Chapter 12
Is Hammarby Sjöstad a Model Case? Crime Prevention Through Environmental Design in Stockholm, Sweden

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12.1 Introduction

Urban sustainability has become the focus of international debate (United Nations Human Settlement Programme 2009), and safety – particularly urban crime and violence in cities – is regarded as one of the biggest contemporary challenges for urban sustainability (Raco 2007; United Nations Human Settlement Programme 2007).

Urban safety has historically been treated as a separate issue from urban planning. Unlike rural societies, urbanisation, cities, economic development, secularisation and anonymity, often combined, created many opportunities for crime. In welfare societies, such as those in Scandinavia, where levels of crime and violence traditionally are not perceived as a major concern, police reported crimes have multiplied several times since the 1950s (Boverket 1998; Balvig and Kyvsgaard 2010).

After the Second World War, the general solution for the housing shortage was implementation of housing developments in the periphery of cities. In many cities in the Western world, this often took the form of residential districts with multi-family housing and culminated in large-scale social housing projects. These city projects, inspired by the CIAM’s Charter of Athens from 1933, were formulated by Le Corbusier and others in the organisation Congrès International d’Architecture Moderne (1928–1959). The CIAM charter contributed to the demise of the traditional street, to functional separation, to anonymous housing, to vast open areas (often little used) and to the building of isolated enclaves surrounded by ‘no-man’s-land’. Safety in these suburban dwellings, especially in relation to burglaries, car-related crimes and violence, has later become a major concern. Part of the programme had utopian social
ambitions, and crime prevention was not part of the agenda. None of the 95 points of the modernistic charter was concerned with urban safety. The projects that resulted were increasingly populated not with a utopian social mix but with a new urban underclass with poorer relations to the labour market, some of them immigrants from different cultures. In other words, CIAM’s programme in reality contributed to social, cultural and spatial segregations that are experienced in the suburban areas of many Western cities. Nowadays, people living in urban districts in large-scale modern housing projects are more concerned with fear of crime than average city residents (Roth and Sandahl 2008; Grönlund 2006, 2008). For some living in these areas, fear of crime changes their behaviour. They may avoid the use of public spaces, public facilities and public transport in the evenings. Parallel to this development, there has been a development of suburban single-family houses especially for the rich and the middle class. These areas were also often spatially and socially segregated suburbs, often targeted by burglaries and car-related crimes.

The latest and perhaps more extreme reaction to the problem of crime and fear of crime in cities are enclosed housing developments, often called gated communities. There are many definitions of gated communities. According to Grant and Mitellsteadt (2004: 913–914) ‘a gated community is a housing development on private roads closed to general traffic by a gate across the primary access. The development may be surrounded by fences, walls or other natural barriers that further limit the public access’. These housing developments have become popular in some severely crime-ridden developing countries, such as South Africa (e.g. Landman and du Plessis 2007) and Brazil (e.g. Coy 2006) but to a large degree are also found in the USA, where more than seven million households (about 6% of the national total) are in developments behind walls and fences. About four million of that total are in communities where access is controlled by gates, entry codes, key cards or security guards (USA Today 12/16/2002). In Europe, despite the lack of statistics on gated communities, these communities exist, the most spectacular ones probably being the new reinterpreted fortresses built in combination with a golf course in Haverleijs north-west of ‘s-Hertogenbosch in the Netherlands. According to Colquhoun (2004), gated communities must be considered as non-sustainable, as they contribute to increasing segregation, most often increasing sprawl and private transportation.

In summary, one may suggest that neither suburban single-family houses, nor CIAM’s modernistic large-scale projects nor gated communities are desirable answers to the demands of urban sustainability goals, particularly with regard to their social dimension. It is argued in this chapter that there are other alternatives when planning new residential areas. In Sweden, for instance, there have been attempts to create new housing developments that are sustainable from various points of view, for instance, the Bo01/Western Harbour in Malmö (Persson 2005) and Hammarby Sjöstad in Stockholm (Frånne 2007; United Nations Human Settlement Program 2009). These housing developments did not explicitly aim at delivering free-of-crime residential areas but did incorporate some basic principles of Crime Prevention Through Environmental Design (CPTED) into their planning. Some of these principles stem from the seminal work of Jane Jacobs (1961) and Newman (1972) but also new theoretical developments on urban safety that are in line with the so-called new urbanism (e.g. Zelinka and Brennan 2001). Here the
case of Hammarby Sjöstad in Stockholm (the capital of Sweden) is examined more closely.

The aim of this chapter is to question whether Hammarby Sjöstad provides evidence of being an urban environment that is sustainable from a safety point of view. First, Hammarby Sjöstad is characterised using some CPTED principles – an approach to crime prevention in planning and urban design that is argued here to be supportive of safe and sustainable urban environments. The intention is to show features of the built environment that in isolation or combined with other criminogenic elements of the area, act in favour of its safety. Later, indicators of safety in Hammarby Sjöstad, such as crime statistics and perceived safety, are compared with other residential areas in Stockholm in an attempt to show evidence of its sustainability with regard to safety. With this case study, this chapter contributes to the urgent need for empirical evidence in this field under Swedish conditions.

This is, of course, a case study, and as such, conclusions are applied to Hammarby Sjöstad only, possibly to districts with similar housing and socio-economic settings. Although Hammarby Sjöstad is a relatively affluent area, the difference between Hammarby and other neighbourhoods of Stockholm is, as this chapter shows, rather small concerning housing composition, income and education. It has been planned for a broad middle class in a country with one of the lowest inequality indexes in the world. The major reason for choosing Hammarby Sjöstad as case study was the fact that the area is a new non-gated, rather dense urban development mainly based on streets and blocks, public transport, lively public spaces and bicycles. The area attracts also a general interest as an example of sustainable urban planning at the same time it contains basic features of CPTED at the urban planning level. It is one of the largest new urban developments in Sweden.

This chapter is structured as follows. The basic principles of CPTED as well their application in the USA and Europe are presented in Sect. 12.2. The Hammarby Sjöstad case is framed in Sect. 12.3. In Sect. 12.4, features of the urban structure such as facades, entries and public yards are taken as examples of CPTED in Hammarby Sjöstad, together with some evidence from crime statistics and perceived safety surveys in Sect. 12.5. This chapter concludes in Sect. 12.6 with a critical analysis of CPTED in Hammarby Sjöstad as well as the approach of analysis used in this study, ending with recommendations for future projects.

12.2 CPTED Principles: From Jane Jacobs and Oscar Newman to European CEN Recommendations

The contemporary focus on crime and safety in relation to the built environment began with Jane Jacobs (1961). To her, a safe city was the traditional city with streets and blocks, diversity, functional mix, concentration and buildings of different age, such as Greenwich Village in New York City. Populated streets and neighbourhood parks were seen as essential. From this point of view, modern urban planning was a failure. Her observations were astute but without systematic
empirical evidence. A sometimes misunderstood point is that her preferred ‘small blocks’ often are quite similar to normal block sizes in European cities, particularly those built before the 1920s. If block sizes become too small, they will be counter-productive to the creation of populated streets.

Oscar Newman (1972), with his concept of *Defensible Space*, had another perspective. His problem was especially to improve modernistic US social housing projects, built since the 1940s – often with free-floating space at ground level combined with large and high buildings with entrance corridors and many apartments concentrated around the same lift and stairwell. Further combined with negative social segregation, these areas had large crime and fear of crime problems that Newman tried to solve by introducing a more graduated territoriality through the creation of semi-public and semi-private spaces – and to some degree, by putting up fences. His work was evidence-based with, for instance, detailed spatial descriptions and statistics. Like Jacobs, much of his focus was on natural surveillance, the informal social control related to everyday life activities, but for Newman, this worked only if related to a clearly designed territoriality. Success was limited because these large US housing projects had too many problems to begin with. In 1972, one of Newman’s case study projects, the slab block social housing Pruitt-Igoe, was blown up in St. Louis, signalling the beginning of the end of modernistic urban planning (Jencks 1977). The defensible space concept has better opportunities for success, however, in other settings with urban fabrics of a more reasonable scale (Newman 1996).

During the 1970s, the concept of CPTED was further developed in the USA, with direct support from the Federal Government through the Department of Justice and the Department of Housing and Urban Development. The CPTED concept also focuses on, for instance, image and maintenance issues and activity support. The term CPTED was coined by C. Ray Jeffery (1971). By 1980, the US Department of Justice summarised the knowledge in *The link between crime and the built environment* and *The current state of knowledge and Crime prevention through environmental design: an operational handbook* (Rubenstein et al. 1980; Wallis and Ford 1980). When Regan became president in 1981, the federal CPTED interest was severely downgraded, although the focus continued to some degree within the police forces, at the National Crime Prevention Institute at the University of Louisville, with the Royal Canadian Mounted Police in British Columbia, and in a few states and city administrations such as the State of Florida.

Criminology has also added to the field with *routine activity theory* and other ideas of environmental criminology (e.g. Cohen and Felson 1979; Brantingham and Brantingham 1984; Clarke and Felson 1993). Routine activity theory relates to everyday life, in which crime happens depending on opportunity. For most crimes to happen, one needs not only the criminal but also unprotected targets and a situation with lack of capable guardians. Much of CPTED is precisely about protecting targets, increasing natural surveillance and creating environments that stimulate activities other than crime. Environmental criminology also contributes with the spatial and temporal aspects of routine crime activity, for instance, focusing on criminals’ movement patterns and spatial awareness.
CPTED is here described as working with territoriality, surveillance (both natural and formal), access control, target hardening, image and maintenance issues and activity support (to support activities other than crime). Cozens et al. (2005) suggested an extended review of the CPTED concept (Fig. 12.1). It is a description closely aligned with contemporary CPTED practice presented at the International CPTED Association (ICA) annual conferences (ICA 2010). In Canada, the gender perspective on CPTED was put into practice in Toronto in the early 1990s, as a result of safety audits with women’s groups, police and transit officials of the Toronto Transit system. The Safety Audit methodology incorporated, for the first time, perceptions and fear into traditionally established CPTED practice (Wekerle and Whitzman 1995). Also in Canada, the International CPTED Association (ICA) was created in 1996, and shortly afterwards a conference presentation by Saville and Cleveland (1997) introduced for the first time the second generation of CPTED (see also Saville and Cleveland 2008). That more expansive form of CPTED includes social factors, systematic risk assessments, anti-segregation measures and active community participation (Cozens et al. 2005). The American Planning Association (APA) supports a complementary form of CPTED called Safescape (Zelinka and Brennan 2001), which seems to exclude the social strategies of the second generation of CPTED. APA’s later Policy Guide on Security (2005) concerns both CPTED and Safescape with its focus on routine crime prevention, as well as extraordinary security risks, like terrorism, that mainly must be handled in other ways than through the built environment, for instance, by collecting intelligence and screening of persons.

In Europe, the interest in CPTED began to grow in the mid-1970s. The UK Home Office formed a crime prevention unit with qualified researchers, whilst in the

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**Fig. 12.1** The first-generation North American CPTED approach: key concepts (Source: Cozens et al. 2005, adapted from Moffat 1983)
In the UK, there was initially a large focus on real cul-de-sacs as the safest residential design. This view was expressed by the Police and by the British Standards Institution in 1986. At this time, Coleman (1985) carried out an extensive study in *Utopia on Trial* that saw the major problem not as the traditional grid street pattern but instead the modernistic large-scale social housing projects. She focused on the same kind of problem estates criticised by Jacobs (1961) and studied in detail by Newman (1972), though they often had the added complications of *streets in the air* and balcony access. Coleman illustrated more clearly than Newman that scale and size of the built environment were essential parts of the problem: the size of the building lot, the number of blocks, the number of dwellings per block, the number of floors and the number of households around the same stairwell. Many of Coleman’s design conclusions are now widely accepted. The essence of her message was that *small is beautiful*, like gridded districts of semi-detached houses (Colquhoun 2004). Later, Hillier (1988, 2004) and Hillier and Shu (2000) showed evidence of more complex links between crime, spatial layouts and street patterns, which rarely support cul-de-sac solutions (for more on Hillier’s findings in Chapter 5 of this book). The current state of CPTED guidelines in the UK is expressed in *Safer places* from the Office of the Deputy Prime Minister (2004), which sums up earlier results with additional focus on planning systems, and in the *Secured by Design* awards guides.¹ These initiatives are aimed more at low to medium density developments than at higher density developments (City of Westminster 2010).

In Denmark, a CPTED committee was formed in the Danish Engineering Society in the mid-1980s, resulting in the Danish Standards publication *Technical Prevention of Violence and Vandalism* (1990) and other later CPTED-related publications. This was, to some degree, similar to the second-generation CPTED’s attention to the social conditions for crime and attuned to the more equal Danish welfare society. In its first paragraph, it is stated that Denmark should continue to be an open society with a minimum of physical barriers and formalised surveillance. The document differentiated between central and local areas, from an overall view of the integrated and mixed city, whilst at the same time advocating social and ethnic anti-segregation measures. It included the same major aspects as shown in Fig. 12.1 but with less emphasis on target hardening and more emphasis on the possibilities of constructive social activities in common areas, especially for young people, which is now a main feature in the second generation of CPTED.

In Sweden, the Stockholm Police, partly inspired by Denmark, began the work on CPTED guidelines in the 1990s, at the same time implementing the ideas in the development of Ärvinge district, Stockholm. In a follow-up study on this residential development, there was evidence that CPTED guidelines had a positive effect on safety, because it was possible to control for the effect of the social composition of the area seen as the major factor for explaining of the low rate of crime incidents.

¹ securedbydesign.com 2010
The CPTED guidelines of the Stockholm Police were published in 2001 and in a second thoroughly revised edition BoTryggt05 in 2005 (Police Authority Stockholm County 2005). A CPTED guideline work at the European level was initiated by the Danish Engineering Society in the 1990s through the establishment of the European Standards Commission’s (CEN) Technical Committee 325 (2011), where experts from many European countries took part. These guidelines are similar to some of the strategies in second generation CPTED, which include risk assessments and public participation/community involvement. There are CEN recommendations on urban planning, dwellings, shops and offices, public transport facilities and petrol stations. Table 12.1 shows CPTED strategies listed by CEN/TR (2007: 20–21).

Table 12.1 CPTED strategies listed by CEN (2007)

<table>
<thead>
<tr>
<th>Urban planning strategies</th>
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<tr>
<td>Planning strategies relevant to crime prevention include:</td>
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<td>Taking into account existing social and physical structures</td>
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<td>Guaranteeing accessibility and avoiding enclaves</td>
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<td>Creating vitality (blending functions and activities, attractive layout)</td>
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<td>Providing mixed status (blending socio-economic groups, avoiding isolation and segregation)</td>
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<td>Creating adequate urban density to allow vitality and natural surveillance</td>
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<td>Avoiding physical barriers (due to infrastructures etc.) and waste land</td>
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<th>Urban design strategies</th>
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<tr>
<td>Urban design strategies for crime prevention include:</td>
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<td>Layout (continuity of urban fabric and pedestrian/bicycle routes)</td>
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<td>Specific location of activities</td>
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<td>Time schedules coordination to guarantee continuous natural surveillance</td>
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<td>Visibility (overview, sight lines between e.g. dwellings and public space, lighting)</td>
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<td>Accessibility (orientation, space to move, alternatives routes, limiting access for unauthorised people)</td>
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<tr>
<td>Territoriality (human scale, clear public/private zones, compartmentalisation)</td>
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<td>Attractiveness (colour, material, lighting, noise, smell, street furniture)</td>
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<td>Robustness (materials, e.g. street furniture, fences)</td>
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<th>Management strategies</th>
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<tr>
<td>Management strategies to prevent crime include:</td>
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<td>Target hardening/removal</td>
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<td>Maintenance</td>
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<td>Surveillance (patrolling, camera monitoring)</td>
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<td>Rules (for conduct of the public in public spaces)</td>
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<td>Providing infrastructures for particular groups</td>
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<td>Communication (of preventive messages and rules of conduct for the public)</td>
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Source: CEN (2007:20–21)

(Lind 2001). The CPTED guidelines of the Stockholm Police were published in 2001 and in a second thoroughly revised edition BoTryggt05 in 2005 (Police Authority Stockholm County 2005).

A CPTED guideline work at the European level was initiated by the Danish Engineering Society in the 1990s through the establishment of the European Standards Commission’s (CEN) Technical Committee 325 (2011), where experts from many European countries took part. These guidelines are similar to some of the strategies in second generation CPTED, which include risk assessments and public participation/community involvement. There are CEN recommendations on urban planning, dwellings, shops and offices, public transport facilities and petrol stations. Table 12.1 shows CPTED strategies listed by CEN/TR (2007: 20–21).

These strategies are basically similar to those of CPTED used in Scandinavian countries, for instance, the Stockholm Police guidelines, but the latter has less focus on target hardening (with the exception of burglary protection) and formalised surveillance. Some of these strategies were considered when Hammarby Sjöstad was planned. For instance, in 1997, at a European congress for local governments, Björn Cederquist, an architect from the Hammarby Sjöstad planning team, came...
into contact with an early draft of the first CEN CPTED recommendation, which later to some degree was used for evaluation of different development proposals (Cederquist 2000). In the next section, the case study of Hammarby Sjöstad is framed with a focus on its building principles and safety.

12.3 Framing Hammarby Sjöstad as a Case Study

In a recent UN HABITAT report on planning sustainable cities, Hammarby Sjöstad is emphasised:

One extremely powerful example of how this eco-efficiency is able to shape urban design and building can be seen in the new dense urban neighbourhood of Hammarby Sjöstad in Stockholm. From the beginning of the planning of this new district, an effort has been made to holistically understand the inputs, outputs and resources that would be required and that would result. For instance, about 1,000 flats in Hammarby Sjöstad are equipped with stoves that utilize biogas extracted from wastewater generated in the community. Biogas also provides fuel for buses that serve the area. Organic waste from the community is returned to the neighbourhood in the form of district heating and cooling. There are many other important energy features in the design as well. The neighbourhood’s close proximity to central Stockholm and the installation of a high-frequency light rail system have made it truly possible to live without a private automobile (there are also 30 car-sharing vehicles in the neighbourhood). While not a perfect example, it represents a new and valuable way of seeing cities, and requires a degree of interdisciplinary and inter-sectoral collaboration in planning systems that is unusual in most cities (United Nations Human Settlement Programme 2009: 121–122).

Hammarby Sjöstad is one of Sweden’s largest urban development projects, known worldwide not just for eco-efficiency (with more than 50% of the energy consumption produced from reclaimed waste from the area and also by solar panels). It is also a successful example of a contemporary mixed use, dense urban development of streets and blocks combined with high-quality public spaces, ambitious green initiatives and public services. This has, among other things, resulted in several architectural awards. In the 1980s, green fields for new developments started to become scarce inside the borders of the city of Stockholm, and a new policy was needed for further development. The new policy of restructuring became known as Build the city inwards! instead of outwards, using the many industrial areas, harbour areas and railway lands located in a ring around the compact inner city.

The planning for Hammarby Sjöstad started around 1990. The construction of the residential area began on the north side and in 1999 on the south. In 2002, the district had a public city housing exhibition. By 2017, the district will have
25,000 inhabitants in 11,000 dwellings, of which 7,000 were complete by spring of 2010. The plan also comprises some 10,000 places of work. Cooperative housing has 54% of the dwellings, and the rest are rental apartments (the average height is 5–7 stores). Within the Stockholm region, the housing costs in Hammarby Sjöstad are considered high as a result of good housing standards, modern construction and central location. There are 95 blocks with 33 real estate owners and 29 architectural firms involved in the project (Cederquist 2010a). Figure 12.2 shows that most of the development in the district is on the south-east side of the main harbour canal (See electronic version for colour figure). Urban blocks and buildings are placed along the waterfront and the main green boulevard serviced by a new light rail tram. There has been a strong emphasis on views towards the sea, vistas, promenades and public parks of different kinds.

Hammarby Sjöstad is formally a part of the central city in Stockholm, although it is just outside the area with congestion charge from car traffic, which became permanent in 2007. The cars are restricted as the number of parking places is only 7,000, of which 4,000 are in underground garages and 3,000 on the streets. There is no parking free of charge during daytime on weekdays and only 0.7 parking places per dwelling. Thus, bicycles and public transportation play an important role in daily movement. The tramline Tvärbanan forms the central spine of the district, with services every 10 min. In addition, a small free of charge ferry boat for people and bicycles connects the southern part of Hammarby Sjöstad

Fig. 12.2 Hammarby Sjöstad overview plan 2007 (Source: Stockholms Stadsbyggnadskontor, 2010 (See electronic version for colour figure))
with the central city up to six times per hour. Figure 12.3 illustrates the character of Hammarby Sjöstad as a traditional urban structure of streets and blocks and at the same time contemporary modern: green and open. There are varied walks and promenades along the waterfront both on quays and in more park-like settings (Fig. 12.3a, b, see electronic version for colour photos). Along the main green boulevard with the light rail, there are seven-story buildings on both sides with shops and restaurants at ground level (Fig. 12.3c). Through a careful urban design process, it has also been possible to incorporate many views and sightlines that connect different parts of the district and that connect the interior courtyards with the more public spaces outside (Fig. 12.3d).

Beside the basic features of partly open blocks, the main street with light rail, shops and restaurants, the attractive seafront with varied walks and several parks, there are public facilities such as schools, day care and a library. Mixed use is also part of the programme both at larger and smaller scales. During the planning phase, there were political struggles about issues of density (building height and daylight), car-parking quotas, lease or sale of building lots, the percentage of rented housing and the amount of public services. In the end, there was to a large degree a consensus on a kind of New Urbanism, solution partly open to the natural sights and a large degree of consensus about the ecological sustainability programme (Vestbro 2005).

Hammarby Sjöstad has more cooperative and less social housing than the Stockholm average (USK 2009). This housing composition, goes together with
other social aspects of Hammarby Sjöstad that show a social composition with several advantages in favour of Hammarby Sjöstad as an area with rather few social problems (residents have a high income, a high employment rate, a high level of education, few health problems, a rather small proportion of foreign-born citizens and a very low level of people on social security aid) (USK 2009). For instance, the income level in Hammarby Sjöstad is 18% above the city of Stockholm average.

### 12.3.1 Safety Principles of Hammarby Sjöstad

Some of the professionals involved in the Hammarby Sjöstad project were interested in CPTED principles, but in practice, these principles seem to have played a minor role in relation to other sustainability priorities and general architectural urban design qualities. For instance, there was an on location seminar on CPTED in 1998 for the planners and architects (Norrby 1998). The seminar showed that plans and drawings for the housing development were difficult to assess in a strict way from a CPTED point of view. As a result, a checklist for CPTED notations on plans and drawings was worked out for the development team (Grönlund 1998). Looking back at the official documents from the planning process of Hammarby Sjöstad, there was little about CPTED included, aside from some very general programmatic statements about safety and experience of safety. The Hammarby Sjöstad team, to some extent, relied on the CPTED checklist with 12 factors interpreted from an early draft of the first CEN Urban Planning recommendation to assess different Hammarby Sjöstad proposals (Cederquist 2000). At the same time, safety was starting to be come part of the municipal agenda. In 1997, the political board of the Town Planning Department agreed on a general programme paper for crime prevention measures for Stockholm City (Brottsförebyggande åtgärder 1997), a document put forward together with the Stockholm’s Comprehensive Plan of 1999 (SBK 1999).

When the crime prevention issues surfaced in the political urban planning debate, it was not so much because of crime levels but rather due to the need to consider gender issues in planning, particularly women’s safety in public places (Vestbro 2005). Stockholm City has had women’s safety programmes since 1999, but they still do not really concern the built environment features. As late as in 2004, an official report states, possibly for the first time, goals for the safety and feeling of safety in Hammarby Sjöstad (Gatu-och fastighetskontoret 2004: 44) as presented in Table 12.2.

In the following section, Hammarby Sjöstad will be assessed based on the aspects of the CEN/TR 2007 listed in Table 12.1 and the Hammarby Sjöstad safety goals from 2004 listed in Table 12.2.
12.4 The Physical Environment in Hammarby Sjöstad from a CPTED Perspective

The characterisation of Hammarby Sjöstad’s physical environment focuses first on an overall discussion about urban planning strategies followed by urban design strategies relevant to crime prevention. Management strategies have not been covered in this study since there are very few indications of poor maintenance. There is, for instance, almost no graffiti and other types of physical damage in the area.

12.4.1 Urban Planning Strategies

Planning strategies relevant to crime prevention include:

*Taking into account existing social and physical structures:* The existing social and physical structures were never a barrier since there were no dwellings in the area. Most of the industrial area was cleared, an action which to some degree has been criticised (Vestbro 2005). A modern architecture landmark, the Luma Factory, was converted into modern business purposes.

*Guaranteeing accessibility and avoiding enclaves:* Southern Hammarby Sjöstad can be seen as an enclave enclosed by the sea and hills, but there is through traffic for cars, bicycles and pedestrians. Of special importance is the light rail, which increases accessibility compared to bus services and also increases visibility, overview and orientation.

*Creating vitality (blending functions and activities, attractive layout):* The district has a functional mix, but partly a large-scale one, when the old industrial part is also considered. In the new part, which is more fine grained, about one-quarter of the floor space is commercial (Cederquist 2010a). The layout is attractive with its contact to the sea, several parks with attractions, and shops and restaurants concentrated along the main street. The residents have possibilities for personalisation of the environment on their balconies and in their gardens. Figure 12.4 illustrates the district’s functional mix and transport connections to Stockholm by

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<tr>
<th>Table 12.2 Goals for the safety and feeling of safety in Hammarby Sjöstad, 2004</th>
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<tr>
<td>Visibility and overview in public space</td>
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<tr>
<td>Strong sightlines for easy orientation</td>
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<td>No pedestrian cul-de-sacs</td>
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<td>Avoid pedestrian tunnels</td>
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<td>Car and bike parking visible from windows</td>
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<td>Garages with light and overview</td>
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<td>Courtyards for about 100 apartments</td>
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<td>Common rooms at ground level and with windows</td>
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<td>Clear separation of private and public space</td>
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<td>Possibility for personalisation of the environment</td>
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<td>Source: Gatu-och fastighetskontoret (2004:44)</td>
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ferry boat (Fig. 12.4a, see electronic version for colour photos). There are several pleasant and interesting walks and parks; Fig. 12.4b shows a long park with fountains. Restaurants, cafés, library and other facilities to visit are shown in Fig. 12.4c. Figure 12.4d shows a courtyard designed with allotment gardens for the residents of the block and with qualities for people to stay in the residential area.

Providing mixed status (blending socio-economic groups, avoiding isolation and segregation): There is a reasonable mix of rented and cooperatively owned dwellings, 63% cooperative housing and 18% social housing in Hammarby Sjöstad, as compared to 51% and 21% in the city of Stockholm, respectively (USK 2009). However, the apartments are rather expensive, including the social housing. This is partly a result of the downgrading of Swedish housing subsidies, which was a decision at the national level. Most of the residents are well educated middle class, 68% with post high school education compared to 53% average for the city of Stockholm (USK 2009).

Creating adequate urban density to allow vitality and natural surveillance: The density is high for an area outside the old central city proper. The built density measured as FAR (floor/area ratio) is 1.2–3.0 within the building plots or 1.4 for the area as a whole including parks (Cederquist 2010a). These are quite high numbers in a Swedish context. This means, for example, that most of the streets have enough pedestrians to provide a minimum of natural surveillance (see below), even in
Scandinavia with its spacious housing standards and generally relatively little outdoor activity in, or close to, the dwelling areas (Grönlund 2007).

Avoiding physical barriers and waste land: The southern ring road touches the area, but there are several over- and underpasses, not only for people but also for plants and animals. When the area is finished, there will be no waste land left.

12.4.2 Urban Design Strategies

Urban design strategies for crime prevention include:

Layout (continuity of urban fabric and pedestrian/bicycle routes): The continuity is secured to a large degree, the enclave character of the district taken into account. A proposed pedestrian bridge to Södermalm (the southern part of the inner city proper in Stockholm) was rejected, but there is now a frequent ferry-boat service. There are bicycle lanes along the main street (but only painted on the street and located between the curb parking and the car lanes), no pedestrian cul-de-sacs or pedestrian and bicycle tunnels: only an underpass under a bridge that is wide and well lit.

Specific location of activities: Almost all shops and restaurants are located along the main streets of the residential area. Those who are not located in the main streets show visible signs of economic difficulties. The main food stores are located at the most accessible street corner of the development. Two schools are located along the main street but face inwards and one of them also towards a park.

Time schedules coordinated to guarantee continuous natural surveillance: The light rail, the ferry boat, the main food stores and the restaurants continue their services well into the evenings, but there are times at night when natural surveillance is weak.

Visibility (overview, sight lines between, e.g. dwellings and public space, lighting): The area has clear sight lines. Most places have good visibility and overview in public spaces, at entrances and to and from windows and balconies. Common rooms and facilities (e.g. laundry rooms) are placed at ground level and with large windows towards courtyards or streets. Figure 12.5 shows examples of good natural surveillance promoted by a number of building features (See electronic version for colour photos). Cars can be seen from the windows (Fig. 12.5a). See-through balcony railings provide good contact between the dwelling and the public space of the city (Fig. 12.5b). There is also good overview in the streets and only a few niches (Fig. 12.5c), and the indoors of the supermarket can be seen from the outside (Fig. 12.5d). Along the main street, there are recesses at the entrances creating niches with less overview of the outdoor areas.

Accessibility (orientation, space to move, alternatives routes, limiting access for unauthorised people): The light rail, the water and the hills facilitate orientation, and the plan layout has consciously worked with sightlines connecting these features. The sidewalks are wide and there are alternative routes. There are almost
no pedestrian cul-de-sacs. Stairwells are almost always kept locked, and in some of the most recent blocks, they have electronic key systems, which are safer than normal keys as they increase the possibilities of control. Some entrances also have video phones. Figure 12.6 provides examples of entrances in Hammarby Sjöstad. Entrances have see-through glass, bike parking and benches (Fig. 12.6a). A more recent entrance is operated by electronic keys (Fig. 12.6b, c) and a dwelling garage with electronic keys (Fig. 12.6d see electronic version for colour photos).

Territoriality (human scale, clear public/private zones, compartmentalisation): There are clear public and private zones. All the dwellings have courtyards, often servicing about 100 dwellings, which is an acceptable scale. Some of the courtyards are larger, a result of balancing demands of social scale with demands of density, sunlight and views to the landscape. The courtyards are generally not locked, which makes these semi-private areas accessible also to visitors. Many dwellings at ground level have private gardens with direct access from the inside. Most often hedges and the likes are possible to look over. There are many subtle markings and distance-keeping features which increase territoriality and protect areas close to facades. The overall impression is soft behaviour guidance between private and public spaces, not fences and gates. Figure 12.7 shows stone beds with grass or plants along the facades to create a soft barrier for movement (a), which also results in fewer blinded windows (See electronic version for colour photos). A change of level from street to courtyard gives an open but easily understood division between public and semi-private space (Fig. 12.7b). The transition can also be marked by a
Fig. 12.6 Entrances and access systems in Hammarby Sjöstad (Source: Photographs by Bo Grönlund, 2010)

Fig. 12.7 Territoriality in Hammarby Sjöstad: marking boundaries, distance keeping, change of levels and visible private gardens help guide movement and increases social contacts (Source: Photographs by Bo Grönlund, 2010)
low garden gate (Fig. 12.7c). A hedge below the height of 1.6 metres marks a private garden and at the same time makes social contacts with neighbours possible (Fig. 12.7d).

Attractiveness (colour, material, lighting, noise, smell, street furniture): The area scores well on these qualities since overall, the area is considered as a pleasant area. However, the CEN/TR 2007 report does not explicitly provide many clues about how to evaluate attractiveness of an area. The report primarily suggests ‘public spaces friendly to users, and the possibility for spontaneous activities’ (CEN/TR 2007: 43).

Robustness (materials, e.g. street furniture, fences): There is very little visible evidence of vandalism or wear and tear. Thus, the CEN/TR 2007 demands concerning robustness have been met: durable constructions, resistance to vandalism, adaption to the needs of the users (CEN/TR 2007: 43). Overall, robustness of design is enough, but it is not overdone.

So far, the main points of CEN/TR (2007) concerning urban planning and urban design strategies have satisfactorily been covered and Hammarby Sjöstad which indicates that the area follows most CPTED principles. There are, however, some further issues that should be mentioned as challenges. The first refers to car and bicycle parking (Gatu-och fastighetskontoret 2004). In the new parts of Hammarby Sjöstad, there were 182 vehicle-related crimes in 2008 (excluding bicycles), of which 64 were thefts of vehicles and 118 thefts from vehicles. This is partly related to the garages. In Hammarby Sjöstad, there are both public and private parking garages, all with safety measures implemented (e.g. with good visibility and overview, CCTV, entrance codes), which are often a target for car-related crimes. These crimes happen especially in some large garages with mixed public and private parking. Smaller, private dwelling garages perform better but still experienced some crime (Fig. 12.8a, b). One of the large garages targeted by thefts – despite CCTV, entrance codes and good visibility and overview – is the Luma garage that accommodates a couple of hundred cars at several levels (Fig. 12.8c, d).

Bicycle parking should also be safer – it is considered to be safe but not safe enough. Bicycle theft and damage are common events. Outdoor bicycle parking should be visible from windows and with solid racks to lock the bikes to. Often they do not meet these criteria (Fig. 12.9a, b). Many small bicycle rooms, with electronic security keys, are needed. Lockable storage rooms for bicycles are too few and too crowded (Fig. 12.9c). Bicycles are often seen on private balconies, indicating that bicycle parking and storage facilities are unsatisfactory (Fig. 12.9d).

Equally important to consider are public transportation nodes, such as tram stops, and the location of automated teller machines (ATMs) or cash machines. Good visibility and overview from dwellings towards ATMs and to tram stops is essential. The tram gives a good overview along the main boulevard and increases informal surveillance possibilities as there is a tram passing frequently (Fig. 12.10a). The tram stops in Hammarby Sjöstad also have good overview, lighting and useful facilities (Fig. 12.10b).
Fig. 12.8 Garages in Hammarby Sjöstad (Source: Photographs by Bo Grönlund, 2010)

Fig. 12.9 Hammarby Sjöstad bicycle parking (Source: Photographs by Bo Grönlund, 2010)
12.5 Assessing Hammarby Sjöstad According to CPTED Principles

12.5.1 People in the Streets

According to CPTED, informal surveillance in public space is important for urban safety. In order to test the frequency of people in public spaces as an indication of natural surveillance of streets in Hammarby Sjöstad, a people count at some selected ‘gates’ at streets and paths was performed at the beginning of April 2010 (a weekday). Table 12.3 shows the results of the counting based on Grönlund (2007). Here it is shown that there are three thresholds of urbanity regarding the density of people in public space. The basic and lowest level is a minimum of at least three visible persons within a 100 m. This is, among other things, where the possibility of informal surveillance starts (visibility of people in buildings is not counted). The next threshold is the experience of at least 1,000 persons per hour. This is where there starts to be a feeling of central place, where people often like to gather. The upper level is crowding, which starts to happen when there is less space per person than two square metres on average. This is the level where, for instance, pickpocketing might easily happen.

Most of the streets are populated to a degree, which makes informal surveillance possible. Not all streets and paths reach a basic level required for informal surveillance. In late evenings and nights, the level of traffic is even lower, which may compromise the potential positive impact of surveillance on safety in the streets. Only in the afternoon-rush hour, a part of the main street in Hammarby Sjöstad becomes a central place, and on an average day, there is no crowding anywhere, except maybe at the waiting area for the ferry boat and at the tram stops.

12.5.2 Risk of Crime

Crime statistics from 2008 (Stockholm Police Headquarters 2010) show that there have been slightly more than 1,000 crimes in the southern part of Hammarby
H. Grönlund

Table 12.3 Hammarby Sjöstad pedestrian and bicycle traffic, average/hour. Thursday April 8 2010 between 8:00 and 20:00. Light clouds, 7–8°C, light winds

<table>
<thead>
<tr>
<th>Selected ‘gates’ counted:</th>
<th>Pederstrains</th>
<th>Bikes</th>
<th>Peds +bikes</th>
<th>&gt;3 people/100 m</th>
<th>Central place</th>
<th>Crowding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lugnets Allé (center/by tramstop)</td>
<td>615</td>
<td>4</td>
<td>619</td>
<td>Yes</td>
<td>Only in rush hour</td>
<td>No</td>
</tr>
<tr>
<td>Hammarby Allé (close to center)</td>
<td>356</td>
<td>32</td>
<td>388</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Sickla Quay</td>
<td>295</td>
<td>42</td>
<td>337</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Lugnets Allé (off center)</td>
<td>281</td>
<td>23</td>
<td>304</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Sickla Udde bridge</td>
<td>261</td>
<td>30</td>
<td>291</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Babordsgatan</td>
<td>104</td>
<td>10</td>
<td>114</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Korphoppsgatan</td>
<td>89</td>
<td>10</td>
<td>99</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Sickal kanalgata</td>
<td>90</td>
<td>7</td>
<td>97</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Styrbordsgatan</td>
<td>77</td>
<td>2</td>
<td>79</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Sickla waters edge promenade</td>
<td>76</td>
<td>2</td>
<td>78</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Torkhusvägen</td>
<td>65</td>
<td>2</td>
<td>67</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Sickla Udde central path</td>
<td>50</td>
<td>8</td>
<td>58</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

To have 3 people within 100 m you need 90 people/hour or more, as one person walks 100 m in 2 min
To have a central place you need at least 1,000 people/hour
To have a place with crowding you need at least 0.5 persons/m², or more than 2 persons/m on a sidewalk

Sjöstad (Södra Hammarbyhamnen). A little less than a third of those offences took place in the old industrial part and the majority of cases in the new parts of Hammarby Sjöstad, which are mainly residential. There were very few serious crimes (one outdoor rape, one murder attempt, one case of serious violence and only four dwelling burglaries). Figure 12.11 shows crime rates per 1,000 inhabitants in Hammarby Sjöstad (Södra Hammarbyhamnen) in comparison with Skarpnäck district (to the south of Hammarby Sjöstad), the average for the city of Stockholm and Sweden (See electronic version for colour figure).

Figure 12.11 shows that the crime rates in Hammarby Sjöstad are generally lower than the average for the city of Stockholm, but also in most cases lower than the Swedish average, which includes many smaller towns and settlements. The only type of crime that does not show lower levels in Hammarby Sjöstad is car-related offences. This is, as suggested previously, partly due, to some large multi-use garages in the area.

Crime statistics of the new parts of Hammarby Sjöstad in 2008 show that property crimes dominate: bicycle thefts (158 cases indicating that bike storage and bike parking are not adequate), car-related thefts (182 cases), other thefts (125 cases), burglaries (105 cases, mainly on building sites, in cellars and storage rooms, and shops) and robberies (6 cases). Concerning violence, in that specific part of Hammarby, there were six cases in 2008.
12.5.3 Perceived Safety and Levels of Crime

Residents declare feeling safe in Hammarby Sjöstad. About 90% of the population feels safe on a range of safety parameters (Roth and Sandahl 2008). The declared perceived safety is high compared to many other areas in Stockholm City (Fig. 12.12 (See electronic version for colour figure)).

All figures show a lower level of fear of crime in Hammarby Sjöstad than that found in other areas in comparison. Only vandalism and dark/poorly lit environment are of major concern in Hammarby Sjöstad. According to Cederquist (2010b), the latter is due to low lamps on some pedestrian paths that leaves people’s faces in the dark. As the area is still under construction, very strong glaring light from construction sites may also make the rest of the environment seem darker than it really is. Overall Hammarby Sjöstad is regarded as safe for almost all living there.

Nobody can deny that residents’ high satisfaction with safety in Hammarby Sjöstad is, at least partly, due to the urban planning and design qualities that the area has so far achieved in its construction and current management. This study shows examples of how many CPTED principles were put in place in Hammarby Sjöstad in an environment that strives to reach high levels of sustainability and is internationally recognised for it. Regardless whether CPTED was consciously implemented, or a more indirect result of good general urban design principles,
Hammarby Sjöstad provides evidence of success from a safety point of view. Careful urban planning and urban design have produced a residential area that is less prone to crime than the expected average for Stockholm and where residents declare feeling safer to a larger extent than those living in other parts of the city.

The degree to which urban planning and the implementation of CPTED principles directly contribute to safety in Hammarby Sjöstad is a question that cannot fully be tested without further study. One reason for this is that although many features of CPTED can be found in Hammarby Sjöstad today, it is not clear how many of these principles were intentionally put in practice as design features against crime. The combined facts of this investigation show that there has not been a fully coordinated, systematic CPTED approach in the planning of Hammarby Sjöstad, although some of the professionals were aware of CPTED guidelines. In order to test the effect of CPTED approach on crime and perceived safety in the area, it would be necessary to compare Hammarby Sjöstad in detail with other areas in Stockholm City and consider not only the physical environment but also other social parameters as recommended in the second generation of CPTED, a project which is beyond the scope of this study.

Since perceived safety is also a function of individuals’ overall well-being, it would be expected that safety would reflect also (at least to some extent) overall levels of satisfaction with life that tend to be higher among those with more economic recourses – like those living Hammarby Sjöstad who are better off than in Stockholm on average (see Sect. 12.3 for details of the social composition of the area). There is a considerable match between high perceived safety, low crime levels and the large share of residents with high education and income in Hammarby Sjöstad compared with Stockholm City’s average.
Another factor that affects levels of crime and perceived safety is the area’s population demography. Hammarby Sjöstad has currently a smaller proportion of young people than the city of Stockholm’s average, which might positively affect the criminogenic conditions of the area. However, the proportion of young people is expected to grow by more than 60% in the next decade, which potentially means a different age composition, potentially more criminogenic in the area. Roth and Sandahl (2008) has shown that there is a co-variance between people’s experience of youth trouble in the different Stockholm districts and the percentage of young people in the population. In general, Stockholm’s youth problems often culminate about 15 years after the construction of the housing developments, when the percentage of young people also tends to peak.

12.6 Conclusions and Looking Ahead

The objective of this chapter was to assess whether Hammarby Sjöstad shows signs of being an environment that is sustainable from a safety point of view. The assessment was performed by looking for CPTED principles in Hammarby Sjöstad, which was expected to have an effect on crime prevention and be supportive of safe and sustainable urban environments.

Findings show that Hammarby Sjöstad has features of a built environment that, in isolation (e.g. avoidance of physical barriers) or combined with other elements of the area (e.g. continuity of urban fabric and pedestrian/bicycle routes and good natural surveillance), can act in favour of its safety standards. Crime statistics and perceived safety surveys in Hammarby Sjöstad show evidence that the area is both actually safer and perceived by its residents as such. Although Hammarby Sjöstad shows promising indicators of sustainability, the degree to which urban planning and the implementation of CPTED principles directly contributed to safety is, however, an open question.

Is it possible to plan and build a new city district safe from crime and fear of crime and also socially, economically and ecologically sustainable? Learning from Hammarby Sjöstad, the answer seems to be yes. Whether this case study is exportable to other countries is another issue. Remember that Hammarby Sjöstad is highly dependent on an affluent welfare society, and efficient public services, and is embedded in a city that is less segregated than most cities in other parts of the world.

This study, however, suffers from a couple of methodological limitations. The analysis has not linked each crime event to its specific CPTED circumstances, which could provide clues to whether design features are working properly. Moreover, the space syntax approach, which Bill Hillier has used with success in the UK and elsewhere, has not been tested here. Nor it is possible to reconstruct in every detail the decision process over two decades which led to the exact built results in Hammarby Sjöstad, which everybody can experience today. CPTED principles were considered by some of the planners and architects involved in the project.
but not systematically. The aim here has been a modest one of comparing the reality of Hammarby Sjöstad to the CPTED guidelines.

CPTED is a normative approach built on a combination of scientific research evidence and the common sense of guideline-writing expert committees. CPTED is in itself a compromise of different concerns. When used in practice, compromises must be made with other sustainability goals and other demands for the built environment (e.g. more lamps in pedestrian paths vs. saving energy). All this does not mean that CPTED should not be investigated further and tested to be further improved, but it means that CPTED is an issue of good enough practices and not a strict scientific sub-optimisation of crime prevention at the cost of other goals and demands. Future research should assess in detail the impact of the CPTED approach on crime and perceived safety to be able to compare Hammarby Sjöstad with other areas in Stockholm and consider not only the physical environment but also other social parameters as recommended in the second generation of CPTED. This should include the needs of different groups (by age, gender and those with physical or mental disabilities) and the way they make use of their environment.

Lessons from Hammarby Sjöstad, as well as from a broader review of Scandinavian cases and Scandinavian CPTED guidelines, can lead us to the conclusion that the rather traditional way of building cities, with streets and blocks, seems to enhance security and feeling of safety, whilst the opposite is often true (in housing developments based on the CIAM type of large, mono-functional, modernistic principles) (Grönlund 2005; 2008; 2009).

The systematic, comprehensive use of CPTED is still often weakly implemented in Stockholm and in need of more permanent and coordinated routines (SBK 2001). Since about the year 2000, experts from the Stockholm City Planning Office took part in the development of the Stockholm Police CPTED guidelines BoTryggt (Police Authority, Stockholm County 2005), but the lack of a coordinated, systematic CPTED approach seems to continue up to 2010, while planning for the new urban district Norra Djurgårdsstaden (Rydberg 2010, personal communication). In 2009, the city of Stockholm agreed on a citywide crime prevention programme (Stockholm stads brottsförebyggande program 2009), which has primarily been implemented by the local crime prevention councils of the city’s 14 local city districts. This work deals mainly with social prevention, with little focus on urban planning issues and CPTED, which basically just refers to the Stockholm Police guidelines.

There are, however, good examples beyond Hammarby Sjöstad to indicate that change might be on the way, such as those now implemented in the local government of Nacka, a suburb of Stockholm, and by a housing development company (see Eriksson 2010: 94–105). In Nacka, politicians decided in 2001 to implement CPTED at all planning levels: the comprehensive plan, local plan and when

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2 Anders Rydberg with the Police Authority of Stockholm County, who were in charge of the development of BoTryggt (Handbook for crime prevention and security enhancement in homes and residential areas in Sweden)
granting building permits, for instance. By 2009, this was, to a significant degree, actually done, including a focus on knowledge, governmental routines and the appointment of responsible officials (Jonasson 2009). This initiative has succeeded because of public officials’ interest in CPTED and the existence of a smaller local government unit, which makes the implementation of policy changes easier than in the entire city of Stockholm.

In the long run, CPTED needs to have legal foundations, if it is to be widely implemented as a tool for planning sustainable urban environments. When laws and regulations are in place on fire protection and escape, accessibility for disabled people, traffic safety measures and many other things, one may wonder why there cannot be laws and regulations about crime prevention and safety.

Acknowledgements
The author would like to thank Roya Bamzar, Matthew Biniyam Kursah and Pouriya Parsanezhad for collecting the data on Hammarby Sjöstad pedestrian and bicycle traffic presented in Table 12.3.

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