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RESIDENTIAL CRIME AND ENVIRONMENTAL DESIGN

Theo van der Voordt

1. 'Small criminality' in The Netherlands

As in most Western countries, in The Netherlands too, crime has risen dramatically in the past two decades. Statistics show an increase from 114,000 offences according to the penal code in 1960, to 990,000 offences in 1985, a period of only 25 years. And these are just the officially recorded figures! It is a well-known fact that many crimes are not reported. In order to gain more insight into this so-called 'dark-number', in 1975 the Dutch government started with annual victimization surveys. These surveys show that on average about 30% of all offences are reported to the police. This percentage varies per type of crime. For example: vandalism is reported for only 10% (and even then, it is not always officially recorded and included in crime statistics, especially not when damage is small), whereas residential burglary is reported for over 80%.

As a consequence the real number of offences according to the penal code can be estimated at three or four million offences per year. In a population of about 14 million people, this figure means a victimization rate of 1:4. Financial consequences are estimated at three or four milliard Dfl each year. Material damage by vandalism is estimated at half a milliard Dfl each year, of which:

- about 155 million of damage on private property such as houses,
- about 115 million of damage on private cars,
- about 100 million of damage on shops,
- about 100 million of damage on governmental objects,
- about 50 million of damage on private schools,
- about 30 million of damage on corporation owned housing,
- about 10 million of damage on public transport (bus, train).

On the whole it is no wonder that there is a growing feeling of discomfort among people, which finds expression in mass media as well as in many research notes. Especially female researchers have pointed out widespread feelings of fear among women and elderly people. As a consequence, government and local authorities are put under strong pressure to take much more stringent punitive measures and to develop strategies for prevention. In 1983 a committee was installed by the Ministry of Justice (the so-called Roethof committee, named after its chairman), in order

- to analyse the occurrence of different types of 'small criminality', i.e. offences which are in themselves not very serious but by their frequent occurrence lead to widespread feelings of unpleasantness,

- to analyse present strategies for prevention and control of crime,
 - to develop ideas for a more efficient approach of the crime problem.
- In the final report of this committee a well elaborated analysis is given, taking into account both socio-economical and environmental factors (Commissie Kleine Criminaliteit, 1986). The environmental approach is strongly associated with the international research literature on crime prevention through environmental design and is supported by many research data. Besides, the Ministry of Justice has provided a budget of 45 million Dfl for further research and field projects. In July 1986, subsidies were awarded to 35 local governments for a total amount of 5 million Dfl. Involved projects are for example:

FIGURE 1. Vandalism recorded as known to the police.

FIGURE 2. Increase of victimization rate.

Source: Centraal Bureau voor de Statistiek, 1986.

Not a very nice welcome for residents or visitors.

FIGURE 3. Regional variation of victimization rate - vandalism.

a = damage to cars

b = other damage

Figures (= percentage of population over 15 years old) are based on Van Soomeren and De Savornin Lohman, 1986.

- a neighbourhood crime prevention program (Amsterdam),
- rehabilitation of a high rise public housing estate in trouble (Breda),
- a project of burglary prevention by security devices and other technical measures (Enschede),
- an experiment focussed on the relationship between playing truant and vandalism in high-rise housing and shopping centres (Utrecht),
- the development of a checklist of criteria to evaluate plans in the design stage and design guidelines for crime prevention through environmental design (The Hague).

The Ministry of Justice intends to set up a system in which all research outcomes and field data will be filed for reasons of research, housing policy, design and management.

In this article I will sketch a general framework in order to facilitate the judgement of theoretical and practical implications of future research data. I will especially consider two types of small criminality: vandalism and residential burglary.

2. Spatial distribution of crime

Studies in different countries have shown an uneven distribution of crime in society (Park et al., 1925; Davidson, 1981; Brantingham and Brantingham, 1981). This holds true for different scale levels. For vandalism and residential burglary the Dutch data can be reviewed as follows.

A. Vandalism

Vandalism can be defined as malicious damage of objects without material profit for the vandal. Figure 3 shows the regional variation of damage on private property. Within there is a lot of variation, too. Figure 4 shows a map of The Hague which marks the number of damage on governmental property in each quarter (Gemeente 's-Gravenhage, 1984). Figure 5 shows the relationship between victimization rate and index of urbanization, from A1-A4 = rural towns to C5 = big cities with over 100,000 inhabitants (Van Soomeren et al., 1986). According to an inquiry in 23 Dutch towns most vandalism occurs in areas with many cafés, cinemas and dancings and also around football fields and along busy routes (Veldkamp et al., 1984).

FIGURE 4. Urban variation of vandalism in The Hague.

Source: number of cases of damage in one year based on: Gemeente 's-Gravenhage, 1984).

FIGURE 5. Index of urbanisation and victimization rate.

Especially schools, sport accommodations, and public buildings are often vandalized, just like public lighting, greenery, and street furniture. If we look somewhat closer, it turns out that inside schoolhouses, sanitary is most heavily damaged of all. In general housing estates most vandalism occurs in the most public and poorest surveyed spaces such as entrances of multi-storey houses, basement stores, staircases and elevators (Van Dijk et al., 1985). The total victimization rate in single family houses, however, is higher than in multifamily houses (5% versus 3.7%). This may be due to the fact that in single-family houses more 8-15 years-old children are living. It is common knowledge that most vandals belong to this age category.

B. Residential burglary

Figure 6 shows the regional variation of the victimization rate for burglary, while the relationship between victimization rate and index of urbanization is included in figure 5 (Van Soomeren, et al., 1986). Dutch data on variation at city level are lacking. Foreign studies have shown a high vulnerability of three areas: poor areas, urban core areas and wealthy housing (Davidson, 1981; Poyner, 1983). According to Dutch victimization studies, type of housing and year of building are also influential too (table 1). Pre-war high-rise and medium high-rise council houses are most vulnerable. Remarkably, in rural towns low-rise houses are more vulnerable (table 2).

C. Fear of crime

Apart from the real crime rate, feelings of fear are also unevenly distributed. Several studies show that people feel unsafe in and around

- dark, isolated places, especially if not visible from the residential environment, such as parks, outlying sport grounds, monofunctional areas (S.O.S. Den Haag, 1985; Van Selm et al., 1985),
- subways, viaducts, car parks and garages (Van der Voordt and Van Wegen, 1979; Dienst Ruimtelijke Ordening Amsterdam, 1985),
- busy places with odd characters roaming about such as junkies, drunks and prostitutes (Clinard, 1978; Van der Heijden, 1984),
- poorly maintained housing estates with cues such as vandalism, deterioration, filthiness (Van der Voordt and Van Wegen, 1979),

Call-box, a favourite target for vandals. From a distance this call-box seems complete, but coming nearer something is lacking.

Graffiti, in itself not very serious but still rather annoying by its associations with norm decay and deterioration.

Graffiti as a way of self-expression and piece of art.

TABLE 1. Housing features and victimization rate (burglary).

a. type of building	. single family	
	- detached	1.5%
	- semi-detached	1.6%
	- row house	1.4%
	. multi family	2.8%
b. number of storeys	. 1 or 2	1.6%
	. 3 or 4	1.9%
	. 5 or more	2.8%
c. year of building	. before 1945	2.4%
	. 1945 - 1970	1.7%
	. after 1970	1.1%

Source: Van der Voordt, 1986a.

TABLE 2. Victimization rate, type of housing and index of urbanization.

	index of urbanization			
	A1-B3	C1-C4	C5	total
low-rise	1.4%	2.3%	3.2%	1.95%
high-rise	0.7%	1.0%	4.1%	2.68%

Source: Commissie Kleine Criminaliteit, 1986.

- . poorly surveyed places in large scale housing estates such as entrance halls, inner streets, overhead walkways, and basements (Newman, 1972/-1980).

For other types of crime similar pictures can be given. However, a more important question is: why is crime so unevenly distributed and - considering the main topic of this Journal - what are the effects of spatial characteristics?

3. Small criminality in the home environment

Crime is a complex phenomenon. No wonder that many explanations have been offered for the occurrence, increase, and spatial variation of crime, sometimes contradicting sometimes complementary. This is not the place to try and give an extensive review of all sorts of theories and the variables involved. I will mainly discuss environmental correlates on vandalism and burglary, according to a simple scheme (figure 6), which was first developed in an inquiry on vandalism in Amsterdam (Van Dijk et al., 1981/1984).

FIGURE 6. Regional variation of victimization rate - residential burglary.

Source: Van Soomeren and De Savornin Lohman, 1986.

3.1 Presence of (potential) delinquents

No vandalism without vandals, no burglary without thieves! Because most vandalism and also many occasional thefts are committed by youngsters (of 8 to 25 years old), a high offence rate can be expected at places where young people live or meet each other, such as schools, shopping centres, recreational facilities, and along routes to and from these facilities. In order to keep the youth away from housing estates it might be helpful to create a separation between housing estates and busy routes, e.g. by a small ditch or a wide strip of greenery.

3.2 Motives

Research has shown that the majority of young people now and then is guilty of vandalism in one form or other (Conklin, 1975; Van Dulleman and Hauber, 1982; Van Dijk et al., 1981/1984). Psychologists and educationalists suppose this is due to loss of identity during adolescence. This often involves frustration and feelings of unpleasantness, and can lead to a search for one's own limits and the creation of a subculture with its own norms and values. Furthermore young people look for excitement and sensation in order to break boredom. More generally, people feel there is a lack of 'perceived control'. Sociologists pointed to the increase in scale in society, which can lead to anonymity, bureaucracy and an elaborate system of complex rules, which many people experience as uncomfortable. Human relations have become rather superficial and many family ties and other social ties (churches) have broken down without the development of new alternatives. The wide and complex variation of specialised jobs requiring a long and serious training make it more difficult to make choices, the more so as many young people are discouraged by the widespread unemployment. This so-called 'no future syndrome' may be one of the factors to explain the strong increase in playing

truant and many truants are roaming the shopping centres and other (semi)-public spaces. Against this background it is easily understood that young people work off their boredom and frustration in vandalism, or the use of alcohol or drugs. Using drugs often means a chronic shortage of money which may reduce one's inner threshold and as such a downward spiral may develop which can be stopped only with great difficulty.

Next to these psychological and social factors, physical factors may have an influence upon motives, too. Especially in large scale mass housing the young children's need for exploration is often frustrated by constraints intended for their safety (Mulderij and Bleeker, 1982). High-rise housing makes it difficult for parents to supervise their children. This leads them to keep their children inside. Once the children are at an age that they can play outside independently, they pick up most of their behaviour patterns from their peers, the immature leading the immature into the generation gap (Coleman, 1985). This might explain why the resistance of many parents to bring up their children in flats is an universal phenomenon (Van Vliet, 1983). But in crowded streets with heavy traffic children are also inhibited in their development. Besides, facilities are important. A variety of play areas and facilities for adolescents may help to prevent vandalism caused by boredom and frustration.

FIGURE 7. Spatial conditions for 'small criminality'.

Source: free after Van Dijk et al., 1981/1984.

High-rise housing from the sixties, not a very popular type of housing for families with young children.

3.3 Thresholds

While motives for vandalism and other types of deviant behaviour appear to get stronger, thresholds to stop this kind of behaviour seem to be lower. This holds true for both internal and external thresholds. The internal threshold refers to the internalisation of norms and values such as 'vandalism is bad' or 'thou shall not steal'. Moral principles seem to be decaying, people's respect for material goods seem to be diminishing (see concepts such as 'throw-away-society') and a phenomenon such as the so-called 'proletarian shopping' is accepted by some people as a more or less acceptable way of a more righteous distribution of income.

This decay of moral values might be due to the many bad examples given by political and social leaders, which are exaggerated in newspapers and other mass media, while according to public opinion people who are held responsible are not sufficiently punished. Another explanation may be that democracy has gone too far here and there. Rightly the democratic movement has led to a breakthrough of too hierarchic and authoritarian relationships, but many people have become uncertain how to act. Nowadays, acting with authority is easily interpreted as undemocratic and authoritative and therefore an in itself recommendable attitude of tolerance may change into too great a permissiveness.

However, to what extent the decay of moral standards is the right explanation for increasing vandalism and other types of small criminality, is still a matter of debate. Most vandals call vandalism a waste of money and a shame, which should be punished more severely. Unfortunately this sense of right and wrong appears to be insufficiently internalised to keep them from vandalism actually.

This brings us to the external threshold: the possibility of sanctions which may keep people from deviant behaviour. According to public opinion, lack of 'formal surveillance' (police patrol) and handling vandals and other delinquents too kindly are the main causes of an ever increasing number of destructive actions, burglary, shoplifting, and so on. Stories about desperate shopkeepers watching the re-entrance of a shoplifter soon after his detection are well known. Indeed one may wonder what is the effect of a policy, where only 15,000 vandals out of over 1 million are caught each year, of which about 5,000 are sent home immediately after a reprimand by the police and about 7,000 after a reprimand by the Public Prosecutor.

Nevertheless one cannot expect miracles by better tracing and more consequent punishments. So let us return to the role ascribed to the design and see how individual managers and local housing officers might influence the vulnerability of their housing estates. Many studies have shown that physical characteristics can effect the external threshold by reducing the opportunity to vandalism and burglary. This so-called 'opportunity approach' (Mayhew et al., 1976; Clarke, 1980) focuses on crime prevention and increasing the (actual or perceived) chance to be caught. Two strategies are important:

- Technoprevention, focusing on reduced accessibility c.q. an increase of the 'physical threshold', e.g. by adequate fastening, locks, alarm system, security devices, target hardening and so on.
- Socioprevention by the presence of people who can see and hear what is going on and who will intervene if necessary. This type of crime prevention aims at increasing the 'psychological threshold'.

Many authors in referring to socioprevention speak of social control. Because of its negative connotation I prefer to speak of natural surveillance, i.e. the actual or perceived presence of people who feel responsible for their envi-

Mixed land use in a modern housing estate: housing, shops, schools.

Car parks, often used in urban estates in order to intensify land use, but by many women and older people experienced as unsafe places for their lack of natural surveillance.

ronment and therefore can be expected to intervene in the case of deviant behaviour. Natural surveillance requires the fulfillment of several conditions.

A. Presence of people

Natural surveillance requires the presence of people both during the day, in the evening, and at night. The presence of people is not only important for actual crime prevention but could also promote people's feelings of safety, because it creates the possibility to call for help in case of danger. Mixed land use and a variety of amenities may be very helpful. According to Jacobs (1961) the post-war separation of functions is one of the main causes of the deterioration of cities. She refers to housing estates with abandoned public spaces around blocks of flats, monofunctional office areas or industrial areas, and deserted greenery. As Jacobs said, 'such places have no eyes'. Of course not all functions are recommended to be mixed into residential areas. Many facilities bring along annoyance and could even lead to an increase of problems (Weicher, 1973). Besides, not all areas can be made equally busy and lively. Although miss Jacobs' theory sounds plausible, much work still has to be done in the field of research and design to know what is commendable.

B. Personal involvement and a sense of responsibility

Whether people actually interfere or not depends on their courage and the perceived effects, while their personal involvement also plays an important part. It is a well-known fact that bystanders often don't interfere, especially not if many bystanders are present (Latané and Darley, 1970; Roëll et al., 1982). Anonymity and the fact that it is not clear who is responsible often leads to a wait-and-see policy. People's sense of responsibility and personal involvement can be increased by:

- behaviourally based design which fits user requirements as adequately as possible,
- creating a sense of ownership, e.g. by user participation in the design process or different types of tenant's self-management (Wilson, 1978),
- clearness about who is responsible for what, e.g. by a clear distinction between public and private spaces and clear functions (Newman, 1972; Brown and Altman, 1983),
- a strong social structure and positive relationships between neighbours, which require some homogeneity, especially on block level, and as a consequence an adequate differentiation of dwelling types and a corresponding allocation of inhabitants,
- care of maintenance: a well-preserved area will be perceived as a habitat, where people live who regard it as their own territory which is under control.

Privatisation and individualisation are keywords for increasing involvement of the inhabitants. Especially large scale high-rise housing estates with many common facilities and a negative social stigma of cheap council housing appear to correspond with a lack of personal involvement of the inhabitants and a sense of anonymity (Van Dijk et al., 1984; Newman, 1972/1980; Coleman, 1985).

Recently a Dutch inquiry has shown an almost linear correlation between the number of dwellings per entrance and the risk of being burgled (De Savornin Lohman, 1986).

TABLE 3. The suspects according to Coleman.

	relative influence ⁺)	recommended threshold
1. dwellings per entrance	58%	6
2. dwellings per block	47%	12
3. storeys per block	41%	3
4. overhead walkways	33%	0
5. spatial organisation	31%	single block or semi-public multi-block
6. vertical routes	27%	1
7. access points	25%	1
8. interconnecting exits	22%	1
9. corridor type	21%	4 dwellings per corridor
10. storeys per dwelling	14%	1
11. blocks per site	12%	1
12. entrance type	10%	communal only
13. entrance position	9%	facing the public street
14. play areas	7%	0
15. stilts and garages	7%	0

⁺) Figures are mean ranges (percentages for six test measures: litter, graffiti, damage, children in care, urine and faeces).

Source: Coleman, 1985.

C. Visibility and clarity

Visibility and clarity are important conditions for both reduction of feelings of anxiety and actual safety (Greenberg and Rohe, 1984). Surveyability strengthens 'perceived control' and promotes opportunities to interfere or escape in anticipation of danger. Most crimes occur at places outside direct view of bystanders or inhabitants, where delinquents can do their jobs unobserved, as we have seen in section 2 on the distribution of crime.

D. Accessibility/escape routes

In order to be able to interfere, places must be accessible for both formal and informal surveillance. Besides, potential victims must be able to escape rapidly in case of danger. Of course easy access and a lot of exits and escape routes also increase the opportunity for potential delinquents to escape. So we have to aim at a balance, in which the built environment can be kept under control. Especially with respect to burglary, Newman (1972) found that the chief kinds of escape routes affecting crime levels are interaccessible lifts, staircases, and exits. As these increase in number, so does crime too.

E. Attractivity

Pleasant forms, human scale, an adequate use of materials and colours etcetera can affect crime prevention in a positive way and might lead to a reduction of feelings of discomfort. Monumentalism should be avoided, especially in the case of housing. Maintenance is also an important factor. Graffiti and other cues of vandalism and decay are often associated with a lack of involvement and responsibility. Research has shown that poorly main-

tained places evoke vandalism not only more easily, but also more frequently (Heberlein, 1974; Shephard, in Ward, 1973).

Taking all in all we may conclude that socioprevention of crime is strongly affected by environmental factors. Many inquiries have shown that especially a combination of lower class people with weak civilised behaviour in high-rise mass housing are problematic. According to Coleman (1985) design factors are even the most influential factors. Based on 15 design variables Coleman c.s. developed the so-called design-disadvantage score. For each design variable a threshold is given (table 3). The disadvantage score can range from zero in blocks where no design breaches its threshold level, to 15 where all the thresholds are breached. The higher the score, the more social problems can be expected.

Coleman's view seems extremely one-sided, however, and her research has been severely criticized for several reasons (Van der Voordt, 1986b). Although practical experience and data from scientific research in The Netherlands seem to confirm Coleman's view, other factors also proved to be important. Coenen (1986), using a modified disadvantage-score adapted to the Dutch housing market, found only weak correlations between both original and adapted scores and social problems.

Especially a poor price-quality ratio proved to be a valid predictor for vandalism and decay.

Overhead walkways, highly dissuaded by Alice Coleman because of annoyance by children and lack of social control.

According to the model of Prak & Priemus (1986), operating problems on post-war housing estates are characterised by three processes of decay which are usually interrelated: technical decay, social decay, and financial decay (Priemus, 1986).

Less popular housing and houses with a bad price-quality ratio are first left by residents of greater socio-economic strength. This holds true for insufficient functional quality as well as for defects of building technology and building physics. Letting out becomes increasingly difficult, which may lead to a less careful allocation-policy and entry of socially weaker groups. If the number of problem families rises above a critical value a negative spiral could start which can hardly be stopped anymore. Housing estates such as the Bijlmermeer in Amsterdam, the Tjalk in Lelystad and the (now demolished) estate of Linnaeusstraat in Leeuwarden are well-known Dutch examples to illustrate this 'theory of decay' in practice.

4. Recommendations

The first thing each housing-authority manager should do to tackle vandalism, burglary, and other types of small criminality, is to analyse the situation very carefully: what is vandalised or burgled, by what type of people, where and when, and under what circumstances? Most situations are different in one way or another and require specific measures. Still several measures may be adequate in most housing estates in trouble, for example:

A. Measures focusing on (potential) delinquents

- personal talks or group meetings with actual or potential vandals and/or their parents,
- information on damage or vandalism during schooltime, in co-operation with teachers and police officers,
- amenities for children and youngsters such as a youth centre or sport facilities,
- a caretaker and/or social worker to keep an eye on the environment,
- regular police patrol and more consequent preferably alternative punishment (e.g. cleaning or repairing vandalised objects),
- if annoyance occurs again and again: give the person notice.

B. Improvement of the social environment

Various measures can be taken to increase personal involvement of the inhabitants and their sense of responsibility for their environment, e.g. by

- establishing a committee of participating residents,
- user participation in improvement programmes,
- maintenance and cleaning up activities in co-operation with users,
- careful allocation of tenants, selective if necessary.

C. Improvement of the physical environment

- privatisation and individualisation of (semi)public areas, e.g. by partition of balconies, corridors and basement stores, a re-arrangement of public greenery into private gardens, locking up entrances and galleries,
- increasing visibility and clarity by improved lighting,
- improved solidity of fastening and other techno-preventive measures such as security devices for individual dwellings and target hardening, e.g. replacement of glass by lexane or application of more solid and hardwearing armatures, especially at highly vulnerable places,
- improved appearance by colour variation, facade cleaning, modernization of dwelling fittings,

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- improved appearance by colour variation, facade cleaning, modernization of dwelling fittings,

- adaptation of the dwelling differentiation to market-demand, e.g. by splitting up or combining dwellings; sometimes (partial) demolition will be the best solution,
- intensified maintenance and use of materials and constructions which require little maintenance.

Up to now scientific testing of the effects of corrective measures by means of before/after studies is scarce. Nevertheless practical experience inspires confidence in the desired effect. For instance, in the Peperklip in Rotterdam - a modern housing-estate of over 550 dwellings - measures such as the employment of a caretaker, intensified day-to-day maintenance, a more selective allocation of tenants and careful police patrol have successfully decreased vandalism and decay (Van der Voordt and Van Wegen, 1986a). Vacancy even decreased from 25% to 2%. In the Molenwijk (The Hague) the organization of tenant's meetings, cleaning up activities and privatisation of (parts of) public spaces also proved to be successful. In the Nieuwmarktbuurt (Amsterdam) rehabilitation included a stricter subdivision of public and private spaces, allocation of activities near areas of transition, increased visibility and careful redesigning of entrances, etcetera. The first results are encouraging (Steemers, 1986). Nevertheless one must be prepared for disappointments. In some housing estates youth clubs have been set up, sometimes with great success, but elsewhere leading to even increased vandalism and noise nuisance. So success cannot be guaranteed, but the problem is not insolvable.

5. Concluding remarks

Once a housing estate is realized, improvements are not always easily possible and sometimes only at very high costs. For this reason it is of utmost importance to take crime prevention into account in an early stage of the design process. To set about this systematically a checklist of points of attention may be helpful. Starting from earlier developed checklists and design-guidelines (Ward, 1973; Zeisel, 1974; Newman, 1976; Sykes, 1979; Wallis and Ford, 1980; Poyner, 1983) we tried to integrate widespread information into a list of questions which designers, managers, politicians etc. should ask themselves in the planning and design stage of the building process or preparing corrective measures in existing situations (Van der Voordt and Van Wegen, 1986b). Questions referring to the physical surroundings of blocks of houses are for example:

Presence of people

- Does mixed land use promote actual or perceived presence of people during daytime and at night?
- Are sufficient amenities available?
- Which places are extra vulnerable as a consequence of absence of people?
- Is it possible to choose out of alternative routes (e.g. a cycle path through greenery at daytime, a route along houses at night)?

Involvement/responsibility

- Is the appearance as such as to prevent feelings of anonymity and isolation?
- Do exterior places have both characteristics of circulation areas and residential areas?

Visibility/clarity/clearness

- Are exterior places visible from inside the dwellings (eyes on the street)? Also at night?
- Is lighting adequate?
- Is the design and arrangement of entrances, street furniture and so on such that visibility is not impeded?
- Is it clear to whom places belong (in connection with management and maintenance) and for what activities are places planned (clearness of functions)? E.g. is there a clear distinction between public and private space, between frontstage and backstage?

Accessibility/escape routes

- Is signposting adequate?
- Which places are/should be accessible for police patrol and maintenance services (repairs, cleaning-up)?
- Has one considered to lock up routes or facilities (e.g. shopping areas, parks, public greenery, pedestrian subways) at night?
- Are escape routes available?
- Is it possible to call for help in case of danger (e.g. to ring at a door, to telephone)?

Attractivity

- Is the appearance attuned to user requirements (human scale, variety of colours and materials)?
- Is nuisance by noise, smell, gusts of wind etc. avoided?
- Has one taken into account aspects such as imageability and legibility?
- Do blocks or housing estates have identity?

Initially the checklist has been developed at the request of the metropolitan police of The Hague, who wanted to participate in the development of plans. At this moment a survey has been started to test the validity and applicability of the checklist, as well as to add a great number of practical solutions. By this we hope to develop a guide for designers, housing-authority officers, users and so on, which is useful both for improvement programmes in existing situations and plans in the design stage and which especially focuses on the Dutch housing market.

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