **public school** administration informed us that there is not one among the more than 170 schools in the municipality with CCTV. Nevertheless, we identified at least one primary school with a few video cameras. The **college/university** with a campus located on our high street has a video surveillance system, but not in the buildings in our research area. The **public library** nearest the high street also has several locations, one with but most without video surveillance. While there are video cameras on the outside of the main building (the building nearest the high street), the inside of this main building as well as all the other 13 branch libraries have no video surveillance. The one **museum** close to the high street in Oslo had a high intensity video surveillance system[35]. In addition, the Norwegian Museum Authority (NMA) informed us about the possibility for museums to apply for state funds (60% of overall costs) for measures aimed at securing public museums. The money is mainly meant for fire protection but can also be used to finance crime prevention initiatives, for instance purchasing CCTV systems. Nevertheless, in the last two years there was only one case where support was awarded for installation of video cameras.[36]

In the area of "Health and social affairs" CCTV seemed to be a common feature in hospitals in Oslo. The **hospital** nearest our high street area that responded to our inquiry had a high-intensity CCTV system. We could not get any respondent at the nearest **social welfare office**, but got data about CCTV at unemployment offices. There is not

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[35] Our typology of systems according to surveillance intensity will be presented in chapter 4.2 below.

[36] Telephone interview with a head of division in the Norwegian Museum Authority. See NMA's homepage http://www.museumsnett.no/nmu/english.html.

one **unemployment office** in the whole region of Oslo (and Akershus) using video cameras. In contrast, the nearest institution within the category of **other local authorities** was the City Hall, which has a high intensity CCTV system. We identified altogether three **prescribing pharmacies**, all in Oslo, two with CCTV and one without.

"Churches and faith communities" were represented by only a few institutions in our survey. Two **churches**, one on each of the high streets, had no video surveillance system. In Oslo, the **cemetery** closest to our high street area had no video surveillance, nor have the other 19 public cemeteries in the municipality of Oslo. However, in the previous work package we came across two articles in a Norwegian newspaper that reported about video surveillance at faith-related institutions. One reported on a cemetery in Østfold county, (southeast of Oslo) with video surveillance[37], the other on plans to install video surveillance at a mosque in Oslo (after 11. September 2001)[38].

"Transport and communication": It was confirmed that there is a CCTV system at **Metro/underground stations** in the centre of Oslo, at the **local rail stations** in Copenhagen, and at the **main railway stations** in both cities. In addition, a small number of bus and metro lines in both cities have had CCTV installed on a trial basis. In Oslo the **Taxi** Association reports that about 14% of cabs have installed "snapshot" systems. One of our cab drivers in Copenhagen said probably only a handful of cabs in Denmark have them installed. (See ch. 4.3.2 below.) The Oslo **Port** Authority informed us about the fact that they use three cameras to watch the whole port of Oslo[39]. Given the size of the area covered they need to have high quality cameras, but they do not record the images and they use physical installations to protect private areas from being under the eye of their cameras. The main purpose is to check visibility conditions (fog, snow) and whether the boats anchor at the right place. The **car park** that we identified close to our high street had a CCTV system with constant observation. Also, both cities' airports had CCTV (see chapter 4.3). Video surveillance of **public roads** in Norway is carried out on three different levels. There are cameras watching the traffic in tunnels, others used for traffic management and finally there are speed control cameras that take fixed pictures. Altogether there are 445 such cameras in the whole region of Oslo/Akershus, Hedemark, Oppland and Vestfold. In contrast in the rest of the country where the sum of traffic cameras amounts to less than 100 cameras. Then too, our informant in the roads department did not mention cameras that record non-payers at toll booths and automatic toll stations, which may add some number throughout the country.

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[37] Aftenposten 12.08.01: Vokter livets hvilegård [Watching over life's resting place].

[38] Aftenposten 19.09.01: Terrorangrepet på USA - Oslo-moské anmelder trusler [Terror attack against USA. Mosque in Oslo reports threats].

[39] Here is an image from their webcam watching parts of the harbour in Oslo: http://www.ohv.oslo.no/

In Oslo, the **public toilet** located close to the high street has an advanced optical surveillance system, but uses only the eyes of the staff members and no video cameras. In Denmark we identified a number public toilets along or near the high street with CCTV.

All of our 22 cases in the "finance sector" were located along the high streets, 14 in Copenhagen, 8 in Oslo. All the **banks** had video surveillance systems. Due to the fact that it was very difficult to get information about CCTV in banks our data is mainly based on observation, but we are sure that all of them do record images. In a telephone interview a security expert of one Norwegian bank stated that they do not have video surveillance at their cash dispenser due to the legal framework regarding recording of images at "isolated" cash dispensers (i.e. not located in connection to a bank branch). Until recently it was forbidden to store images recorded at isolated cash dispensers longer than one week, whereas images recorded in banks can be saved up to three months. According to the security expert, it does not make sense to record images if the bank can't save the images longer than one week. In general, **cash dispensers** were locations that showed the connection between the reality of CCTV and the underlying legal framework. In Denmark, it was until recently forbidden to use video cameras at cash dispensers. This was reflected in our findings: Not one of the five cash dispensers along the high street in Copenhagen had CCTV, while three of four cash dispensers in Oslo were protected by cameras. Another type of institution we registered separately was **money exchange** offices. All these offices, four in Copenhagen and one in Oslo, had video surveillance. Finally we included one **post office** in this category, as they also have banking functions. The post office on the Oslo high street had a moderately intensive CCTV system. In all, the percentage of CCTV locations in the finance sector was 64.3% in Copenhagen and 87.5% in Oslo. CCTV at banks has been much discussed in the media, so this nearly complete penetration (all but the cash dispensers where legal regulations intervened) did not come as a surprise. And after the recent changes in the legal framework both in Denmark and Norway, one might suppose that the nearly every institution in this sector will be protected by cameras in the nearest future.

Another sector were we expected a high coverage of CCTV were institutions such as police offices, national government buildings and embassies. While there is no video surveillance at the **police office** nearest to our high street, the closest police station for the whole district around our high street has a new video surveillance system. There are a lot of **national government buildings** close to the high street and the video surveillance system covering the government complex was actually the only system in our survey that got the maximum number of points in our surveillance intensity index (see chapter 4.2, table 4.10). Here we identified all the characteristics of a high intense CCTV system: A CCTV system operating a high number of cameras "24/7," including operator-controllable pan-tilt-zoom (PTZ) and dome cameras, with digital recording devices, constant monitor observation, and automatic alarm detection. While we got professional

information about the system in the Norwegian government area in Oslo, the figures about the nearest **embassy** are based solely on what we could observe. Here we counted 6 PTZ and/or dome cameras outside the building and 2 stationary cameras in the public accessible area inside the embassy. In light of the two layers of armed guards conducting bag inspection and metal detection before admission to the public area of the building, we can only assume that the video system was high intensity, too.

The one **galleria/shopping mall** (18 shops) that was located in the high street area in Copenhagen had no video surveillance. Of the three gallerias/shopping malls in Oslo, one had no system (23 mostly small shops) and one had a moderate intensity system (8 more exclusive shops). The third galleria/shopping mall (23 shops) appeared to have the biggest and most intensive system, but unfortunately we did not get any information about this CCTV system. In this context it is interesting to see if the existence of CCTV in shops is dependent on whether the shop is located in a galleria/mall with or without CCTV. The category of small shops and chain stores stands for the majority of locations in both high streets. In general, we identified 177 **small shops/chain stores** in the high street in Copenhagen, of which 28.8% had video surveillance. Among the 18 shops within the gallery (without CCTV) the percentage of individual video surveillance systems was slightly higher (32.6%). In Oslo we had altogether 128 small shops/chain stores. Of these, 37.5% had video cameras. We could not find any correlation between the existence of CCTV in shops located in malls with or without video surveillance. The percentage of individual CCTV system in shops located in malls with CCTV varied from 23.2 to 44.5%. To us it appeared that the type of shop was more important than its location with or without surrounding surveillance.

The categories of **restaurants** and **bars/cafés/pubs** included a number of quite different locations. Overall, the percentage of CCTV locations among the 68 cases in this category was nearly the same in both cities (31.3 % in Copenhagen, 30.8 % in Oslo). Among the CCTV locations in Denmark there are 5 cafés and fast food places, one discotheque and one restaurant. In Norway, we identified one discotheque, 3 fast food locations and restaurants and 4 pubs. The latter often mentioned their liqueur licenses as a reason to have video surveillance. In Oslo we had two **hotels** along the high street; both had video surveillance systems. One declined to give further information, while the other informed willingly about their high-intensity system. The Norwegian Hospitality Association informed us that CCTV has not been much of a debate theme within the association. The subject had come up at one meeting of restaurant owners. The dominant opinion then was that any measure that could improve security without making guests feel unwelcome or uncomfortable was a good thing. Video surveillance was seen as protecting staff and guests against potential violence, but this was seen as more of a police responsibility than a task for the host organisation. Viewing clients as “guests” rather than “customers” was emphasised throughout.

Finally, we were looking for a **high-density residential area** nearby the high street. The one we included in our Norwegian survey was more a multifunctional area than a pure residential area[40]. This area had a high intensity video surveillance system.

4.2 Zooming in: video surveillance at the micro level

The central variable in the questionnaire that we used in the two high streets was the **existence of a CCTV system**. Within our two research areas with in all 440 publicly accessible addresses, we identified altogether 153 locations with CCTV systems (34.77%). We were mainly interested in CCTV systems in this survey, and as a consequence we did not collect much data about locations without CCTV. But we did note some attitudes towards CCTV at places without video cameras: One manager said that it would not be much fun to work in her shop if they had video surveillance. In other shops we were told that they do not *need* CCTV because the shop is not so big and/or they have another alarm system. In a café located within a smaller galleria they didn't have cameras because of the "huge number of cameras" in the galleria. Nevertheless, they had their own CCTV sign at their entrance.

Table 4.3: Existence of CCTV systems in Oslo and Copenhagen (8 missing cases)

	Oslo	Copenhagen	Total
Cases along the high street	204	236	440
CCTV locations (absolute)	78	75	153

But let us focus on the identified CCTV locations. Distributed over the two cities we see that the percentage of CCTV systems is slightly higher in Oslo (38.4%) than in Copenhagen (31.78%). Of the 6.46% difference, 2.12% corresponds to the five cash dispensers at which video surveillance was not allowed when we conducted our survey. Now that this is allowed also in Denmark, we expect that the difference will be reduced, as the one thing Danish bank managers were willing to talk to us about was their need for CCTV at cash dispensers and doorways.

But overall differences or similarities between the two cities are not the sole point of interest in these data. The main purpose of this survey was to contribute to the development of a typology of CCTV systems, and therefore we collected data that would enable us to describe the CCTV systems. As we will see, the terms "CCTV system" and "CCTV location" encompass many different aspects and qualities. In the following chapters we will present several characteristics of the identified CCTV locations. We start with an indicator of the size of the CCTV systems, the number of cameras.

[40] This webcam shows part of the area: http://www.akerbrygge.no/index.php?artikkelid=webcam

Along the two high streets we identified more than 800 **cameras**: 452 in Copenhagen, 353 in Oslo. However, before we start with a more detailed description of CCTV locations on the basis of this variable we need to make some remarks. First, not all places were willing to name the exact figure. What we did in these cases was to note the number of cameras we were informed of. "More than five cameras" was for instance coded as 6 cameras. Where we did not get any quantitative information from the respondent we noted the number of cameras we ourselves observed. That means some CCTV location might actually have more cameras than registered in our data file. The figures from our data represent therefore a minimal estimate. Secondly, one CCTV location along our Danish high street area was a big department store with alone 160 cameras. In Oslo we had several big shopping malls just around the corner of our research area, but mainly due to the time schedule we decided not to include them. In the following discussion about the number of cameras we will exclude this particular case as an "outlier" in favour of a more balanced analysis of the remaining cases. Elsewhere in the report, the case will be included.

Table 4.4: Number of cameras along the high streets in Oslo and Copenhagen[41]

	Number of cameras	Cameras pr address	Cameras pr CCTV location
Oslo	353	1,73	4,53
Copenhagen*	292	1,24	3,89
Total	645	1,47	4,24

Table 4.4 shows the number of cameras on each of the high streets and the average number of cameras per publicly accessible address and per CCTV location. The differences between the average number of cameras in Copenhagen and Oslo echo differences we have seen before, e.g. in the percentage of addresses with CCTV. So too with the number of cameras per system. The maximum number of cameras in a single system in Oslo was 24, in Copenhagen 16 (aside, that is, from the department store). While these differences may be telling, the figures in table 4.5 indicate that in both cities we are basically seeing the same type of CCTV systems. Besides the fact that the majority of addresses along the two high streets have no cameras at all (63.41%), among the 153 CCTV locations in Oslo and Copenhagen, there are 43.51% with just one or two cameras and 31.82% with three to five cameras. In the class with 6-10 cameras we can see a bigger percentage in Oslo (23.08%, in contrast to 10.67% in Copenhagen). The 12 remaining systems with more than ten cameras constitute less than 8% of all CCTV locations. In other words, almost all the systems we found were

[41] Not including one big department store in Copenhagen with 160 cameras.

quite small, probably too small to warrant keeping someone on salary to watch the monitors.

Table 4.5: Size of CCTV systems in Oslo and Copenhagen (7 missing cases)

	Oslo	Copenhagen	Total
No cameras	123	156	279
1-2 cameras	33	34	67
3-5 cameras	22	27	49
6-10 cameras	18	8	26
11-20 cameras	5	5	10
More than 20 cameras	1	1	2
Total	202	231	433

Another crucial question the one regarding the **recording** devices. We asked whether the images were recorded, and if so in which way (digital/analogue). The following overview over recording devices is based on data for 119 of the 153 identified CCTV locations. The confirmation of recording devices at 50 CCTV locations in Oslo and 44 such cases in Copenhagen results in a percentage of CCTV with recording of 64.10% along the Norwegian high street and 58.67% in the Danish context. The lower percentage of systems with recording was backed up by the following "history" of one dummy system in Copenhagen: There the shopkeeper informed us that the location does have cameras (and signs), but that the employees in the shop were not willing to tolerate that the images of the CCTV system were recorded. Therefore, the manager decided to switch off the whole system, because she did not see any point in video cameras without recording devices. The inoperative cameras and now inaccurate signs were left in place in hopes they would function as a crime prevention tool.

Technically the vast majority of CCTV systems with recording facilities are based on analogue equipment (88.3%). Among the 7 Danish systems with digital recording there are four (a system shared by four exclusive design shops) that used analogue recording for some of their cameras. The other three digital systems were located in banks (2) and one telephone shop. In Norway we found digital systems at a jeweller's, City Hall, a photography shop, and a kiosk

Table 4.6: Recording devices at CCTV locations in Oslo and Copenhagen (34 missing cases)

	Oslo	Copenhagen	Total
No recording	14	11	25
Analogue recording	46	37	83
Digital recording	4	7	11
Total	64	55	119

Another aspect of the surveillance intensity CCTV systems represent in a given place, is the **time period** the cameras are in use and/or the images are observed on a monitor. The standard questionnaire included a question about the time of observation (see the results further down). We added another question about the time period in which the cameras are on. For systems without recording, this period was related to the presents of employees, thus, in most cases similar to the opening hours of the institution. Therefore this question was mainly of interest in those cases where images were recorded.

Table 4.7: Time of observation and with cameras in use, Oslo and Copenhagen

	Time of observation		Cameras in use	
	Oslo	Copenhagen	Oslo	Copenhagen
24 hours a day/7 days a week	2	2	45	30
Day time (opening hours)	2	2	16	12
Irregularly	36	36		1
Total	40	40	61	43
Missing	38	35	17	32

Along the high street of both cities we identified about 40 cases with observation. In Oslo and Denmark the vast majority of CCTV systems included "**irregular observation**" (90% of all the cases with observation in both cities). But what does "observation", or "observer" actually mean in our context. Observation refers to the fact that that the images of the CCTV systems are observed by a human being on a monitor in real time. An observer is therefore an employee who actually looks at the monitor(s) and – even if (s)he had other tasks parallel to the observation – can react directly to particular events.

Who then were the "observers" in our study and what does "irregular observation" actually mean? The very dominance of irregular observation gives a first hint. Irregular observation refers mainly to ordinary staff members who occasionally watch the monitor/s in the shop they are working. Thus, the figures about places under observation can easily be misleading. In one location that is formally listed among those with

irregular observation the monitor was actually switched off when we were guided around in the shop.

Another indication that the identified observation is of less intensive character is the fact there were only three locations in Copenhagen and four in Oslo with operator-controlled (PTZ or dome) cameras in operation (4% and 5.13% of all the CCTV locations along the two high streets respectively). One of the Danish systems had 36 controlled cameras and one Norwegian system included 18 controlled cameras. The other systems with dome cameras amount to a total of seven cameras in both countries. So altogether we found only 61 controlled cameras among more than 800 cameras along the two high streets. In other words: 92.42% of all identified CCTV cameras along the high streets were stationary.

One of the features that we added to the standard questionnaire was the classification of addresses according to their **size**. The following table shows the number of locations in the five different classes along the two high street areas, as well as the percentage of CCTV locations within the different size categories.

Table 4.8: Size of CCTV locations, Oslo and Copenhagen (29 missing)

	Oslo		Copenhagen		Total	
	All cases	**CCTV**	**All cases**	**CCTV**	**All cases**	**CCTV**
Very small	27	42.3%	24	17.4%	51	30.6%
Small	53	28.8%	48	29.8%	101	29.3%
Medium	52	34.6%	76	32.9%	128	33.6%
Big	50	40.0%	43	43.9%	93	41.8%
Very big	21	61.9%	17	41.2%	38	52.6%
Total	203	-	208	-	411	-

Not surprisingly, we see a general tendency towards more surveillance at the bigger locations. But here one has to be aware of the fact that video surveillance of a "very big" location does not necessarily mean that, for instance the whole department store is covered. In contrast, we found several locations in this class where the video surveillance system was limited to certain vulnerable areas of the location (e.g. cosmetics department). This is the main reason why we did not use the variable "size of the location" to estimate the size of the business area under surveillance.

While we found about the same number of institutions in the different size classes in the two high street areas, there are differences regarding the percentage of CCTV locations among smallest and the biggest institutions in the two cities. On the one hand, the reason for the higher percentage of CCTV locations among the 27 "very small" locations in Oslo can be explained with two words: cash dispensers. On the other hand, it seems

to be more difficult to find the reason for the lower level of surveillance in very big institutions in Copenhagen. One hypothesis we had was that opposition to video surveillance at work places is stronger where there are a large number of organised employees. But again, the types of businesses may also solve the mystery. The presence of certain large institutions and the fact that they tended to have video surveillance may explain the higher level of surveillance in Oslo (for instance the Parliament, City Hall, public transport facilities, hotels, book shops and shopping malls).

The overall impression of our CCTV systems so far is that there is a substantial number of locations using small video surveillance systems. The social impact and effectiveness of this surveillance, however, may in the end be dependent on whether the individual systems are integrated or not. The fact that we have to do with a large number of CCTV locations with few cameras each, puts numbers of cameras in another light than if the cameras and systems were co-ordinated. So let's see how those questions in our survey were answered. The relevant questions to identify integrated systems might be first of all whether the institution itself owns and operates the system, whether images can be switched over to other observers and finally, whether there are any other communication links (such as radio networks) to other systems and/or institutions.

Table 4.9: Non-existence of integrated CCTV systems, Oslo and Copenhagen

	Oslo	Copenhagen
Location owns CCTV system	93.0 %	93.1 %
Location operates CCTV system	96.7 %	94.7 %
Images cannot be switched over to other observers	96.8 %	92.6 %
No communication links	96.8 %	46.2 %
N (total number of operative systems)	78	75

Table 4.9 shows clearly that the vast majority of CCTV locations operate their own cameras. In Oslo and Copenhagen there were just 4 cases each were the CCTV system was not owned by the institution where it was located. In Oslo "others" owned four systems, while we identified two systems in Copenhagen that were owned by security companies. It is somewhat difficult to say who the "others" are, but this might be another private company that operates or leases out the location. The systems not operated by the institution totalled five cases. In Denmark two systems were operated by security companies, in Norway just one.

When we look at the technical features regarding integrated systems we see that there was not one system in Oslo where images could be switched over to other observers (two respondents could not answer that question). In Copenhagen we identified three locations were images can be switched over to other observers. Copenhagen seems to stand out in table 4.9 with more systems involving communications links, however these

were all separate links (mobile phones, radio links) to security company patrols in the area; none were connected with the video surveillance system, and all positive responses were a result of extra prompting on the part of the interviewer.

Another aspect of interest regarding the technical level of video surveillance systems is the automatic detection of events by either alarm detection technologies or by intelligent image evaluation. There were only 14 cases with automatic detection of events. All the 11 such systems in Copenhagen and the three systems in Oslo used alarm detection technologies.

If we summarise our findings so long, we see that the majority of CCTV locations represent isolated video surveillance systems, often with a small number of cameras, and many even without recording devices – not to mention more sophisticated technical features such as automatic detection technologies or image switching. In table 4.11 we have combined the above-discussed features to form an index of the intensity of video surveillance in the identified CCTV locations. The index is based on six variables from the standard questionnaire and one additional Scandinavian question[42].

Using the information in table 4.10, every location can be described with the help of a new variable that counts the values/points in each of the selected variables. The locations along our high streets could thereby range from 0 to 14 points. Zero points indicates that the location has no video surveillance system, while 1 point represents a dummy system. CCTV systems can be distinguished on four different levels. An operative CCTV system would have at least 4 points in our data sheet[43]. Thus we coded CCTV locations with 2-5 points as "simple systems" on a very low-intensity level (these systems have usually only a few cameras and no recording/observation). Low- and moderate intensity video surveillance systems with 6-7 or 8-9 points are characterised by a higher level of surveillance, usually due to (irregular) observation of monitors and/or (analogue) recording of images. High-intensity video surveillance systems with 10-14 points stand for the highest level of surveillance due to intense and more advanced observation and recording of images (including technical aspects such as use of dome cameras and automatic detection of events). Thus, an operative CCTV system (2 points) with a high number of cameras (2 points) operated 24 hours/ 7 days (3 points) including at least some PTZ or dome cameras (1 point), with digital recording (2 points) and constant observation (3 points) as well as automatic alarm detection (1 point) would get the maximum number of 14 points in this system of surveillance intensity.

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[42] In addition to the information from the standard questionnaire about the "time of observation" we added the question regarding the time of period with "cameras in use". For an overview over all variables used for the calculation of the index, see table 4.4.

[43] Operative CCTV system (2 points), less than average number of cameras (1 point), cameras irregularly in use (1 point).

Table 4.10 includes the 16 "dummy systems", so that we have a total number of 169 "CCTV and dummy locations". In both cities we had nearly the same percentage of dummy systems (8.24% in Oslo and 10.71% in Copenhagen) out of the total of CCTV and dummy locations. Table 4.11 excludes the dummy systems, focussing on operative CCTV locations.

Table 4.10: Calculation of an intensity index for CCTV locations

Variables	Values	CCTV locations	
		Oslo	C'hagen
Existence of a system	0 = No CCTV system	117	145
	1 = Dummy system	7	9
	2 = Operative CCTV system	78	75
Number of cameras	0 = No cameras	117	145
	1 = Less than average	57	65
	2 = More than average	28	21
Recording devices	0 = No recording	136	165
	1 = Analogue recording	50	39
	2 = Digital recording	4	7
Time of observation	0 = No observation	129	156
	1 = Irregular	36	36
	2 = Opening hours	1	0
	3 = 24 hours/ 7 days	2	2
Cameras in use	0 = No cameras in use	124	154
	1 = Irregular	0	1
	2 = Opening hours	4	0
	3 = 24 hours/ 7 days	46	30
Automatic detection of events	0 = No automatic detection		
	1 = Alarm detection technologies	3	11
PTZ or dome cameras	0 = Only fixed cameras		
	1 = At least some PTZ and/or dome cameras	3	4

It was somehow difficult to set the exact limitations for the individual classes of more or less intensive surveillance systems. On the background of our findings in this work package, e.g. the fact that we had a lot of very small places (less than the average of 4,24 cameras can still be a lot in a very small shop) and hardly could find any system with digital recording or automatic detection technologies we did not expect to find many systems with 14 points. There was not one system that got more than 12 points in our survey. In Copenhagen we identified two CCTV systems with 12 points, followed by four systems with 11 points and nine systems with 10 points (three in Oslo and six in Copenhagen). The first finding in table 4.12 is the confirmation that by far the majority

of CCTV systems we found were of low intensity. Especially in Denmark, where over 70% of the identified CCTV locations can be classified as very low or low intensity video surveillance systems.

Table 4.11: Intensity of CCTV systems, percentage of locations with operative systems.

Level of intensity	Oslo	Copenhagen	Total
Very low-intensity video surveillance (2-5 points)	34.62 %	56.00 %	45.10 %
Low-intensity video surveillance (6-7 points)	19.23 %	14.67 %	16.99 %
Moderate-intensity video surveillance (8-9 points)	41.03 %	20,00 %	30.72 %
High-intensity video surveillance (10-14 points)	5.13 %	9.33 %	7.19 %
N (total number of operative systems)	78	75	153

In light of this technological level, what is the purpose of the systems we identified and how do they react to events they hope to catch on the camera?

Table 4.12 shows an overview of the spontaneous answers of the respondents. This means that the respondents have not seen the relatively detailed list of standardised answers in our questionnaire. In fact, many of them were actually surprised by this question: As if *the* reason for video surveillance system weren't obvious?! Our impression was that the majority of respondents see CCTV systems as a crime prevention tool, and that's it. The results in table 4.12 confirm the dominant role of CCTV systems as a crime prevention tool against theft, fraud and burglary. The vast majority of all CCTV locations (73.2%) use video surveillance to prevent crime. Interestingly enough, only 86 of these 112 systems have recording devices. This confirms our impression that the first category encompasses a number of very different CCTV locations. Here we find the department store with 160 cameras (including a large number of dome cameras) next to the system of a small textile shop (with one camera, one monitor and no recording devices at all). If we focus briefly on the latter aspect, it is interesting to note that all the 27 CCTV systems that according to the respondents aim to prevent "violence against persons" include recording devices. In addition, "theft and fraud" includes criminal offences by employees; thus, we are not able to say how many of the cameras within this 112 CCTV locations are directed against criminal employees. Even if a Danish shopkeeper told us that thefts from employees were a bigger problem than from customers, our impression was that the majority of cameras were directed towards customers.

Table 4.12: Purpose of CCTV systems, Oslo and Copenhagen

Purpose	Oslo	Copenhagen	Total
Prevention and detection of			
- Theft, fraud, burglary	57	55	112
- Damage to property	5	-	5
- Violence against persons	11	16	27
Improvement of			
- Accident and fire prevention	-	-	-
- Work management and service	7	6	13
- Client's safety feeling	5	5	10
Others	6	10	16

Let's have a closer look at locations where CCTV is used due to other reasons than (only) prevention of theft. We tried to catch all the possible purposes of CCTV systems with the list of answers in table 4.12. "Client's safety feeling" refers to the safety of the customers, and prevention of violence against persons includes customers as well as staff members. With the help of these categories we can roughly estimate the number of CCTV systems aimed to protect customers. Even if these purposes were only named in 6.54% (client's safety feeling) and 17.65% (violence against persons) of all CCTV cases, it took on some prominence within our data collection due to signs with the text "CCTV surveillance - For your own safety" (see the results about signs and notices below). In Oslo, the locations that used cameras to increase the customers safety feelings were such different places as public transport facilities, hotel, watchmaker, restaurant, and entertainment centre.

Another interesting aspect is the fact that vandalism and graffiti seems to be of no importance. This purpose was mentioned at only 3.27% of all CCTV locations, and not once in Copenhagen. We have three explanations for this: first the impression that this purpose is of minor interest for the locations we analysed (the majority were small or medium sized shops), second that private video surveillance out along the street was forbidden in Denmark, and third the number of missing values in our data sheet and the fact that we used an open question. If we had directed the respondents consciousness towards the opportunity to name "damage to property" we might have got other results. Anyway, the locations in Oslo where we identified CCTV systems directed against vandalism were two major public institutions, a shopping mall, a huge entertainment centre and one fast food restaurant. One owner of a Norwegian vegetable shop without CCTV wished that they had video cameras watching the outside of the shop at night to hinder graffiti.

Table 4.13: Deployment to events caught on camera, Oslo and Copenhagen

	Oslo	Copenhagen	Total
No routine	3	5	8
Staff	16	10	26
Security service	36	26	62
Police	27	26	53
Others	1	0	1

Having mentioned that most of the systems are aimed to prevent and detect criminal offences like theft and fraud, how do the users of CCTV systems react when they actually catch such an event on camera? For most of the places it was stated that there is some kind of deployment to events that were caught on the camera. We translated the English term "kind of deployment" with the Danish/Norwegian expression for "routine". Our impression was that many respondents felt insecure about this question and very often at this stage of the survey a kind of discussion arose. In the end a repertoire of reactions became obvious. Certainly in shopping malls security staff are alarmed. In some shops where each offence only stands for a small loss, the shopkeeper does not bother to inform the police. That would require their attention for 2-3 hours for each crime report and they just do not have the time to do so. There it is the staff that put matters straight and excludes the offender from the shop. At one shop this had occurred twice on the very day we spoke to the manager. Many reported that they didn't so much respond to acts "caught on camera" as go back to the tapes to see if they could identify acts, for instance on occasions when these resulted in substantial losses of goods. The tape would then be turned over to the police. Many also reported that such use was rare, that for the most part the mere existence of the system was presumed to function preventatively. That raises the question of whether customers are made aware that a CCTV system is in place:

Table 4.14: Existence of CCTV notices/signs, Oslo and Copenhagen (11 missing)

		Notice/sign	No notice/sign	Total
Oslo	No system	6	118	124
	CCTV system	62	16	78
Copenhagen	No system	9	146	154
	CCTV system	38	34	72
Total	No system	15	264	279
	CCTV system	100	50	150

The information in table 4.14 is based on 97.27% of all cases in Oslo and Copenhagen and shows quite clearly that the majority of 264 locations have no video surveillance and no sign (61.49%). The next largest group (100 locations, 23.37 %) inform the public in one way or another about their surveillance system. But more interesting than these two major groups might be the remaining minority of 15 places with signs but no camera (3.50%) and 50 CCTV locations without signs (11.68% of all addresses, 33.33% of all CCTV locations). While the former might represent the lowest level of crime prevention, the latter may well be infractions of the law and should be of special interest for the Data Inspectorates in Oslo and Copenhagen. Let us have a closer look at "dummy systems" and "lawbreakers."

Among the locations with no system in table 4.14 we found 16 dummy systems, nine in Copenhagen and seven in Oslo. Most of these locations had only signs but no camera at all, only in three cases did we identify "dummy cameras". Both in Copenhagen and Oslo we coded one location with real cameras that were not in use as a dummy system. In another Danish shop we actually found camera-like boxes. In some shops the respondents informed us that the signs were left over from former shopkeepers. In other shops the signs were intentionally set up by the current shopkeeper to prevent crime.

Most of the CCTV locations without signs are located along the high street in Copenhagen (68 %). These 34 places constitute 46.58 % of the 75 identified CCTV locations in the research area in Denmark. In Copenhagen the sum of cameras at CCTV locations without signs amounted to 106. In contrast, the Norwegian Data Inspectorate might rejoice at the fact this group of CCTV locations without signs is only half as big along the high street area in Oslo (20.51% of CCTV locations). In all we found 45 cameras without signs along the Oslo high street. Regarding the (il?)legality of these cases, we have not used the variable in the standard questionnaire for reasons explained above. Instead we noted whether the signs were visible, and whether they included information about the responsible data controller and the purpose of the video surveillance system. This registration was difficult enough. Among the 155 locations where we (often after some effort) saw signs, we coded 102 as visible. This figure is highly dependent on what is regarded as sign/notice and visibility. For instance, we accepted a visible monitor as a visible sign.

Similar remarks have to be made regarding the question whether the sign names the responsible data controller. Most CCTV locations use stickers from video surveillance suppliers. These stickers bear the names and sometimes telephone numbers and/or addresses of well-known security services or firms selling the surveillance systems. From our point of view these stickers function more as marketing tools than as notices/sign that inform about the responsible data controller. The marketing effect was confirmed in an interview with a Norwegian representative from the security sector in the last work

package.[44] As a consequence, according to our judgement only 14 out 153 CCTV locations informed about as to who was legally responsible for the video surveillance system. Here of course, one has to remember that the publicly accessible spaces that we analysed were in general small areas of private property. One can question whether the requirement to mention the data controller is that important in a small shop. The very location of the sign in a textile shop might be seen as a sufficient indication that the shop-owner is the responsible data controller.

Finally, we found only six signs that informed about the purpose of video surveillance. In connection with our search for signs we came often into a discussion with the respondents. At some more exclusive (textile) shops we were informed that signs did not fit with the public image of the shop and therefore could not be posted on the windows or doors.

Excursus: The geography of video surveillance

After this presentation of the technical and organisational features of CCTV systems we will focus briefly on the geographical aspects of CCTV locations. The very method of this work package, to map CCTV locations in selected urban areas can in many ways be seen in a geographical context. The presentation of our findings with the help of scenarios in the next section, for instance, could be written as social geographies of visibility for tourists, teenagers and so on. In fact we could have included maps that showed the locations where particular groups are under surveillance. Anyway, what we try to do in this short excursus is to focus on the methodological aspects around the geographical mapping of CCTV systems. We will concentrate on one geographical aspect within the attempt to map CCTV locations, the question of whether there is a certain concentration of video cameras in the selected urban area in Oslo. This example will be used to give an idea about the possibilities geographical information system present for understanding and analysing the geography of video surveillance. But most of all we will try to point out a number of methodological problems.

As mentioned above we had a number of geographical hypotheses about where we would find a concentration of video surveillance along the high street in Oslo. Starting point for the hypothesis that we might find an uneven distribution of video surveillance systems in the selected area was twofold. We knew the characteristics of the high street area very well and thought that we might find different levels of surveillance intensity on the background of different types of institutions in the different parts of the high street.

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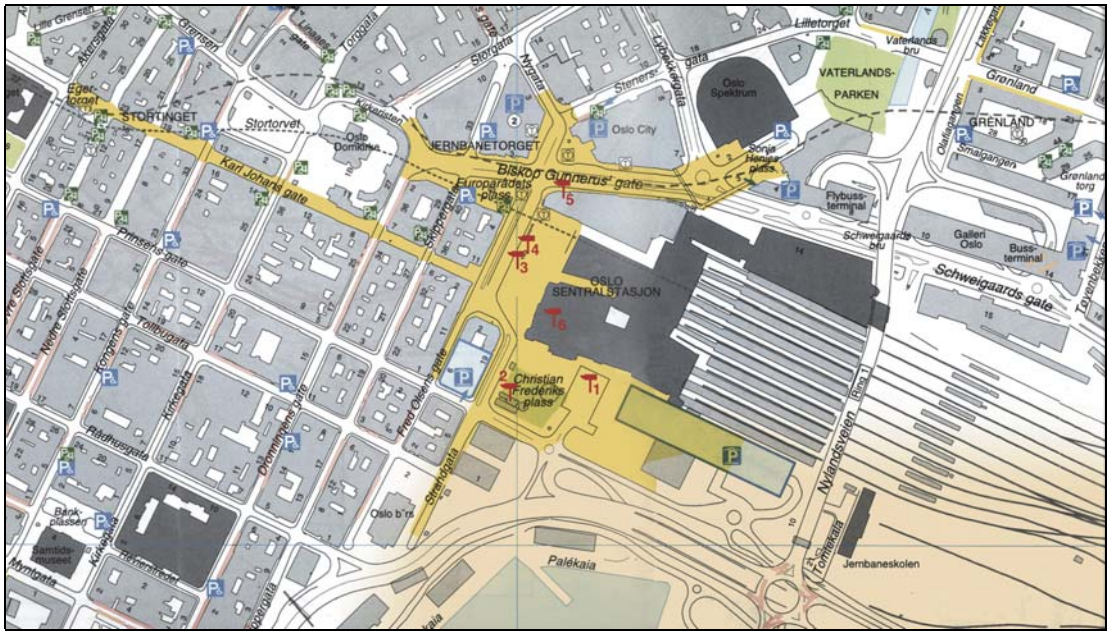
[44] Interview with representative from CCTV supplier firm, Norway, 01.11.01, see Wiecek & Sætnan 2002: 5, 17. Our opening question in all interviews in the first work package was "How do I start with video surveillance in Norway or Denmark? What do I have to do before installing CCTV?" This question was in Norway frequently answered with, "Contact with the Data Inspectorate". Another answer was that those who are interested in CCTV often take contact with supplier firms after they have seen signs with telephone numbers of these firms at other CCTV locations.

Secondly, the one and only open-street system in Norway, the CCTV system of the police in Oslo in the area around the main railway station (see figure 4.1) covered one part of our research area. This might relate to the presence of other surveillance initiatives in several ways: The site for the open street surveillance was chosen in part on the basis of the area being known as something of a crime "hot spot". That same knowledge might lead others to install surveillance as well. But if the police open street system was effective in reducing crime, then shopkeepers in the area might feel less need to install CCTV themselves. Or, regardless of effectiveness, they might feel that the police surveillance system covered their surveillance needs.

Figure 4.1: Open-street system in Oslo[45]



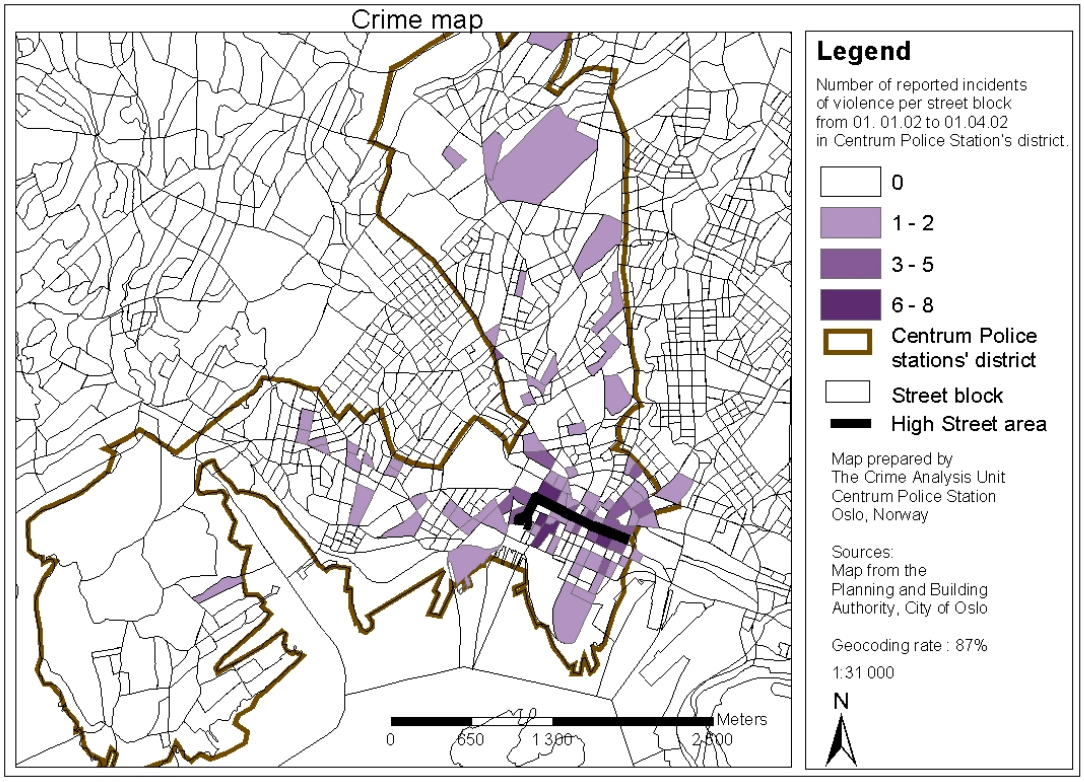
The map in figure 4.1 shows the location of the six video cameras and the area covered by this open-street system. This system will be described in detail in our next report. Here we just like to point out that among other reasons it was/is the local crime situation that lies behind the establishment of this open-street system around the main railway station Oslo S. The open-street system is located right at the border between two police districts in the Norwegian capital. Huge parts of the area covered by the cameras are located in the Centrum Police district. As an example, the crime map in figure 4.2 shows the number of incidents of violence per street block in the Centrum Police Station's district in the first quarter in 2002.[46] The crime map indicates crime hotspots in the district of the

[45] Published with permission from the editor of the police report about Oslo S, see Winge 2001: 13

[46] This map functions just as an example. The choice of this particular type of crime events was based on a recommendation from the Centrum Police Station, while the period of time was a necessity due to the fact that other data not available within the time frame of this work package. The data basis of this particular crime map includes incidents that were located and/or have been reported at the shown

Centrum Police Station and shows quite clearly a concentration of violence along and nearby the high street area, especially around Oslo S.

Figure 4.2: Crime map, Oslo

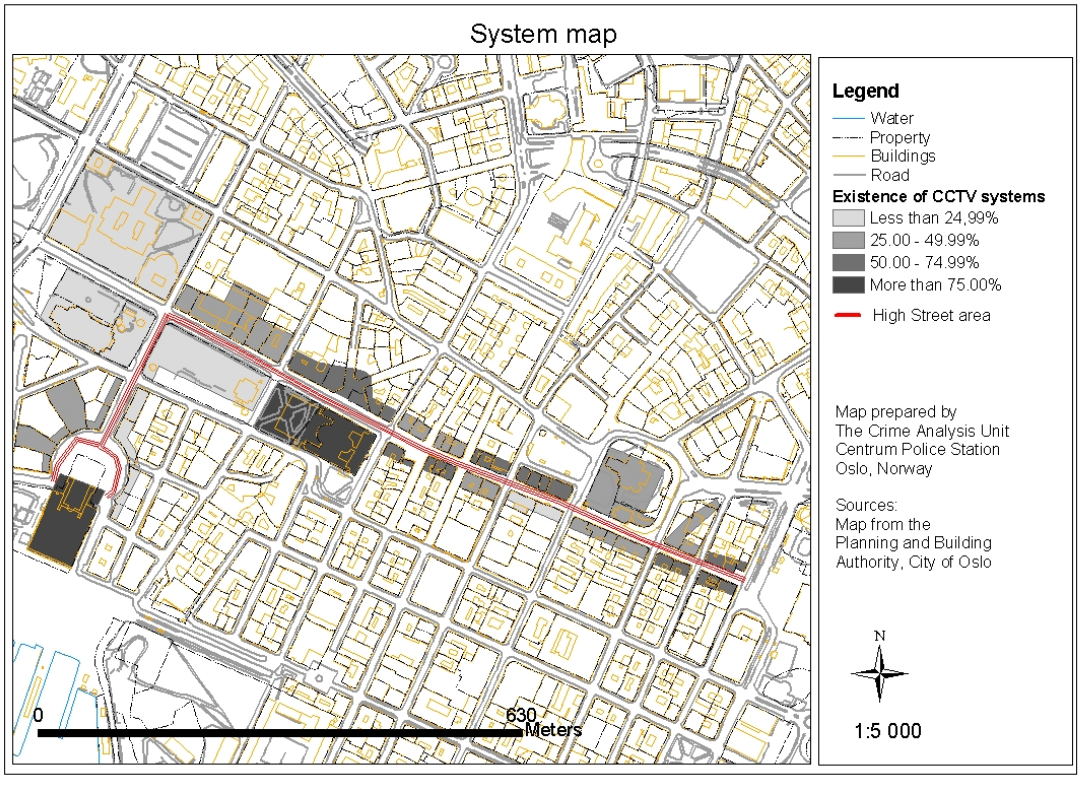


Our question was whether the local crime situation in this area would be mirrored in our findings. One hypothesis was that the high risk of crime incidents would motivate shopkeepers to install CCTV systems as crime prevention tools. As a consequence we would find a higher concentration of video surveillance in this area. But then again, a high crime rate could easily be explained on the background of a low risk level, i.e. a low risk of detection, which in turn could relate to a low level of video surveillance. One can easily complicate the relation between crime and the existence of CCTV figures in a local context more, for instance, by focusing on the time aspect. Is it really possible to see a causal relation between the existing video surveillance systems in this area in the first quarter of this year and the crime rate from the same period of time? Wouldn't we, at the very least, need time series data in order to study effects? Well, the theoretical relation between the existing crime rate and one specific crime prevention tool is not what interested us most at this stage. We attempted to map CCTV systems and to present the findings on maps.

location (street block). In general, about 87 % of all reported incidents have a confirmed address in the district. The remaining 13% of all the incidents shown on the map may eventually fall away.

First we had to choose the data to present the geographical patterns of video surveillance along the high street in Oslo. We decided to begin with the crucial variable "existence of CCTV systems" from the standard questionnaire. As explained above, for a number of reasons we decided not to point out individual systems/locations on the map. Therefore we classified our data from 204 cases into 23 street blocks (see figure 3.1). This classification then formed the basis for the system map in figure 4.3. Regardless of the technical or organisational characteristics of the systems, the map presents the geographical distribution of all the systems we identified. What we see is the percentage of CCTV locations per street block. For each street block the percentage of CCTV locations among all addresses was calculated and afterwards classified. Thus, the intensity of video surveillance was calculated somewhat independently of the number of locations per street block. There are only two street blocks where more than 75% of the block's addresses are CCTV locations. These are, however, exceptional blocks, each with only a single institution (City Hall and the Norwegian Parliament).

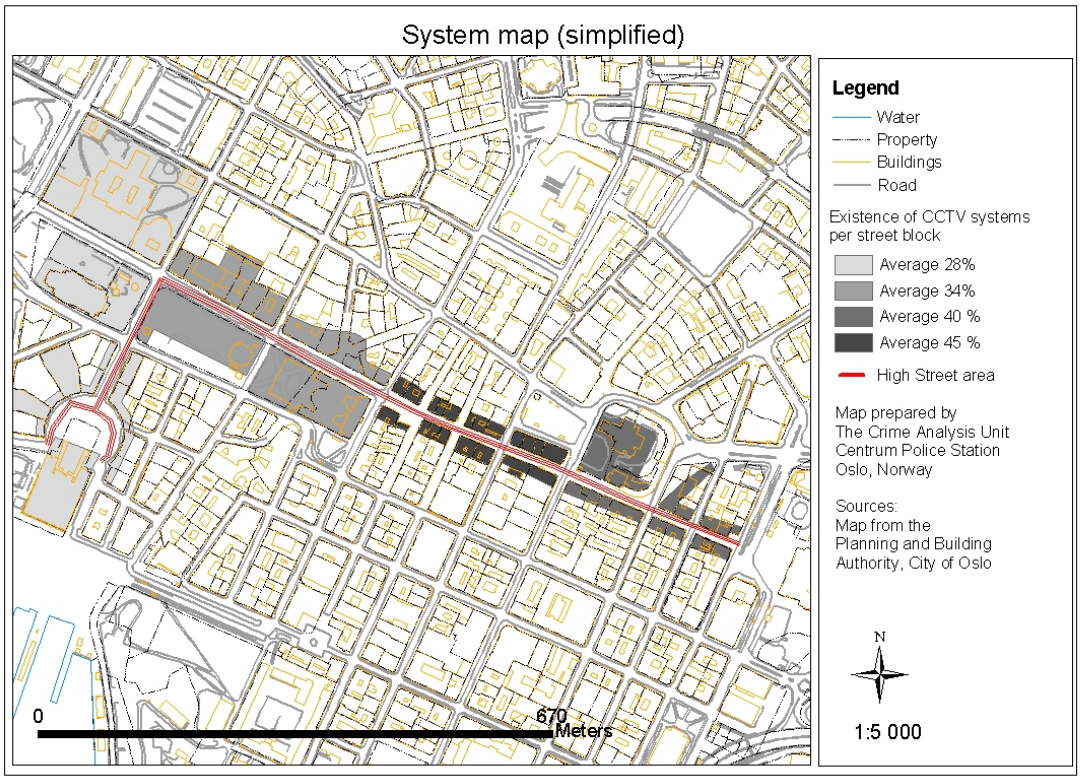
Figure 4.3: System map, Oslo



Ignoring these two blocks, what we see on the system map is a higher percentage of CCTV locations in the lower part of the high street, the area closer to the railway station with the open street surveillance system of the police. On a simplified system map where we classify the 23 street blocks into four different areas, and calculate the average of CCTV locations for these areas, the exceptional role of the City Hall and The Parliament was masked by their inclusion in the surrounding surveillance. What we then see more

clearly is a higher concentration of video surveillance systems in the two areas in the lower part of Karl Johan. 42% of all locations in these areas had video surveillance systems, while only 31% of the remaining institutions had CCTV systems.

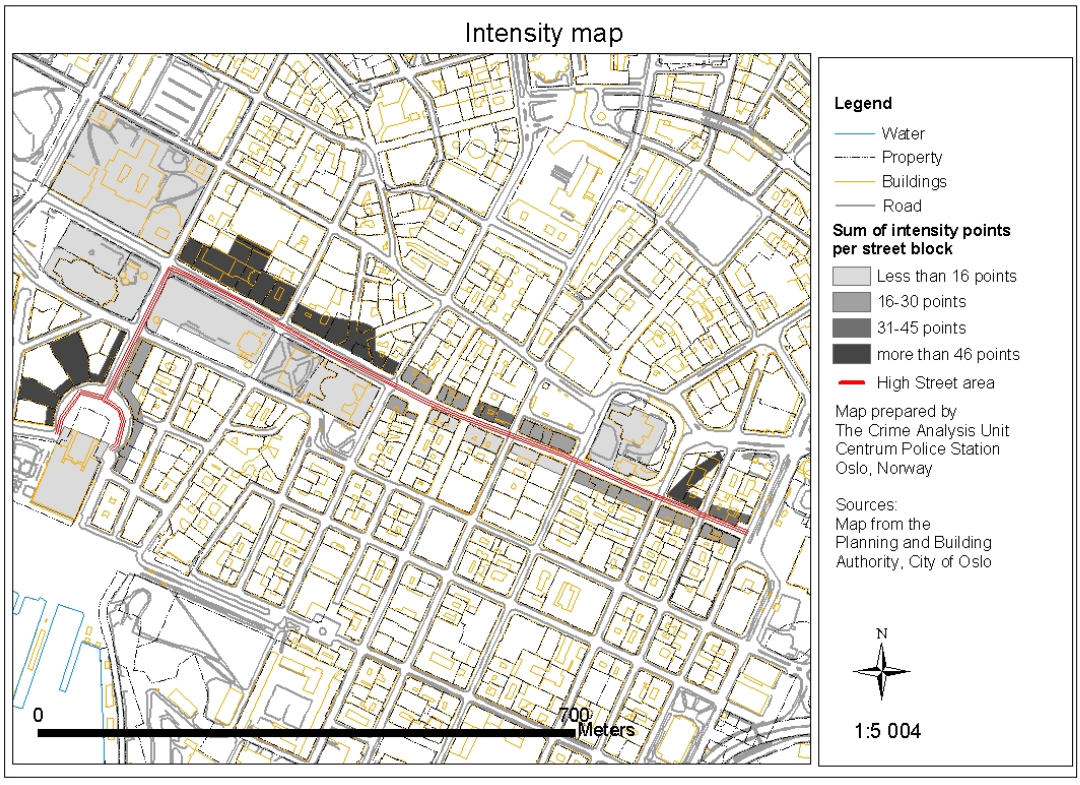
Figure 4.4: System map (simplified), Oslo



These maps are based on information as to whether an institution has an operative video surveillance system or not, regardless of the technical or organisational characteristics of the systems. In addition, the proportion of video surveillance was presented regardless of the absolute number of addresses in each street block. Thus, we present a picture of the percentage of CCTV locations within particular areas of the high street – not necessarily a picture of the actual amount of video surveillance in these areas. Alternatively, we could have presented the sum of systems per street block, or we could have used other variables indicating the level of video surveillance such as the number of cameras. We have drawn a number of different maps which showed other images of video surveillance along the same high street, e.g. a camera map showing the distribution of the 353 cameras along the Karl Johans gate in Oslo. The information shown in this camera map was based on the total number of cameras per street block. Thus, the intensity of video surveillance in this map reflected both the number and type of locations per street block. Yet another geographical pattern was presented on a recording map where we used the information about recording devices as the base for the geographical presentation of video surveillance.

Finally we attempted to show the geographical distribution of CCTV according to all the surveillance-intensity indicators in our index. In contrast to all the other maps, the Intensity map in figure 4.5 is based on a number of variables (see table 4.10). And while the system maps presented a picture of the relative density of CCTV systems among all locations along the high street, the intensity map is based on the total number of intensity points per street block. As explained above, the intensity index points of each address could range from 0 (no CCTV system) to 14 (very high intensity system). We simply calculated the sum of intensity index points per street block and classified the results in four levels of surveillance. By doing so, the intensity of video surveillance expressed in this map reflects not only the different technical and organisational characteristics of CCTV systems, but also the number of CCTV locations and their characteristics (such as the size and type of institution) influences the outcome. For instance, the higher level of video surveillance in three of the four street blocks with more than 46 points be seen as a consequence of the existence of shopping malls/gallerias with a high number of institutions and CCTV locations in these blocks. A block with a high intensity point sum could have many addresses with low-intensity CCTV systems. It could also have a few addresses with high-intensity systems. Thus the image of the spatial distribution of surveillance visibility differs a lot from the one in the system maps.

Figure 4.5: Intensity map, Oslo



Each of these maps provides a graphic representation of the distribution of surveillance visibility along our high street. The question remains which, if any, or which combination of the representations is the most relevant and/or accurate? This question begs the underlying question of what surveillance visibility means in urban life, and that is a question that we hope to be better able to address as the project progresses.

4.3 Scenarios

So far our analysis has shown that addresses along both the Copenhagen and Oslo high streets, when they do have video surveillance, tend to have isolated, low-to-moderate intensity systems. In terms of system density or coverage, differences between the Norway and Denmark data are not so great as Wright (1998) would have led us to believe. Variations in density according to types of places are more striking, spanning the full range from 100% coverage (bank branch offices) to 0% (hairdressers, travel agencies). One consequence of this is that we might think of each high street not as one place but as many places simultaneously inhabited by populations with many different agendas. These populations, according to where along the high street their agendas take them, are subject to different degrees of video surveillance visibility.

In this chapter we will present five such agendas, sorting our data so as to explore the potential visibility of five population groups. We have agreed within the project group to present the following five agendas: a tourist couple on the high street, an elderly lady, a yuppie who commutes to a job on the high street, an unemployed single mother, and a teenager.

Two admissions/cautions before we begin: First, these agendas are not grounded in empirical studies. They are based on (let's face it) stereotypes, albeit stereotypes whose reliability is supported by personal experience. We have ourselves been tourists on the high streets in question. We have friends who work in such areas. We have been job seekers and parents (one of us also a parent of teenagers) in Scandinavian cities, and we have elderly friends and relatives living in Scandinavian cities. Thus, while we cannot say precisely how typical the agendas we describe are, we can say that they are not unrealistic.

Second, our selection of locations for potential inclusion in each agenda is also subjective, but not unrealistic. We have also done our best to avoid a biased selection of locations. We have seen these places – some only once, while others are places we know well. On our survey rounds we recorded rather more data than the questionnaire required, including the name of each location and a string variable with our own categorisation of types of businesses. Thus we not only have a blanket category "restaurants" but our own notations that some of these are "fast food" places and also their names, e.g. McDonald's, Burger King, Shawarma Palace, Kebab House. We based our selections of places for each agenda on these two variables – the more detailed

description of types of businesses and the business name. When dealing with categories of places on the scenario routes, only after selecting the locations did we check which of them had CCTV systems. So while the selections are all subjective, and while that subjectivity is related to our probably stereotyped impressions of their customers, it is not generally biased in terms of where we consciously or sub-consciously wanted or expected to find video surveillance. In fact, we ourselves were surprised by some of the patterns we found. We did make some exceptions, however, to include places with particularly interesting CCTV aspects. These are mentioned as singular stops on the routes and the special characteristics of those places are pointed out.

Table 4.15 An overview over the scenarios (* Not included in the high street area)

		Oslo		Copenhagen	
		All cases	CCTV (%)	All cases	CCTV (%)
Tourist	Transport	1	100.0	*	
scenario	Souvenir	23	47.8	42	42.9
	Food	27	22.2	15	33.3
	Hotel	2	100.0	*	
	Entertainment	5	40.0	3	-
	Photo	6	33.3	3	33.3
	Cash	5	80.0	9	44.4
	Mall	3	66.7	1	-
	Total	72	41.7	73	38.4
Pensioner scenario	Transport	1	100.0	*	
	Shopping	18	55.6	22	68,2
	Food	6	-	5	80.0
	Entertainment	1	-	1	-
	Glasses	6	16.7	2	100.0
	Shoes	4	-	9	33.3
	Mall	2	50.0	1	-
	Others	*		1	-
	Total	38	34.2	41	58.5
Yuppie scenario	Transport	1	100.0	*	
	Shopping	5	80.0	14	64.3
	Food	29	27.6	7	28.6
	Entertainment	5	60.0	3	33.3
	Travel	6	-	1	-
	Cash	4	75.0	5	-
	Mall	2	100.0	-	-
	Total	52	40.4	30	40.0
Jobseeker scenario	Work places	42	35.7	64	14.1
	Fast food	20	50.0	18	44.4
	Hairdresser	4	-	1	-
	Other	*		1	-
	Mall	3	66.7	1	-
	Total	67	40.3	85	21.2
Teenager scenario	Pants	44	34.1	63	14.3
	Fast food	21	52.4	20	40.0
	CD books etc	9	44.4	13	53.8
	Mall	3	66.7	1	-
	Total	77	41.6	97	24.7

The "Tourists' High Streets"

Both the High Streets we studied are major shopping streets for tourists in the respective cities, with some number of other tourist attractions along them and close by. Having furthermore been tourists on both these streets ourselves, this is the one scenario we feel able to identify with to a large extent, thereby giving this scenario rather more "quality (reliability) control" than the others. Nevertheless, like the other scenarios, this one too is still basically grounded in stereotypes.

We will stipulate that our tourists are a middle-aged couple from the US. Let us say this is our tourists' first day in each city. Condensing that day a bit to include arrival in the country as well, we can start our scenario at the airport. In Oslo, this would be Gardermoen International Airport. Airport officials there were not willing to answer our questionnaire, but as passengers ourselves were able to observe that there are numerous surveillance cameras in the public areas of the airport. There are also signs at the street and railway entrances to the airport notifying the public that they are entering an area under video surveillance; but, we did not see such signs as we entered the airport via the jetway from our plane. Furthermore, conspicuous as they are, if we remember the wording in the Norwegian Personal Data Act that "attention shall be drawn clearly by means of a sign or in some other way to the fact that the place is under surveillance" [47], we can question whether the signs we did see fulfil that legal requirement. The signs are text only, in Norwegian, with no symbols. Do you, a potential tourist in Norway, understand this text: *"Terminalen er TV-overvåket"*?

Finished at the airport, our tourist couple takes an airport train to the central railway station. During the 20-minute ride they are not under video surveillance in the railway car, although the airport arrivals hall where they bought their train tickets was under video surveillance. They were also within a camera coverage area on the platform before departure and will be again when they arrive. Furthermore, they left an electronic trail of their route when they paid for their tickets by credit card at the ticket automate in the airport.

On arrival at the Oslo S railway station, they are again potentially subject to video surveillance. The railway company has a system comprising approximately 400 cameras - many of them deployed for safety purposes along tracks and platforms, but some also in the main hall of the station. Outside the station, the Oslo police has its own video surveillance system in place[48] - the first and so far only open street surveillance system in Norway, and still considered to be on experimental status. Some of the shops in the main railway hall and adjacent shopping centre also have their own cameras. And finally, the adjacent shopping centre has its own system of between 75 and 100 cameras.

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[47] Norwegian PDA, Section 40 *Notification that surveillance is being carried out*

[48] See Winge 2001

Within and nearby this building complex, our tourist couple is potentially subjected to the highest degree of surveillance visibility they will experience on their visit to Norway. However, like most members of the public, they probably don't even notice. So that is not the reason they leave the building so quickly. It is simply that the building is a transit point. Their next stop is their hotel to drop off their luggage.

There are two hotels on our High Street stretch, both within easy walking distance of the railway station if our tourist couples' luggage is light and/or wheeled. Should they choose to walk, they will be within range of the police surveillance system based at Oslo S station for most of that walk. One of the pan-tilt-zoom cameras, atop the main station entrance, can cover Karl Johan Street in overview or in detail from the station entrance all the way to the Parliament building. Both hotels are just beyond that point, and both of them have surveillance systems in operation. At one of these hotels we were informed that the system is high-intensive, with constant monitoring and recording. The other hotel declined to answer technical or organisational questions about their surveillance operations.

Our tourists are already a bit tired and jet-lagged and decide on an easy program for the afternoon, hoping to adjust to the time zone without getting too exhausted. Their hotel informs them that the University's main lecture hall, just up the street, and the public areas of the City Hall, three city blocks from there towards the fjord, both contain murals by well-known artists such as Edward Munch. They decide that this is about what they can manage for the afternoon. But maybe they also find time for the National Gallery or the National Museum just around the corner from the university. The university auditorium building has no video surveillance, but the City Hall and National Gallery both have systems in operation, monitored and with constant recording.

Exiting the City Hall towards the fjord, our couple purchases a bag of fresh-cooked shrimp at the pier and sits down to nibble and rest. Here they are not on camera, though that was probably not an issue they considered when tempted by the others they saw eating shrimp. They then return to their hotel, stopping briefly at some souvenir and crafts stores on their way. There are seven such stores along that stretch of the high street, five of them with no video surveillance systems and two with moderately intensive systems. Of course, our tourist couple does not have the energy to visit all seven, nor do all seven have displays that match their tastes, so they may or may not happen to visit one or both of the shops where they would be recorded on video tape. On the other hand, if they have the energy to do the whole high street, they will pass 23 such shops, 47.8% of which have surveillance. If they happen to run out of film on their way, they will also pass up to six photo shops, two of which have surveillance cameras. And if they run out of cash, they will pass four cash dispensers and a money exchange, all but one with surveillance. Their shopping may also take them into the three malls/gallerias on the high street, two of which have surveillance.

They then take a light supper at a restaurant. The pubs and fast food places on lower Karl Johan don't interest them (but we will include them in our table summary just in case), nor do they have the energy now to walk back down there, so they choose among the more stylish restaurants and cafés near their hotel. There are 13 such included in our survey. These are cafés and restaurants with ground floor services; more could have been included had we gone up- and downstairs. Of the 13 surveyed, one has a moderately intensive system and one a dummy system. The other 11 have no video surveillance. The one restaurant with surveillance emphasises pizzas, hamburgers, and steak plate dinners and appeals generally to younger diners, so at dinnertime our middle-aged tourists are not likely to be in the cameras' gaze. If we also included the pubs on lower Karl Johan, their chances of being "on camera" would increase to 22.2%.

Having eaten, they decide to call it a day, but time confusion caused by jet-lag and by the brightness of the summer night keeps them awake, so they take a stroll around the Royal Palace gardens[49] before they are finally tired enough to fall asleep. While the palace gardens themselves are not a targeted surveillance area, the perimeter surveillance system for the Royal Palace does cover some portions of the gardens. Summing up, our tourists were in the cameras' gaze at the airport and train stations, at their hotel and part of the way while walking there, while looking at murals at the City Hall, possibly in a shop or two, and perhaps briefly if they walked close to the Royal Palace on their garden stroll. Other groups, as we shall see below, are far more surveillance-visible even along the same high street. But first let's compare to how visible this couple is a few days later when they arrive in Copenhagen.

In Copenhagen our tourists have a similar day. They again land at the city's international airport - in this case Kastrup. At Kastrup we were given a thorough presentation of the surveillance system and a tour of the control room. Although the airport has a system with many cameras and constant monitoring and taping, our tourists will not be subjected to much surveillance there unless they attempt to enter a non-public area. The surveillance is mostly directed at unauthorised traffic across the perimeter (incursions and theft), safety issues relating to air and ground traffic, and unauthorised entrance into non-public areas. There are also cameras to let personnel know when lines are too long at check-in and security (so that further lines can be opened) and when there are too few luggage carts by the entrances. There are also possibilities for security surveillance at check-in and security points. Thus our tourist couple may have been recording passing through passport and customs control, but since they are an innocuous couple they were unlikely to attract surveillance attention.

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[49] For a guided tour, watch the Surround Video of the Palace Esplanade at www.kongehuset.no/default.asp?lang=eng.

Kastrup is quite near the city, so they take a cab to their hotel[50]. Having landed early, they eat breakfast there and leave their luggage in storage until their room is ready for them later in the day. As it happens, the hotel where we stayed during data collection is the nearest to the high street area. Perhaps we even met this couple at breakfast and walked alongside them to the high street afterwards, but we can never be sure since the hotel has no video surveillance and therefore no tapes we could use for evidence.

On the high street, our couple enjoys the current outdoor sculpture exhibit and browses a number of souvenir stores as well as stores selling Danish crafts-industry products (e.g. amber jewellery, sealskin coats, Royal Copenhagen porcelain, Holmegaard glassware, Georg Jensen damask, etc.) and European brand-name fashion stores such as Gucci and Versace. If they visit them all, they'll have an exhausting day of shopping, since there are at least 42 such shops along the high street. Their shopping excursion will also be fairly well "documented." 42.9% of shops we think our couple likely to visit have video surveillance systems, most with recording devices and at least occasional real-time monitoring.

Around noon our couple finds a café where they take a break for lunch before returning to check into their hotel room. We'll assume they are not homesick for a McDonalds hamburger. We'll also assume they feel a need to sit down in a quiet and roomy spot for a few minutes. Skipping over the fast food places and noisy bars, they still have at least 15 cafés and restaurants to choose from. Five of these have some form of video surveillance, four of them including recording, so it is somewhat likely that our couple's lunch break will be caught on camera, perhaps even on tape.

No longer jet-lagged, restored from their lunch stop, and therefore still energetic, our couple decides to walk back along the high street and continue their shopping, winding up at the Tivoli Gardens for dinner and an evening of entertainment. From the high street, Tivoli is just a few blocks further past the City Hall. Crossing the City Hall square, they are unaware that they are photographed every 20 seconds by a camera atop the *Politikken* newspaper building. Had they known, they might have alerted friends to look for them on the *Politikken* web page, but they would have had to use large flags or balloons for their friends to be able to identify them, since they only appear as tiny specks in a small image.[51]

As they exit the City Hall square, they also leave the camera gaze behind. There are no open street systems from here to the Tivoli Gardens, nor does Tivoli have any video surveillance in or around the gardens.

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[50] Regarding video surveillance in taxis, see the Pensioners' High Streets scenarios below.

[51] You may even try to find them: http://politiken.dk/VisArtikel.iasp?PageID=143878.

Although our survey data showed rather more surveillance on the Oslo high street than in Copenhagen, our tourist couple had a mixed experience: They were subjected to less surveillance while shopping expedition in Copenhagen than in Oslo, but more at lunch. On the other hand, their hotel and park visits in Copenhagen were surveillance-free, whereas in Oslo the hotel was under constantly monitored video surveillance and parts of the park were covered by perimeter cameras around the Royal Palace.

The "Pensioners' High Streets"

Because of the similarities between our two high streets, we can give our two fictional pensioners similar itineraries. Let's say that Mrs. Johnsen (Oslo) and Mrs. Janssen (Copenhagen) both decide to spend a day on their respective cities' high streets on the occasion of morning organ concerts at the respective churches. Let's further say that they each get to their high street by bus, attend the concert, then meet some friends at a café for lunch. After lunch, they and their friends do some shopping for gifts. One has a wedding to attend and needs a gift and new shoes. Another needs two gifts for grandchildren, a toddler's birthday and a teenager's confirmation. A third needs new glasses and wants her friends to help her choose a frame. And maybe one has a prescription to fill along the way, but as we found no pharmacies on the Danish high street, we will drop that errand. They visit some fairly expensive gift shops that carry national brands of housewares and jewellery (Royal Copenhagen porcelain, David Andersson jewellery, etc – shops also frequented by tourists) and also speciality shops carrying childrens' clothes and/or toys, shoes, glasses, and a pharmacy. By late afternoon they are tired and share a cab home.

Neither Mrs. Johnsen nor Mrs. Janssen is under the eye of video surveillance on the morning bus or tram ride or at the church. Had either woman taken light rail, however, there would have been security cameras covering the platform for accident prevention. There is one bus route in Copenhagen where the bus company is trying out cameras. We've also heard that some of the Greater Oslo busses have surveillance. In the municipality proper, the Oslo City Transport Company tried out CCTV on one of the subway lines, but has discontinued the experiment. They are also planning to upgrade surveillance at platforms and bus stops in coming years. For now, however, neither Mrs. Johnsen nor Mrs. Janssen happens to live on a route with video surveillance.

After the concert, there are many cafés and restaurants our two groups of ladies can choose from for lunch. Their preferences tend towards the same places as our tourist couple, We think they might choose among five cafés in Copenhagen, four of which have some form of video surveillance, and six cafés in Oslo, none of which has video surveillance. Mrs. Janssen and her friends have a favourite café on the Copenhagen high street. It's been a favourite since they were young girls, and became even more so when they noticed the signs announcing video surveillance "for your protection." Having once

had her purse snatched on the high street, Mrs. Janssen appreciates the café's efforts to discourage pickpockets.

Given their gift-shopping plans, we have identified 18 shops the ladies' shopping round in Oslo might include, some of them also visited by our tourist couple. 55.6% of these have surveillance cameras. In Copenhagen, there are 22 shops we think Mrs. Janssen and her friends might think likely to have appropriate gifts, again overlapping with the tourists' agenda, 68.2% of which have surveillance cameras. They also have other errands: Six shops on the Oslo high street sell glasses, only one of them with CCTV, as compared to two shops in Copenhagen, both with CCTV. There are four high street shoe stores in Oslo, none of which have CCTV, and nine in Copenhagen, three of which have CCTV. All in all, our Danish ladies are far more likely than their Norwegian counterparts to be "caught on camera" during their shopping trip.

Assuming these groups of ladies really are simply shopping and that none of them are shoplifters, they are not likely to draw any attention from the surveillance systems whose gaze they happen to pass through. Should one of them suddenly feel ill within one of the shops, the shop staff are likely to respond faster due to direct visual observance than via the surveillance monitors they rarely look at. However, should one of the ladies suddenly feel ill outside on lower Karl Johan in Oslo or in one of the two department stores in Copenhagen with a constantly monitored system, there is some possibility that an observer at the control room might be the first to send someone to help.

Finally, our groups of ladies each shares a cab home. Both in Oslo and Copenhagen there are several competing cab companies, all organised around individual license holders/cab owners. All cabs have radio contact with their dispatcher stations, mobile phones, and emergency call buttons. A few also have surveillance cameras. One cab driver in Copenhagen explained to us that these take a "snapshot" of each new set of passengers and further snapshots should the emergency button be activated[52]. How many cabs have such systems depends on how many cab owners who have decided to make the investment. In Oslo there are three cab companies, the largest of which comprises over 2000 cabs. Altogether, the Norwegian Taxi Association estimates that from 300 to 500 cabs in Oslo have snapshot security cameras installed[53]. We have not yet been able to obtain comparable data from Copenhagen, but our voluble Copenhagen cab driver was of the impression that cab ownership was more profitable in Norway than in Denmark and that therefore more cab owners in Norway were likely to have invested in cameras.

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[52] See the recommendation of one taxi company in Oslo: www.taxinett.no/video.asp.

[53] Response to telephone inquiry, 22 May 2002.

The "Yuppies' High Streets"

Our imagined yuppies inhabit a somewhat different high street than the retired ladies or the tourists. We imagine that they live in suburbs, somewhat further out from the centre of the city than where we have booked our tourists' hotels or where elderly ladies are likely to live and still make frequent visits to the high street. So let's say they leave their cars at parking lots from where they take light rail to the high street daily because they work there. And let's say they work in high street banks. Of course, that makes for very short scenarios: highway, parking lot, train to work, sit in the bank, train-parking lot-car home. So let's let them enjoy some high street entertainment after work before taking the last train home one Friday: dinner at a restaurant, theatre or concert, maybe a quick shopping expedition at lunch to get some new clothes for the theatre, extra cash from a cash dispenser, a drink at a bar (not enough to put them over the driving limit), and fill up gas before driving home.

This schedule puts our yuppies in camera view for a large part of their day. We have no exact data as to where cameras are located along the motorways, but certainly speed cams do exist both in Norway and Denmark. In addition, both Oslo and Copenhagen have some toll roads/bridges/tunnels nearby, all of them equipped with automatic toll collection systems for subscribers as well as systems that record non-paying driver. These systems include cameras that take snapshots showing the vehicle, license plate, and driver's face if a driver tries to pass through without paying. . Some tunnels also have cameras for safety purposes, and then there are traffic management cameras. If we knew precisely where speed cams, toll stations, etc. were located, we could easily place our fictional yuppies in suburbs just beyond them. Since we don't have that information, we will simply stipulate that our yuppies live somewhere such that their commutes takes them past at least one such camera point.

Arriving at the train station, each parks in a parking structure. Again, our data is thin. We have no data on parking lot surveillance in Denmark. In Oslo we did contact the nearest parking garage to our high street area. Our yuppie won't be parking in that garage today, but that garage is the newest in a chain. The garage is equipped with four surveillance cameras. These will also be recorded, but the recording system has not yet been installed. The garage is open 24/7. During the hours that an attendant is present, the attendant watches goings and comings at the garage fairly regularly on a monitor. When the garage is unattended, the images are forwarded to the company's central control room. That being the case, we think it safe to assume that the company also has video surveillance installed at their other garages. So again, we can stipulate that our Norwegian yuppie commuter parks at a garage owned by this chain and is therefore on camera and on tape for that stage of the day. Whether the Danish counterpart is also recorded while parking will have to remain a mystery to us.

The next stage of their days is by rail to the centre of town. The tourists and lady pensioners described above also took, or could have taken, light rail in connection with their high street visits. We mentioned then that both the Oslo and Copenhagen city trains have video surveillance at the platforms for safety reasons, but no video surveillance in the trains themselves. This is still the case when our yuppies make their commute journeys, so they too are on camera and on tape when boarding and leaving the train but not during the ride itself.

Our Oslo yuppie works in a bank near the City Hall. (S)he takes the train to Nationaltheater station, which is west of the Parliament and therefore outside the area covered by the open street system based at Oslo S, and walks from there. So for a few minutes (s)he is out of the gaze of surveillance cameras. Once in the bank, however, (s)he is potentially on camera and on tape for the rest of the working day even though the cameras are primarily aimed at the customer side of the counter. Our Copenhagen yuppie is also out of camera range during the walk from the station, but potentially on camera and on tape throughout the working day at the bank.

So far, our Danish and Norwegian yuppies have been subjected to identical degrees of surveillance, as far as our data allow us to measure. At the lunch break and after work, however, we may find differences between night life surveillance on the Oslo and Copenhagen high streets:

Our yuppies decide to use their lunch breaks to invest in some new clothes for the theatre. They visit the more elegant shops. We found 14 such in Copenhagen, of which 64.3% have surveillance. Of the five on the Oslo high street, four (80%) have surveillance. Then back to work and back into the gaze of the banks' cameras.

Our yuppies begin their evenings with the realisation that they are low on cash and ought to have made a withdrawal before the bank closed. Too late now, so they each turn to their banks' respective cash dispensers outside. In Denmark it was, at the time of our survey, illegal for banks to install video surveillance at street-side cash dispensers. We have since heard that they are now permitted to install cameras in the dispensers themselves, though not externally mounted cameras that cover the dispenser and surrounding sidewalk. Presumably, given the comments almost all our bank informants spontaneously made during the survey, the banks will be quick to install in-dispenser cameras. As of March 2002, however, none of the five cash dispensers on the Copenhagen high street had video surveillance, whereas three of the four dispensers we found on the Oslo high street did.

Now equipped with cash, our yuppies meet their respective partners at the railway station and go to a restaurant for an early dinner before theatre time. Their restaurant options overlap those of the tourist couple and the lady pensioners, but some lunch-time cafés are now closed and some restaurants are more obvious options for dinner than for lunch. On the Oslo high street we have identified 16 restaurant options, two of which

(both of them pizza restaurants popular with younger customers) have moderately intensive video surveillance systems and for one of which we lack data. The remaining 13 are all surveillance-free. On the Copenhagen high street we identified 8 restaurants that remain open after shopping hours[54]. Two of these have video surveillance systems (one with and one without recording) including the restaurant closest to the theatre. Thus it is highly unlikely that our Oslo yuppie couple will be on camera at their dinner, but at least somewhat likely that our Copenhagen yuppie couple will be.

At the theatre, however, neither couple will be subject to video surveillance. The Royal Theatre in Copenhagen does have video surveillance of the service garage entrance (behind the stage area, where deliveries are made and tour companies load and unload their trucks), but not of any publicly accessible spaces. There are two theatres in our survey area in Oslo, neither of them with video surveillance.

After the theatre, our couples each stop for a drink before their return journey home. Our Oslo couple have 14 bars/pubs/night clubs to choose from within the survey area. Five of these, all on the east half of Karl Johan, have video surveillance – three with irregular monitoring and constant recording, and two that declined to give further data. As you will recall, this section of the survey area is also subject to open street surveillance from the police control room at Oslo S. But if our couple chooses a pub close to the theatres, they will not be subject to video surveillance inside or outside the pubs. Our Copenhagen yuppie couple have six pubs/bars and a disco to choose from if they stay within the survey area. None of these have video surveillance. In table 4.15 the restaurants and pubs are grouped together. In all there are 29 on the Oslo high street, just over ¼ of which have surveillance, and seven on the Copenhagen high street, about the same proportion of which have surveillance.

In all our yuppies would have been under video surveillance at about 40% of the addresses they might have visited – about the same in both cities and about the same as for the tourist couple, but substantially more than the lady pensioners in Oslo and less than the lady pensioners in Copenhagen. But what of somewhat poorer citizens using the high streets, what of the unemployed? or of teenagers?

The "Job-Seekers' High Streets"

Neither of our high streets happened to include a job centre, a social welfare office, a school or day care centre, or low cost housing. And regarding daily shopping functions such as groceries and sundries the high streets represent only high-priced alternatives. Nor did we, for Copenhagen, fill in these missing functions by finding the nearest such office to the high street. For Oslo, however, we do have some such supplementary data and also conducted a brief on-site survey of a working class neighbourhood a few blocks

[54] There are many more on side streets, but they fell outside our survey area.

east of our high street area. Given these limitations on our data set, and trying to place our job-seeker scenarios in the areas for which we do have data, we created the following comparable itineraries for a pair of job seeking single mothers in Oslo and Copenhagen:

Our two unemployed single mothers live in working class areas near the centre of town, i.e. near the high street. Neither woman owns a car, so both are looking for work within walking or bus/tram distance from home. After walking with her young son to the local school, each woman makes a quick stop at the local job centre/welfare office, then takes a bus from there to the high street to personally deliver job applications at a number of the larger chain stores/department stores. For lunch, each woman takes some inexpensive fast food and eats at a park bench. She then freshens up at a public toilet nearby and continues on her round of job applications. At mid-afternoon, she hurries home by bus, stopping at a grocery store near home to pick up something for supper. This schedule puts our women in camera view at a few places, mostly as they pass through shops looking for the manager's office.

According to the school administration in the Municipality of Oslo there is no video surveillance at public schools in Oslo. We did actually find one public school with video cameras, but these were directed towards the visitors of a youth club. Although this club is located near the school, it is not very likely our mother or her son will be caught on camera; the cameras with recording devices are on from early afternoon til the next morning. Nor is there video surveillance at the day care institution nearest our high street area in the direction of the working class area (Grønland) to which we ascribe our imagined unemployed single mother. Video surveillance at day care institutions is quite uncommon in Norway, although we found a few notifications from kindergartens in the public record of the Data Inspectorate. In Copenhagen there is at least one private pre-school with a video surveillance system – a service parents can subscribe to that allows them to virtually "visit" the school whenever they wish during their working day[55]. That school, which has plans to expand from pre-school only to a complete K-12 school, would be unaffordable to our imagined unemployed single mother. We don't happen to know of other public or private schools with surveillance in Copenhagen. We would have to check with municipal authorities to be sure, something we have not yet had time to do.

In the whole region of Oslo there is not one local job centre (*aetat*) with video surveillance. We could not get data regarding the social welfare office for the Grønland district. In Copenhagen there were no job centres or social welfare offices on the high street and, again, we have not sought supplementary data outside our survey area. Thus it is with some caution, given the limitations in our data, that we assume that our two

[55] www.bu-fonden.dk/olga/olg_main.htm

job-seeking mothers have probably not encountered video surveillance until they begin delivering job applications to shops. Perhaps they might also visit a hairdresser to look their best during interviews. If so, then they will not have encountered video surveillance there either. We will now make a guess as to what shops they are most likely to apply to.

Our guess is that they will skip the smallest shops (likely to hire only the owner's family members) and the most exclusive ones (where they fear they might not be able to dress well enough for the workplace). That still leaves a substantial number of large shops and chain stores. Our job-seekers might also prefer these for other reasons, for instance that many of them have union contracts and well-defined worker benefits such as rebates on in-store purchases. Chain stores that carry children's clothing, shoes, and/or sports equipment might be especially attractive for that reason. We identified 42 such stores along the Oslo high street (there may be more that we don't recognise as chain stores because we've only encountered the name this once), and 64 on the Copenhagen high street.

In Oslo, many of these stores are located on lower Karl Johan, under the scrutiny of the open street system at Oslo S. A majority of the shops, both within the Oslo S-scanned area and outside it, have either no video surveillance system or a totally dummy system (2 of the shops on lower Karl Johan). In all, 35.7% of these shops, or very nearly the average for the entire survey area, have an operative video surveillance system installed. Factoring in time spent in the gaze of the open street system, it is highly likely that our Oslo job-seeker is within camera gaze and on tape for a large portion of her job-seeking day, either within or between the shops she visits. In Copenhagen, by contrast, our job-seeker will only rarely be within camera gaze and even more rarely on tape. Of the 64 chain stores we identified, only 14.1% have operative CCTV systems. Nor are there any open street systems in Copenhagen.

Our job seekers also take a brief lunch break – take-out food eaten in a park, and a stop to freshen up at a public toilet. The women's food options are the same as those for the teenagers and will be discussed in more detail below. For now, however, suffice it to say that the picture remains similar to that for the shops: In Oslo 10 of the 20 fast food options have video surveillance (50%), while in Copenhagen this is true for only eight of 18 (44.4%). Within this category of locations, surveillance is somewhat more common in Oslo than in Copenhagen. The high street parks, however, have no video surveillance in either city. Neither do the public toilets in the Oslo survey area, however given the drug problems around the nearby railway station the personnel in charge does practice an advanced form of visual surveillance of the public toilets there. In Copenhagen the municipality confirmed that there is video surveillance in the entrance area of some public toilets, including those at the square halfway along our high street stretch.

After completing their job application deliveries, our job-seekers return to their neighbourhoods to pick up their children from school, shop for groceries, and prepare dinner. For Copenhagen, we have no data about the neighbourhood. In Oslo we did conduct a quick survey in the centre of the working class neighbourhood Grønland, in the district of Gamle Oslo just east of the railway station (see figure 4.3), including 66 cases. Video surveillance was less prevalent here than on the high street, so it is not very likely that our job-seeker was on camera once east of the area covered by the Oslo S open street system.. Just one out of four locations had video surveillance. 10 out of these had recording devices and 14 locations had CCTV signs.

For the errands for which we had comparable data for both cities, our Oslo job-seeker was much more likely to be on camera than was her Copenhagen counterpart – 40.3% of probable addresses as opposed to 21.2%.

The "School Youths' High Streets"

We decided to make our school youths somewhat older than the son of the unemployed mother. Let's say they are 14 years old. We also decided that they come from more economically secure families, so that they have an allowance of pocket money that makes it attractive for them to spend some time on the high street. Their families' economic security demands that both parents work full time. Thus, these youths have some time on their own between school hours (in Norway and Denmark typically 0830 to 1430) and supper time (in two-income families, typically after 1700). Living in middle class neighbourhoods near the city centre, the youths can reach the high street and return home on their own, for instance by bike or on roller blades.

Given the youths' age and their parents' working hours, we decided that both our youths have, perhaps for the first time, been given a sum of money to go shopping for a new pair of pants. The money won't be enough for the most expensive brands, but if they find something extra cheap they've been told they can spend the remaining money on food or entertainment. Given this program, we have identified a set of clothing stores on each high street that our youths are likely to try, a group of fast food restaurants targeting young customers, and a set of entertainment options such as video game arcades and stores selling CD's.

Both of our high streets have a large number of clothing stores. Skipping the high-fashion clothing stores such as Versace or Gucci and skipping speciality stores for furs, wedding gowns, etc. we still find 44 stores on the Oslo high street and 63 in Copenhagen where a teenager might look for pants. In these shops it is more than twice as likely that our Oslo youth shopper will be "caught on camera" while shopping for pants than our Copenhagen teenager. 34.1% of the youth clothing stores in Oslo have at least a low-intensity video surveillance system in operation, as opposed to 14.3% of the shops in Copenhagen.

There are also plenty of fast food restaurants on both high streets, especially if we include kiosks that also sell snacks and hot dogs. Each of the high streets also has a couple of ice cream shops and a chocolate shop or two. On the Oslo high street we found 21 fast food and/or snack shops where a 14-year-old is likely to go for a light meal. Eleven of these (52.4%), including all but two of the hamburger and pizza restaurants, report having some form of active video surveillance system. Given the popularity of hamburgers and pizza among teenagers, our young shopper in Oslo is highly likely to have been on camera and recorded on tape when buying his or her meal. The Copenhagen high street has 20 fast food and/or snack shops, but the food selection and (as with the clothing stores) the frequency of surveillance are quite different. Seven of the fast food outlets sell "exotic" foods (kebab, shawarma, Chinese food), and only one of these has video surveillance: a camera at the door with a monitor in the back room to alert them of customers arriving if no one is at the counter. Nor is there video surveillance at the three chocolate and ice cream shops, the two Danish sandwich shops or the one local hamburger bar. But rather more of the international fast food chain outlets such as 7-11, Pizza Hut, McDonalds, and Burger King do have video surveillance. In all, eight fast food outlets (40%) have some form of operative CCTV system. But as these are among the most youth-popular fast food restaurants, it is still quite likely that our Danish youth shopper will have been on camera and on tape from his or her meal stop.

Assuming that our teenager has been honest but smart, (s)he now has a new pair of pants, has had a light meal, has not been arrested for shoplifting, and yet still has some money left for entertainment. Of course, we don't actually know these fictional youths. We don't know what their hobbies are. Would they spend their remaining time and money in a book store or a photo shop? listening to CDs or trying out computer games? shopping for cosmetics or bijouterie or hobby kits? or maybe practising rollerblade stunts in a park? We've just made some random assumptions and decided that they would listen to CDs (in music shops or books stores), check out the high streets' respective hobby shops, play video games (Oslo high street), or (in Copenhagen where there are several such shops on the high street) wander through the "$1 stores". Of a total of nine such places on the Oslo high street, four (44.4%) have video surveillance, as do seven (53.8%) of the 13 such places on the Copenhagen high street. So for this part of their afternoon, it is somewhat more likely that our Copenhagen youth will be under surveillance than our youth in Oslo. However for the afternoon as a whole, the opposite is true. Our Oslo youth scenario has video coverage at 41.6% of locations, the Copenhagen youth scenario at just over half that proportion (24.7%).

Summing up.

Before presenting our scenarios, we recalled that the overall frequency of video surveillance was somewhat higher in Oslo than in Copenhagen – 38% vs. 32% of all

locations along the surveyed high streets. However, frequencies vary according to types of locations. As we have seen above, locations visited by our tourist couple and yuppies were a bit more likely to be under surveillance than the averages for the street as a whole – around 40% in both cities. The retired ladies shopping for gifts were far more often in the gaze of surveillance cameras in Copenhagen, both than the average for the street as a whole and than their counterparts in Oslo. Our impression was that expensive shops were more likely to have video surveillance than shops with less expensive goods, perhaps especially in Copenhagen. There are also more such shops on the Copenhagen high street than the Oslo survey area, and our impression was that they tend to have costlier merchandise.

But this runs counter to the overall picture of low level surveillance, especially in Copenhagen, for the street as a whole. Therefore there must be other location types at which surveillance is more common in Oslo than in Copenhagen. As we've seen, our job-seekers and teenage shoppers experienced this. Markedly more chain stores, youth clothing stores and fast food outlets have video surveillance in Oslo than in Copenhagen. This brought to mind some of the comments that questionnaire respondents made to us spontaneously on our rounds. Whereas Copenhagen respondents at several youth clothing stores and department stores spontaneously commented that they found video surveillance somewhat distasteful and that they didn't want their ordinary customers to feel they were under scrutiny, we encountered informants at similar stores in Oslo who – equally unsolicited – commented that even ordinary customers "steal like ravens[56]" unless conspicuous surveillance convinces them they won't get away with it.

All in all, we got the impression that both cities have a similar base of video surveillance deployed to protect staff in places handling large sums of money and/or open at all hours (banks, convenience stores). The differences between the two cities seem to be related to other deployments. In Copenhagen CCTV was often deployed to protect high-priced goods, while in Oslo the aim was often to control the impulses of easily tempted customers. This may have to do with the "local" characteristics of the high streets. Or, echoing Monty Python's architect sketch[57], we may have divined a cultural difference

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[56] quote from one such informant.

[57] Mr. Tid: Ah! That's probably the first architect now. Come in.
(Mr. Wiggin enters)
Mr. Wiggin: *Good morning, gentlemen.*
Clients: *Good morning.*
Mr. Wiggin: *This is a 12-story block combining classical neo-Georgian features with the efficiency of modern techniques. The tenants arrive here and are carried along the corridor on a conveyor belt in extreme comfort, past murals depicting Mediterranean scenes, towards the rotating knives. The last twenty feet of the corridor are heavily soundproofed. The blood pours down these chutes and the mangled flesh slurps into these...*
Client 1: *Excuse me.*
Mr. Wiggin*: Yes?*
Client 1: *Did you say 'knives'?*

between Danish and Norwegian business owners' attitudes towards their customers. Not that the Oslo business owners are on the verge of slaughtering customers, but regarding certain customer groups they do seem to be more distrustful than their Copenhagen counterparts. Whether this is reflected in different triggers for actual surveillance attention, remains to be seen in our next work package when we observe the activities in a Danish and a Norwegian control room.

4.4 Typologies

The main purpose behind the empirical work package Locations and actors was to collect data that would enable us to develop a typology of CCTV systems. After the presentation of our findings in the former chapters, we will now share some thoughts we've had during the analysis work regarding development of typologies.

For a number of reasons it is not that easy to build a bridge between the empirical work and the more theoretical construction of a typology. One can question the very term system. What do we actually mean by "typology of CCTV systems"? Are we looking to categorise the technical aspects of systems? the locations? the intensity and/or integration of systems? the system owners' intentions? the populations exposed and/or targeted? Any or all of these aspects – and more! – could be topics for developing typologies.

Not least for this reason, we do not believe that it is possible to develop one typology of CCTV systems. In contrast, our results seem to enable us to say something about several analytically separate though possibly empirically related typologies of video surveillance systems. During analysis work and while writing the report so far, several different typologies seemed germane. Among these were typologies based on technical and organisational features of the system (for instance in terms of potential surveillance intensity), the purpose (work management, crime prevention, and so on), targeted and protected groups (in Denmark it seemed crucial whether a location had valuables to protect, while in Norway suspected offenders seemed more in focus) and the geographical setting of a CCTV location. We discuss two of these below.

Mr. Wiggin: *Rotating knives, yes.*
Client 2: *Do I take it that you are proposing to slaughter our tenants?*
Mr. Wiggin: *...Does that not fit in with your plans?*
Client 1: *Not really. We asked for a simple block of flats.*
Mr. Wiggin: *Oh. I hadn't fully divined your attitude towards the tenants.*
(For the complete sketch, see: http://www.ironworks.com/comedy/python/architec.htm)

Technical and organisational characteristics as criteria for a typology of CCTV systems (Intensity)

Based on our observations, we felt a need to differentiate between degrees of surveillance intensity. We experimented with several ways of combining variables and values into indices to express this and are not completely happy with any so far. However, in our scenarios above we did manage to categorise systems into five levels of intensity, ranging from constant observation with routines for intervention, via nearly no surveillance, to no surveillance at all. A number of variables in our data sheet, such as existence of systems, number of cameras (in relation to the size of the location?), the time of observation (by staff), time of surveillance (cameras in use), recording images (digital/analogue) seem relevant in describing the intensity of surveillance, but how to weight them relative to one another?

Furthermore, intensity is in many aspects closely related to intention and location. For instance, where the system at a shop with limited opening hours is operated 24 hours/7 days a week, this seems to indicate that prevention of burglary is at least one intention behind it. Or too, as two interviews with Norwegian shopkeepers showed, such a surveillance system may be aimed at showing the presence of employees inside the shop after closing and/or to identify employees stealing within opening hours (embezzlement?). However, the problem of separating intensity from intention and location seems surmountable. Once separate typologies for each have been worked out, the relations between them can be explored. We have proposed one such typology for surveillance intensity. However, as our index for this typology includes one of the variables we added for the Scandinavian context, it will have to be modified if it is to be used comparatively across the participating countries' data.

Characteristics of the institution as criteria for a typology of CCTV locations

Another typology we worked on, again without arriving at a solution we are entirely happy with, focuses on the CCTV location (type of location/institution, size of location) and the possibly also the purpose(s) and/or the target(s) of the video surveillance. In this area we are further from a proposable solution, and our main problem seems to be separating location types at some "objective" level from CCTV intentions, risk perceptions, and even our own empirical observations of the existence and forms of CCTV.

For instance: We observed that certain types of businesses had no video surveillance. Is there some identifiable trait that hairdressers, travel agencies, union offices, etc. share – aside from their shared non-investment in CCTV – that somehow relates to that non-investment?

Or, towards the other end of the intensity scale: We encountered only a few informants who attributed their CCTV systems to the intention of preventing violence. But those

few seemed to share a higher level of surveillance intensity than the average for systems only targeting theft. Whereas even dummy systems (e.g. signs but no cameras, or only empty camera-like boxes) might be installed to prevent theft, all locations explicitly targeting violence had some form of recording installed. But again – is there some independently identifiable trait we could use to pick out locations where violence is likely? Could we then compare that to location-owners' perceptions of the risk of violence, and then compare those two factors to the frequency and forms of CCTV installations in such locations? For the moment, we are struggling with all these factors intertwined and are thus at risk of developing a typology that can only serve to confirm our current hypotheses.

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