COST 358 Pedestrians’ Quality Needs

Perceived Needs

PQN Final Report - Part B2: Documentation
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PQN Final Report - Part B2 Documentation

PQN project - Working Group 2 Perceived Needs

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B.2. Perceived Needs

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B.2. Perceived Needs
The needs that people perceive in connection with walking

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Summary
The aim of this working group was to look in more detail at the needs of pedestrians, with a focus on the 'emotional' perspective on the current situation. This includes the perception of walking as an activity, and how attitudes, expectations and motivations influence the behaviour of both walkers and other road users, planners, policy makers and politicians.

Work was divided into four subgroups, each dealing with a special topic regarding perceived needs.

The first group took a look at pedestrian tasks and preconditions for performing them and gave an overview about how preconditions (like public space, weather or aesthetics) are perceived by pedestrians. Furthermore the perspective of other groups like policy makers, stakeholders and planners and how they perceive the needs of pedestrians was summarised. Finally three examples of how perceived preconditions from a pedestrian point of view can be measured were given.

The second subgroup dealt with the influence of perceived safety and security on walking. Two types of risk that are of importance for pedestrians were highlighted: the risk of being involved in an accident and the risk of being victim of criminal offences, violence or threats.

The third subgroup dealt with the perceived needs of specific groups; children, senior citizens and disabled people. The scope was to monitor and evaluate situations within those specific groups of pedestrians.

Finally, higher level preconditions, was the topic of the fourth subgroup. Within this group preconditions like housing location or societal activities to make walking visible, were addressed.

The report of each section concludes with specific recommendations with the aim to influence the determinants of current barriers, to eliminate institutional and social obstacles, and to improve the quality of life for pedestrians.

1. Introduction

Within the COST Action 358 – Pedestrian Quality Needs – the aim of working group 2 (WG2) was to have a closer look at the perceived needs of pedestrians. So to say, this working group focused on the 'emotional' perspective and included the perception of walking and how attitudes, expectations and motivations influence behaviour of road users, planners, policy
B.2. Perceived Needs

makers and politicians, and of walkers themselves. A practical task in connection with the discussion of user needs was to check and screen what studies have been carried out during the last years that were dealing with pedestrian needs. One important goal was to formulate recommendations for planners and policy makers concerning how both to learn about needs of different groups of walkers and how to respond to them. Not least, knowledge gaps concerning pedestrian needs should be identified.

The focus on what needs pedestrians perceive included dealing with a number of issues; perception of the different situations by pedestrians themselves; attitudes, motives and desires of pedestrians; the question which human factors influence the safety and freedom of walking; a state of the art concerning what is known about the needs and expectations of pedestrians; the question how pedestrians perceive themselves; the view of other groups like stakeholders or policy makers on the needs of pedestrians; inter- and intrapersonal conflicts in relation to their presence and moving in public space that walkers experience; the role of communication in connection with the perception of qualities and shortcomings of the sum of all preconditions in the broadest sense.

A comprehensive approach was used in order to understand the perception of physical and social environments, including the transport system, and the role of communication in connection with walking. One aim of the work done here was to provide assistance to the experts to decide which interventions are needed and possible in order to improve pedestrians’ quality of life. For this, we applied different working methods, like literature search, individual draft compilation of results, heuristics and group discussions within WG2 as well in small groups.

2. Needs of walkers seen from different angles

In this chapter the results of work on four sub-topics are displayed, that has been carried out in the frame of the collaboration within the work group WG 2 mentioned in the introduction:

- Tasks (of pedestrians) and preconditions for performing them
- Perceived safety and security in the context of other requirements that pedestrians have
- Specific groups like older citizens and children and their specific needs
- Higher level preconditions (meaning for instance earlier decisions like choice of living place, or activities of society in order to make walking an option).

Figure 1 below reflects the relationship between these topics; the decision to walk depends on how easy or how difficult walking is perceived. Then, two filter areas are introduced; the degree of safety, security, and other requirements determines whether one decides to walk or not, viz. – for people who have no other option than to walk – whether one finds walking a burden or not; different groups of road users will perceive all these preconditions differently. And finally, higher level preconditions influence the whole decision chain under all other conditions reflected in the graph (see Figure 1).

2.1. Tasks and preconditions for performing them

This sub-chapter deals with theoretical aspects and examples concerning the question how preconditions are perceived by different groups of citizens. This includes the following questions: How are preconditions like weather, the functionality of the public space, or aesthetical aspects perceived and how important are they? What tasks do pedestrians have to perform and how are these exigencies perceived? How are the preconditions for walking in general, and how in particular are safety and security in the public space seen? Which
facilities and provisions are perceived to be required for performing the tasks a walker has appropriately?

For example shade matters as a walkability attribute in summer, even when age and gender differences among individuals are taken into consideration. Generally one can say that people are willing to walk for longer time when walkways were shaded in summer. Another factor is aesthetics, namely: street-side greenery. This influence the number of activities which people perform, particularly activities connected with movement (walking) and recreation and leisure. Other aspects which make walking more attractive for pedestrians are wide sidewalks, separation of sidewalks from cycle paths, good illumination, high feeling of safety (especially for children and elderly) or low speeds of cars.

It is also discussed how “other” groups (policy makers, stake holders, planners) perceive the needs of pedestrians. Finally some analysis and evaluation methods are summarised that discuss how one can assess, or even measure, how preconditions are perceived. One important example derived from the work of this group is that the assessment of preconditions by users/walkers and by policy makers may vary considerably; in this connection a result from the EU project “ASsess Implementations” (ASI; Forward et al. 2005) was referred to that showed that, for instance, experts underestimate the importance for walkers, of the number of shops, of points of reference, of the presence of people working and living in the area, and of the quality of street lighting (Steg et al. 2007; Figure 2). This indicates that citizens have to be involved in the discussion of plans concerning the public space (participation); moreover, the degree of acceptance of implementations has to be analysed. I.e., it has to be analysed how implementations according to those plans are perceived.
2.2. The Influence of Perceived Safety and Security on Walking

This chapter mainly gives an overview of the influence of perceived safety and security on the decision to walk and while walking. The theoretical background as well as empirical findings dealing with these issues, are summarised. One question is for instance to what degree the physical and social environment reflect safety and security, or short-comings in this respect, and also, how behaviour is influenced by these factors. Individual habits, attitudes, and emotions, viz. individual coping play an important role, thereby.

One example that is given refers to the negative weight of accident risk on the one hand and of unpleasant situations (crime, violence, harassment) one is afraid of in connection with the use of a special mode on the other hand: The risk profile of ten modes of transport derived in this way is presented in figure 3 below. It shows respondents’ worry for accidents (x-axis) and for being involved in an unpleasant situation (y-axis). The figure shows mean scores, derived from assessments on scales from 1 to 5 (Backer, Grøndahl et al., 2008). This study showed that walking is to a rather high degree associated with unpleasant situations as referred to above, second only to how a trip by metro is perceived. This may certainly vary from town to town, but the results tell that safety and security issues generally have the potential to function as barriers for walking. The conclusion to be drawn from this is that continuous analyses of these issues are necessary, not least in order to learn what degree of generality in importance they have.

The attention within the research on risk perception has moved from cognition to the role of affect, as both aspects play an important role in decision making processes. Furthermore it is necessary to look at both types of risk that are important for pedestrians: the risk of being involved in an accident and the risk to be involved as victim in a criminal offence, violence or threats. The feeling of insecurity tends to result in more behavioural adaptations, like changing the route.
2.3. Needs and assessments of specific groups

This chapter gives an overview on the needs of different groups. In literature, children, senior citizens, and persons with functional limitations, and their specific needs and requirements, are dealt with more and more frequently. Cases dealing with all of these groups were dealt with in WG2.

The proportion of senior citizens will increase in the coming years. Due to modern medicine and the overall qualitative change of the modern society life style more and more seniors citizens want to remain active and to be involved in social events etc. which increases their demands on mobility. Planners and policy makers have to take this in consideration. Health is a very important issue and senior citizens realise the importance of walking as an available and health-beneficial activity. Not only for fulfilling basic needs of every day life, but mainly as an available “fitness” activity.

Here, one case dealing with barriers to outdoor mobility of senior citizens is reported. The graph below (Figure 4) shows what is considered as an obstacle by older persons. While it is specific for this group, its format reflects precisely what is needed for every group of walkers and potential walkers; to know what the obstacles for walking are, that in the case of those who have a choice may lead to avoid walking, and in the case of those who have no choice (i.e. who have to rely on walking) decreases their life quality.

The group of functionally limited persons is very heterogeneous which also results in conflicts regarding their different needs concerning infrastructure. Wheelchair users have different requests on infrastructure (sidewalk without any curbs) than blind or vision impaired persons (curbs needed for orientation). The case study on multiple scleroses patients referred to in this chapter showed that it is not possible to give specific recommendation for this group. The reason is that knowledge about this group of persons is poor. The collection and interpretation of objective data on a larger scale is therefore desirable.
Children are not fully developed and smaller in height than adults. They perceive traffic from a different angle. Furthermore they are not familiar with traffic rules and are simply not able to cope with complex traffic situations. Research on the need of children has to take this into account. Another problem is that parents are afraid that their children get involved in an accident and in a vicious circle they decide that the safest way to take their children to school to use their car. But this causes more traffic and adds to the safety problems for those children who still walk or cycle to school by themselves. Furthermore it is shown that badly designed pedestrian crossings are more likely to cause danger to children than to improve their safety.

2.4. Higher level preconditions

Walking has been clearly evolving in recent years towards a more positive perception by actors involved in decision-making, lobbying and planning, but also how it has gained momentum as a full-fledged issue with the media and the general public. However, a lot still remains to be done in order to reach a consistent and comprehensive walking culture that gives its rightful place to both large-scale strategies and policies in order to set up a solid framework against which background to deploy a host of more concrete measures and interventions. Quite a few essential steps have already been taken by numerous cities in order to increase walking potential and its level of integration with other modes in order to achieve the goal of deploying a fully-fledged multimodal urban mobility system within their territory.

In this chapter the influence of higher-level preconditions, like housing location, or like societal activities to make walking visible, are shortly discussed. One part of the discussion here may be summarised under the headline of “the suburban context”. Issues that play a role in connection with this are, among other things, walking speed and time budget and the restrictions inherent to walking as the slowest of all transport modes. The question how these issues are related to the strategic decisions concerning the housing location is an interesting one. For instance, is the question whether one can find any services (shops, hairdressers, etc.) at all in walking distance when choosing such a location for living asked at all? In the working group the case of the Helsinki metropolitan area was discussed, dealing with
housing preferences and mobility styles, and how the political, or policy, reaction to this can be described. The development of different types of suburbs as well as examples of different types of social layers in different types of suburbs, are discussed. Income, mode opportunities and mode use, and social factors (education, age, etc.) certainly play a strong role, there. In wealthy areas no infrastructure is needed when families own several cars and supply is easy by using this mode. In other areas, ground-prices may be very low so that people with lower income can afford housing there, public transport supply may be poor and car ownership restricted. Combined with poorly developed infrastructure, this may affect life quality negatively.

Generally, the discussion of walking in the urban region points out that the historical urban centre is the clear winner. It is rather limited in its dimensions, representing the original pedestrian city with some extension to the first suburban areas. There will also be more and more political support for investments for these areas, since the centre is also the main target of tourists and business visitors, as well as the preferred housing location of the urban upper classes. The situation is totally different with the suburban parts of the city which can be described as low density suburban districts of detached houses, were commercial services are concentrated in hypermarkets or “small towns” along the highways. High car-ownership and low density make it very difficult for the city authorities to provide for local public services or public transport. Thus there is very little to walk to, and walking is usually practiced only for recreational reasons. In this context, providing for pedestrian routes seems to be a side issue, but it can of course form part of a comprehensive policy against segregation e.g. through targeted measures for positive discrimination (such as providing extra funds for suburban schools and extra services for the suburban centres).

Another topic dealt with within this group was of a more pragmatic character; it discussed how walking in the agglomeration, but not only there, could be made "visible" and be given more weight. Thus, the paper reflects a kind of marketing process reflecting both product and communication efforts/improvements. The "slogans" carrying this idea were, among others, make walking visible and make issues concerning walking heard (e.g., see figure 5 below); offer trial environments; distribute information thoroughly. Moreover, consider that social factors affect walking (income, gender, age, etc.); do not forget that segmentation – e.g. considering lifestyles and associated mobility patterns – is necessary; do not just consider the physical but also the social walker (infrastructure improvements are not enough). In connection with all these suggestions, and in addition to increased efforts to understand user segments’ needs, it is also necessary to carry out systemic assessment; for instance, it has to be understood what consequences changes in one area (e.g., improved public transport) cause in other areas (e.g., walking and bicycling could increase). And not least, it has to be underlined that things need time to shift; in connection with attempts to introduce improvements in the public space one should not give up too early.

For evaluation, an important question to ask may be what people believe in. How do they look at implementations and what role does their own experience play? Good communication campaigns with media support and involving opinion leaders and peers could help to achieve critical masses of citizens supporting certain projects. When asking how interventions and measures are perceived one should refer to quantity and quality of dedicated space, to time management, to enabling elements (accessorising, virtual technologies and enhanced reality), by specifying what pedestrian-tailored access to goods and services means, etc.

Concerning policies and strategies a digitalisation is needed if one wants to know more about how they are assessed by the public. In this area, as well, just to have assumptions is not good enough. Acceptance has to be measured and there is need for accurate data and ways of measuring. With respect to this, one may assume that attractiveness, and therewith acceptance, can be increased if there is a shift in arguments from just dealing with safety to lifestyle, design, well-being, etc. At the same time, and in spite of potentially good acceptan-
ce, efficient measures for walking will not be implemented if there is a lack of lobbying. The reason is that improvements for walking usually go hand in hand with a reduction of options for car drivers. This means that allies have to be looked for and involved when it comes to supporting walking policies. For instance, synergies between efforts for improving preconditions for walking and increasing turnover of local economy should be made transparent.

Figure 5: The Tube & Walk map for London highlights synergies between walking and public transport (Source: Quickmap, 2007)

One question in connection with marketing walking is of course which scales fit walking policies and strategies best; the agglomeration scale, suburban areas, rural roads and villages? The answer just seems trivial: agglomeration is easiest for walking where nearness dynamics function as a motor. But probably, walking can be supported efficiently everywhere by sets of integrated measures and comprehensive networks of modes. Multimodality plays an important role there, and for instance creativity with respect to introducing new technologies: This not only refers to information, but also to "hardware", like new forms of public transport services, taxi services, etc. that make walking possible and worthwhile in areas where longer distances have to be covered and a walk alone can solely be done for recreation but not for fulfilling any other more practical tasks.

But as figure 5 above shows, also in London, a prototype of agglomeration, a combination of modes makes clearly sense!

Two other case studies reported in this working group, about Barcelona (Soares) and Lisbon (Malet), conclude that sometimes planners are weighting the needs of other groups (estate agents, city officials, architects, investors) higher than the needs of the inhabitants. Thus they do not improve the quality of life for the inhabitants (the daily walkers), but only improve the profitability of the space, with consequences for social interaction and quality of life.
3. Conclusion

The conclusion drawn from the contributions and discussions in working group WG2 is that a regular process of meeting the needs of different groups of citizens under different conditions is necessary. To communicate with road users should become a routine. However this has to be combined with effective and efficient improvements of physical (infrastructure) and social (image and visibility) preconditions. If measures of these types are carried through – see also recommendations below - then it will be possible to convince persons to use walking as a mode on distances that can be covered by walking, eventually also in combination with public transport, with out losses in their life quality; and at the same time it will make life of persons who have to rely on walking because no other options are available easier and improve their life quality.

4. Recommendations

Since quality in pedestrians movement is directly linked to perceived needs it is recom mend ed that all quality elements for different pedestrian groups are taken into account. Regarding quality elements it was pointed out in WG 2 that streetscape elements, weather conditions, facilities and provisions like aesthetics and greenery may have great influence on people decisions to walk or not; these factors are perceived as essential for creating a pedestrian friendly environment. The weather can of course not be influenced, but protection against it can be provided.

As far as different pedestrian groups are concerned it was said that if specific groups are well considered (children, elderly, disabled persons), this is would probably be advantageous for all other groups. Furthermore the tendency of certain target groups (especially senior citizens) to overestimate traffic risks should be tackled by informing about psycho-physical benefits of walking, altogether with risks connected to sedentary life styles and motorisation.

Security issues should not be underestimated, as they play a crucial role on both the tactical and the operational level. Security should therefore be seen to at all parts of the travel chain day and night; the weakest link should get highest priority. However, measures for pedestrians should also make sure that objective safety is not compromised on behalf of increased perceived safety. Regarding children it was specified that any measure aimed at increasing walking and cycling safety for children, will lead to more children walking and cycling to school (instead of being brought by car) if parents experience that traffic safety is improved. Thus, all physical measures improving traffic safety need to be supplement by communication measures.

Interventions for promoting walking are more effective when focussed at multiple levels. Therefore it was advised. Firstly, to use findings from literature and empirical research about personal factors that influence individual behaviour attitudes, social norms, habits, in accordance with what marketing models ask for: You need to know your target groups before offering either recommendations or improved "hardware". Moreover, how physical and environment factors are perceived (security, safety & aesthetics) has to be studied from case to case, as well as the function of social environment factors (media, role models). These would all be parts of a toolbox for how to consider participation needs appropriately and how to react accordingly.
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References


Preconditions and how they are perceived

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Summary

This chapter provides some examples of how different preconditions are perceived by pedestrians when it comes to perform certain tasks. Preconditions such as weather conditions, public space and aesthetics, are considered of special interest for pedestrians and therefore one important goals is to reach to practical recommendations which can be utilised by those who are interested in facilitating pedestrian movement. Furthermore we attempt to have a look at how other involved actors or groups such as policy makers, stakeholders and planners perceive the needs of pedestrians. Finally we include short presentations of three examples of how the perceived preconditions from a pedestrian point of view can be measured. The chapter concludes with recommendations to different stakeholders and actors involved in pedestrian related issues.

1. Introduction

As explained in detail in other parts of the PQN Handbook, (potential) pedestrians mainly perform tasks at three hierarchical levels, namely the strategic, the tactical and the operational level.

Pedestrian tasks are strongly affected by a number of preconditions that apply to the pedestrian environment. In the following list some examples are given (see also WG4: Needs):

- Safety and Security
- Comfort
- Accessibility
- Environment (Pleasurability)
- Weather conditions
- Existence of necessary provisions.
B.2. Perceived Needs

Most of them may be interrelated, although each one of them is characterised by its own attributes; attributes that are ranked and/or scored quite differently by individuals. Empirical research shows that individuals rate the value of these preconditions differently (see PQN Final Report B.2.4 Needs of specific groups). These differences can be attributed to several factors, such as general and special background of individuals, education, social norms and values. Furthermore they can be attributed to people’s specific needs and wants, as well as to their priorities and preferences.

Attitudes, perceptions, preferences and priorities characterize the demand side of pedestrian infrastructure since they directly affect the degree to which people travel as pedestrians. On the other hand the level with which the above mentioned preconditions are provided and/or secured by the responsible authorities (state, regional or local authorities) depends on many factors. Such factors include the perception of the authorities about the role of pedestrians in the society, the sought quality of pedestrian space, availability of funds to achieve the above, and hierarchy of goals. In states where urban planning is mature or advanced, pedestrian facilities and provisions tend to be plenty and functional; similarly the necessary preconditions are fulfilled quite adequately. In other words the supply of pedestrian facilities and provisions in terms of quantity and quality provides the prerequisites and the preconditions for the pedestrians to function at all levels.

Therefore, it is evident that there is a supply-demand situation in this area of concern which in most cases is not in equilibrium. Equilibrium stage is difficult to achieve, because pedestrian needs and preferences change over time, whereas new needs emerge. At the same time authorities set different priorities leading to the need for interventions. Apparently the quality aspects in this supply-demand relationship are quite stronger than the quantity ones, provided that there is a basic quantity level in place. The quality aspects are dealt with in one of the next sections of this part.

2. Weather - shade as a strategy to foster walking in summer

2.1. Introduction

For being successful, an urban space assigned to pedestrian use requires much more than mere banishing of car traffic, or giving attention to aesthetic and functional considerations. Climatic conditions at street level are also important for pedestrians and might even be decisive when considering walking as an alternative means of commuting.

“Thermal comfort perception” is an important component of people’s spatial cognition. If a place is known as highly demanding in effort needed to be reached by foot, the choice will probably be to drive there in an air-conditioned car instead of walking … or … not going there at all.

In the case of warm to hot climate conditions, typical of southern countries, “Shade” acts as an “attractor”, while the “Sun”, (defined as direct exposure to solar radiation), acts as the “predictor” of walking.

The study presented in this section addresses pedestrians’ behaviour during warm to hot climate conditions. It examines the impact of solar exposure (sun and shade) on the time people are willing to spend walking. It also explores the influence of different trip purposes on the willingness to walk (in the sun and in the shade).
The study findings indicate that the willingness to walk in summer is significantly influenced by the presence or the absence of shade. It was established that, on average, the influence of “Gender” does not have a significant influence. However “Age” plays a greater role on the willingness to walk for trips with the particular Recreation / Health destination when comparing with trips without a specific destination (also referred as abstract destination) and trips with Recreation / Health purpose.

The study results contribute to the understanding of preferences and constraints that shape travel choices in different contexts. They can also be used to inform choice models as well as urban form policies targeted to discourage small trips by car in favour of walking, thus contributing towards streets vitality.

People may walk, even considerably long distances, instead of driving in their air-conditioned petrol powered cars if outdoor conditions are comfortable enough for pedestrians. If streets are designed to minimize the impact of adverse climate elements, extending the period with comfort outdoor thermal conditions, people will also use the outdoors more often, for social encounters, for window-shopping or just for a gentle stroll. Increasing the number of pedestrians will, in turn, attract and promote businesses making the city economically worthwhile and liveable, as well as meeting basic conditions for environmental, social and economical sustainability.

2.2. Empirical study on pedestrian responses to influences on street microclimate
Acknowledging the lack of studies analysing the impact of pedestrians’ thermal discomfort on walking in warm to hot conditions, an empirical study was undertaken (within the ongoing research work, Marques de Almeida, 2006) aimed to collect information capable of substantiating the underlying belief about the relation between climate conditions and modal travel choice.

The study was conducted during the month of August in Bragança, a Portuguese town (Lat. 41° N) where summer is well known for its warm to hot discomfort conditions. The particular objective of this study was to provide some insight for assessing the potential of shading in the reduction of automobile travel in favour of walking.

2.3. The hypothesis
Three issues are the premises behind the hypothesis to be analyzed through the study:
1. Climate conditions are a major factor influencing urban outdoor activity and walking.
2. Strategies capable of mitigating street thermal discomfort should be considered and actions implemented in order to create microclimate conditions capable of encouraging activities outdoors.
3. The first action to be taken to mitigate hot conditions outdoors in summer is to intercept solar radiation - the most important source of heat gain - by providing shade to both surfaces and people.

Based on these principals the following hypothesis was formulated: “Providing shade, in urban plazas and streets, promotes outdoor activity and fosters walking in summer”.

2.4. Methodology
*Population and sampling characterization*
The study analyzed the opinion of 200 individuals, in the downtown of Bragança, Portugal. In order to collect information, the target population was approached randomly on the street
and asked to be interviewed. However, the locations where the interviews took place were "conveniently sampled".

Figure 1  Map of downtown Bragança/ Portugal. Site location of surveyed squares.

Survey instrument and procedure
The data were collected through a quantitative method and the instrument used for that purpose was an Intercept Survey using Questionnaires (face-to-face interviewing), complemented by Observations and Photographs. The answers to the Questionnaire (closed questions) were typed directly into the statistical software (SPSS - Statistical Package for the Social Sciences) previously coded for this questionnaire. The Intercept Survey was found to be an adequate method of inquiring, based on the following reasons:

- Ability to target actual pedestrians and downtown users
- Ability to target users by location, date and time of day
Report
Within the main objective the following issues were investigated:

- What is the relationship between the environmental factor “Shade” (over walkways and public spaces) and the maximum time that people are willing to walk?
- Does the purpose of the trip (destination) influence people’s response about the maximum walking-time that they are willing to walk in the sun or/and in the shade?
- Are the responses about walking-time significantly influenced by background factors such as gender and age?

Summary of findings
From the analysis of the results (report presented below), the following findings could be drawn:

In relation to the main objective of the study, which is to determine how shade improvements would benefit walking in summer, the following findings could be attained:

a) The majority of the Respondents (87%), value shade.
b) The majority of the Respondents (80%) would walk more often if there were more shaded walkways.

2.5. Analysis
The analysis presented below was performed in order to determine

- what would be the influence of the destination purpose, on the time that people are willing to walk in the sun and in the shade, for trips without stopping, with and without a pre-defined destination
- what would be the impact, on the above results, of the background factors “Gender” and “Age”.

Walking-time “Sun” and walking-time “Shade” by trip destination
This section analyses the impact of shade (the existence or the absence), in summer, and the maximum time that people are willing to walk without stopping (one trip) with varied destination purposes (trips with and without a pre-defined destination).

A1: with no destination specified (also called abstract destination)
A2: with a specific destination: a) to work or to school; b) to recreation or health activities

A1 - Trip without stopping (no destination specified)
Table 1 summarizes walking-time frequencies for trips without stopping - with no destination specified. The variables are:

V1: Abstract assumption: For how long would you consider walking?
   V1.1: Walking-time “Sun” and V1.2: Walking-time “Shade”.

The majority of the respondents (87%) are willing to walk in the sun for a maximum time of 15 minutes, while their willingness to walk in the shade varies between 30 minutes and 60 minutes (76% and 25% of all respondents, respectively).
B.2. Perceived Needs

Table 1  Absolute and relative frequencies of responses to the question:

<table>
<thead>
<tr>
<th>V1.1 Sun</th>
<th>V1.1 Shade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>5 min</td>
<td>12</td>
</tr>
<tr>
<td>15 min</td>
<td>174</td>
</tr>
<tr>
<td>30 min</td>
<td>14</td>
</tr>
<tr>
<td>60 min</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
</tr>
</tbody>
</table>

A2 - Trip without stopping (specific destination)

a) - to work or to school;
b) - to leisure or health activities

Table 2 summarizes walking time frequencies for trips without stopping - with a specific destination. The main variables are:

V2: For how long would you consider walking to go to work / school?
V2.1: walking-time “Sun” and V2.2: walking-time “Shade”.

V3: For how long would you consider walking for recreation / health purposes?
V3.1: walking-time “Sun” and V3.2: walking-time “Shade”.

Table 2  Absolute and relative frequencies of responses to the question:

<table>
<thead>
<tr>
<th>V2 Work / School</th>
<th>V3 Recreation / Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>V2.1 Sun</td>
<td>V2.2 Shade</td>
</tr>
<tr>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>5 min</td>
<td>1</td>
</tr>
<tr>
<td>15 min</td>
<td>156</td>
</tr>
<tr>
<td>30 min</td>
<td>14</td>
</tr>
<tr>
<td>60 min</td>
<td>0</td>
</tr>
<tr>
<td>90 min</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>171</td>
</tr>
</tbody>
</table>

In both cases (trips to work/ school and trips for recreation/ health purposes), the time that the majority of the respondents (78% and 63% respectively) are willing to walk in the sun is 15 minutes. This is in accordance with the time accepted by the majority of respondents to walk in the sun for trips with no destination specified.

However, the trip destination influences the walking-time “Shade”. When the destination is work/ school, the time that the majority of people are willing to walk in the shade is 30 minutes (in accordance with walking-time “Shade” for trips with no destination specified). On
the other hand, when the purpose of the trip is recreation then the majority of the respondents (75.5%) raise their willingness to walk in the shade up to 90 minutes (3 times more than for the other trips).

**Walking-time “Sun” and walking-time “Shade” as a function of background factors**

The analyses of the above results enabled the author of comparing responses (in terms of the mean values of walking-time in the shade and in the sun) related to trips with the various destinations. The following conclusions have been drawn from values of walking-time as a function of the variables “Gender” and “Age”.

**Walking-time as a function of “Gender”**
The main conclusion is that gender does not have a significant effect (on average) on the time that people are willing to walk, to any type of destination, applicable for both sun exposure conditions, in the sun and in the shade.

**Walking-time as a function of “Age”**
The main conclusion is that walking-time “Sun” - is influenced by “Age” particularly in the trips, with destination “Recreation / Health”. The “Adolescent” age group is responsible for that influence.

Walking-time “Shade” - is influenced by “Age” in particular, in trips with no destination defined and for work / school purpose. The “Adolescent” age group is responsible for that influence. “Age” does not influence significantly trips, in the shade, for recreation / health purposes.

**Comparing results (Averages)**

Figure 2 presents a comparison between the average results obtained from the assessment of the respondents’ willingness to walk in the sun and in the shade, for trips with the three destinations considered in this study: Abstract destination, Work / School and Recreation / Health.

Walking-time “Sun” is not affected significantly by the trip destination. The average difference between walking-time “Sun” for the various trip destinations is about five minutes. On average people may walk in the sun, for maximum time of about fifteen minutes and they would walk five minutes more time if the purpose of the trip is recreation / health.

Walking-time “Shade” values show a very significant difference between the trips with abstract destination or work / school and the trips for recreation / health purposes. The walking-time “Shade” (on average) for trips with recreation / health purposes is about two times more than walking-time “Shade” related to the other two purposes.

On average, people are willing to walk during 40 minutes for trips, in the shade, when the destination is not specified or to go to work or to school. However, for trips with recreation / health purposes people may walk, about double that time, for as long as 80 minutes (on average).

When the trip destination is not specified (abstract) or is to work / school purpose, the variable “Destination” has no significant impact on walking-time “Shade”. For trips with those purposes, people are willing to walk, on average, for a maximum time of 35 minutes. However, the destination recreation / health has a significant influence on the time people are willing to walk in the shade. They may walk for as long as 80 minutes (on average), which is about double the time that they would walk for trips with the other destinations.
Among the different travel purposes, trips with a Recreation / Health destination, is the purpose where the willingness to walk in both conditions (in the sun and in the shade) shows the highest values. When considering the destination Work / School or an Abstract destination, the effect of the destination on the willingness to walk is not as evident. However the difference between the mean values of walking-time "Sun" and walking-time "Shade" is considerable, showing that "Shade" is the factor with the most significant influence on walking. Along with the purpose of the trip, the exposure to solar radiation (shaded walkways, in this study) is the most important reason influencing the interviewee's willingness to walk. In a way, this is the most fundamental rationale, as the trips would simply not be done by walking if no shaded path exists.

2.6. The Photographic Survey

Results from the survey questionnaire show that "Shade" has a significant effect on the time people are willing to walk. The photographic survey taken at the same places and during the same period of time as the interviews, illustrates the way people move and use the urban outdoor spaces in summer and the importance of shade on their behaviour. The photographs presented below were taken during a weekday in August in three squares: Court Plaza, Post Office square (Correios), and Cathedral square (Sé).

The Squares

Photographs taken at the squares focus on pre-identified benches and places where people are likely to stop to gather and socialize. These images confirm people's preference for shaded walkways and shaded spots and show that the occupancy changes along the day according to shade availability. Where the shade goes, people follow. Places exposed to solar radiation are avoided by the majority of people in warm to hot conditions.

The Court Plaza

The Court Plaza (Figure 3) is located half way between the railway station (which is also the main stop for regional buses) and the commercial area near the Cathedral square. It is a place with meaningful social life, where people come to meet others, to sit or simply to stroll.
through the plaza. Photographs were taken at both sides of the plaza (north and south), capturing the benches and people in the shade and in the sun.

![Figure 3 Court Plaza. Photographs taken along the day (Tuesday, 13th Aug).](image)

People start passing by from early in the morning, most of them on their way to the core of the commercial area in the old part of the town, near the Cathedral. It is, however, mainly from about 12.00H that some groups start gathering in the large shaded area on the southern side of the plaza.

**The Post Office Square (Correios)**

This square (Figure 4) is an important meeting place in downtown Bragança. This is probably due not only to its location, in the middle of the busiest part of downtown, but also to its pleasant human scale, with benches, edges and steps to sit on, and above all, a large shaded area near the front door of the post office, in which people stand talking.

Figure 4 shows a selection of photographs taken at three spots on the Post Office square:

- Column left: Bench by the sculpture (middle / east side).
- Column centre: Post office main entrance (south side).
- Column right: Bench by the newspaper Kiosk (west side)
B.2. Perceived Needs

Figure 4  Post Office Square. Photographs taken along the day (Tuesday the 13th Aug).

The Post Office opens at 9.00H, but it is around 10.00H when people start gathering near the main entrance. The shadow projected by the building creates a large shaded area from early morning decreasing as mid-day approaches. It is interesting to observe how people stand dispersed or more concentrated, depending on the dimension of the shaded area.

The bench by the sculpture is exposed to the sun for the whole day. Usually people do not sit there. The bench by the newspaper Kiosk is very well positioned in terms of granting a good perspective of the whole square. Nevertheless, people only sit there early in the morning, or late in the afternoon, when this bench is in the shade.

The Cathedral Square (Sé)

This square (Figure 5) was renovated recently. It is very unfortunate that the trees that were planned to be planted on the square have been replaced by small planters. No shade is available.

This large open space is exposed to solar radiation during the all day. Only late, in the afternoon, when the sun "moves" towards the west behind the buildings, is a shadow projected across the square.

Three benches were surveyed in the Cathedral Square: They are located near the front façade of the cathedral, facing north-east.
B.2.2. Preconditions and how they are perceived

Despite the fact that the square is largely exposed to solar radiation (from morning until late afternoon) there is, however, a narrow strip of shade along the south-eastern façade of the Cathedral that can be experienced throughout the day.

People, mostly men, sit on these benches from around 10.00H onwards. As far as the benches on the opposite side are concerned, nobody sits there while the sun strikes them during most of the day (Figure 5, general view).

2.7. Conclusions

The survey, (face-to-face interviewing, complemented by photographs) and the analyses conducted for this study corroborate the importance ascribed to shade as a mean to promote outdoor activity and to foster walking in summer. Results confirm that the availability of shaded places and shaded walkways in summer affect pedestrians' behaviour. The majority of people looks for shaded walkways in summer and is willing to walk for significant longer...
time in the shade than in the sun. The existence or absence of shade influences where, when and for how long or how far people are willing to walk.

The survey shows that shade matters as a walkability attribute in summer. The specific strengths of the effects on walking of urban shade among trips with different destinations may vary, and the additional variables in play may also present some differences according to demographics, but the majority of respondents were willing to walk for longer time when walkways were shaded in summer.

The photographs taken on site illustrate people behaviour and suggest new dimensions of the “Shade” impact, involving social and economic aspects. Outdoor urban places with shade in summer do encourage people to gather and make them stay talking or just sitting resting or watching others.

The importance attributed by pedestrians to shade in summer, and how this is translated in terms of how long people are willing to walk in the shade and in the sun, may also affect for how long, why, where and when people prefer to shop.

Shade has been proved to have an impact on where people walk and for how long. Walking time would probably imply walking distance. Shade would encourage people to walk to places where they wouldn’t go if they had to walk in the sun, or where they would go using the car.

3. Public space - walking conditions from a user`s perspective

3.1. Introduction

Walking is a crucial element of our everyday mobility. Almost every outdoor trip starts and ends with a walking trip. Walking is considered as a natural mode, which can normally be done without any technical instruments. This might be one reason that the needs of pedestrians often are considered of minor importance in transport policy. This, however, could have a direct impact on the share of people who choose walking as their transport mode. The share of pedestrians in Vienna for example dropped from 33% in 1995 to 27% in 2001 (Socialdata 2003). At the same time in Austria the risk of being involved in an accident as a pedestrian increased despite the reduction of pedestrian accidents (see Frey 2008). For pedestrians the same axiom can be presumed as for cyclists: The more pedestrians are on the road the safer walking is. Walking should not only be promoted because of safety reasons, but because of life quality reasons, too. A city which is walking-friendly usually correlates with a high life quality (e.g. Zürich is among the first places in city-life quality rankings and at the same time it is a walking-friendly city time). Pedestrians should be considered as emancipated road users, with their special needs in safety, comfort, time efficiency and attractive surroundings. In the study “Gehen in der Donaustadt” the user’s perspective on walking issues were in the centre of the research work.

3.2. Aims and study design

The project „Gehen in der Donaustadt“ can be seen as a national contribution to the European COST 358 Action “Pedestrian Quality Needs (see www.walkeurope.org). The main aim of the study in Vienna was to assess walking conditions in four parts of “Donaustadt” from the user’s perspective in order to get hints and helpful suggestions how walking can be successfully promoted. The following questions were of crucial interest:

- What kinds of conditions make walking to an attractive mode?
- What kinds of measures would citizens appreciate in order to promote walking?
What kinds of conditions are considered as unpleasant while walking?

How do existing preconditions for walking influence our quality of life?

Four areas in the 22nd district of Vienna were chosen according to certain criteria. These criteria were chosen in order to make sure that walking and using public transport is a realistic alternative:

- good public transport connections
- the stop of the public transport should be not further away than 500 meters (= 5 to 7 minutes of walking)
- two central (Kagraner Platz, Rennbahnweg) and two de-central areas (Aspern, Eßling)

Two different approaches were used for this study. The first part consists of a qualitative approach, in which focus groups were organised for citizens of the four investigation areas. The aim of the interviews was to find out which kind of aspects promote walking and which aspects prevent people from walking. Infrastructural aspects (e.g. traffic light regulations) and the way how traffic is organised (design of crossings) played an important role in this context. Within the second part a quantitative approach was selected. On the basis of the focus group a questionnaire was elaborated. For the quantitative analysis 400 telephone interviews were carried out (100 for each area). The sample was representative for the investigation areas and quoted in age and gender (see table 3 and 4).

### Table 3 Age distribution of the sample

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-25</td>
<td>49</td>
<td>12.25%</td>
</tr>
<tr>
<td>26-40</td>
<td>132</td>
<td>33.00%</td>
</tr>
<tr>
<td>41-60</td>
<td>143</td>
<td>35.75%</td>
</tr>
<tr>
<td>61+</td>
<td>76</td>
<td>19.00%</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Table 4 Distribution of women and men

- male
- female

#### 3.3. Results

In the frame of the evaluation a factor analysis and a reliability analysis for testing the factors was carried out (Testindicator: Cormbachs Alpha) and the following clusters were identified: Comfort and traffic flow for pedestrians, Life quality, traffic noise and air quality and Social interaction with other road users. In the following the results for each cluster will be described in detail:

**Comfort and traffic flow for pedestrians**

The majority of respondents think that walking in Vienna is comfortable (70%). There are lots of pavements (64%). The pavements are wide enough (76%) well illuminated (69%) and at winter time pavements are cleared from snow (70%). One, however, should not neglect those 22% who complain about badly illuminated sidewalks or those 28% who think that the number of sidewalks should be increased (see figure 6).

There are significant differences with respect to the different road users and different age groups. Respondents, who walk regularly, are more critical about comfort aspects in connection with walking than interviewees who consider themselves as car drivers. Elderly people complain more often about small and badly illuminated sidewalks than younger people. There are however no significant differences between men and women.
B.2. Perceived Needs

Figure 6  Assessment of comfort and traffic flow for pedestrians

A majority of the respondents is concerned about the combination of sidewalks from cycle paths. Only 5% of the interviewees have no problems with mixed sidewalks and cycle paths (see figure 7).

Figure 7  Importance of separation of sidewalks from cycle paths

Figure 8 shows that 46% of the respondents consider crossing times at regulated crossings as too short for pedestrians to use. Our hypotheses that more elderly people consider crossing times at regulated crossings too short could not be verified. Independent of age respondents feel disturbed by too short crossing times (see figure 8).

There are however significant differences between regular pedestrians and regular car drivers (mean value 3.16 car drivers and 2.42 pedestrians). 58% of respondents who consider themselves as pedestrian complain about short crossing times, but only 36% consider crossing times for pedestrians as problem and 45% are completely satisfied with the existing traffic light regulations (see table 5). The lack of places to rest is criticised by more than 60% of the respondents. Again there are no significant differences in the various age groups.
B.2.2. Preconditions and how they are perceived

![Chart showing assessment of crossing times at regulated crossings and places to rest.]

**Figure 8** Assessment of crossing times at regulated crossings and places to rest

![Table showing assessment of crossing times at regulated crossings by pedestrians and car drivers.]

**Table 5** Assessment of crossing times at regulated crossings by pedestrians and car drivers

<table>
<thead>
<tr>
<th>Crossing times are too short</th>
<th>Pedestrians</th>
<th>Car-drivers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>51 (58,0%)</td>
<td>58 (36,2%)</td>
<td>109</td>
</tr>
<tr>
<td>Partly agree</td>
<td>17 (19,3%)</td>
<td>30 (18,8%)</td>
<td>47</td>
</tr>
<tr>
<td>Do not agree</td>
<td>20 (22,7%)</td>
<td>72 (45,0%)</td>
<td>92</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88 (100%)</strong></td>
<td><strong>160 (100%)</strong></td>
<td><strong>248</strong></td>
</tr>
</tbody>
</table>

![Chart showing life quality, air quality, and traffic noise.]

**Figure 9** Life quality, air quality and traffic noise
Life quality, traffic noise and air quality
As figure 9 illustrates, people who live in the investigation areas, seem to have a high quality of life. The majority of the respondents are satisfied with the air quality. Only traffic noise seems to be a problem for more nearly 15% of the interviewees.

An interesting aspect with respect to life quality, is the problematic behaviour of dog owners, who do not clean the road of their dog’s excrements. This is probably not only a Viennese specific problem. A majority of the respondents (54%) feel harassed by dog excrements on the pavement. There is a significant difference between pedestrians and car drivers. Pedestrians consider dog excrements on the pavement as bigger problem than car drivers.

Social interaction with other road users
The mutual respect of the different road users is not optimal. The mean value of the item “The mutual respect of the different road users is ...” accounts 2.67. This value is equivalent to the answer category “partly agree”. There is a significant difference between the various age groups. People over 61 and young people between 16-25 are not as critical about this item as the group of middle aged people.

Table 6 Mutual respect of different road groups, split in age groups

<table>
<thead>
<tr>
<th>Alter</th>
<th>16-25</th>
<th>26-40</th>
<th>41-60</th>
<th>61+</th>
<th>Total</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutual respect of the</td>
<td>2.53</td>
<td>2.70</td>
<td>2.84</td>
<td>2.40</td>
<td>2.67</td>
<td>0.006</td>
</tr>
<tr>
<td>different road users</td>
<td>49</td>
<td>130</td>
<td>141</td>
<td>73</td>
<td>393</td>
<td></td>
</tr>
</tbody>
</table>

Concerning 30km/h zone it is interesting to mention, that car drivers to not seem to stick to the speed limits in these zones. The majority of the respondents (59%) are hold that car drivers drive beyond the speed limit in 30km/h zones. There are no significant differences between car drivers and other road user groups. This means car drivers are aware of their “bad” behaviour.
3.4. Conclusion
Based on the results of this study the following aspects make walking more attractive:

Wide Sidewalks
In contrast to car drivers, pedestrians are able to move under cramped conditions. Nevertheless pedestrians do need space to enjoy walking. In the Viennese „Masterplan Verkehr“ (Oblak 2003) it is stated that sidewalks have to have a minimum size of 2 metres. This probably meets the needs of pedestrians. It is however, important not only to set up good guidelines, but to stick to the guidelines consistently.

Maintenance and Cleaning of pedestrian areas
For the comfort of pedestrians, it is necessary to keep the sidewalks clean and in good condition. To find a solution for the “dog - excrement problem” is one important aspect in this context.

Separation of pedestrians and cycle paths
Combined sidewalks with cycle paths should be avoided. In several studies (e.g. Fußverkehr Schweiz 2007; Risser, Ausserer, Ausserer, Koldas, Schmidt 1997) it is pointed out that combining sidewalks and cycle paths causes conflicts for both road user groups.

Providing places to rest in sufficient number
Places to rest increase sojourn quality on the road for pedestrians. More places to rest are not only demanded by respondents in this study, but also in other projects (e.g. Viennese Project SALTO www.saltowien.at, EU-project SIZE www.size-project.at)

Low speeds of car drivers, 30km/h zones
The smaller the difference in speed between the various road user groups the merrier pedestrians will enjoy walking. For that reason it is highly recommended to extent the areas of 30 km/h zones. At the same time infrastructural measures (e.g. humps) and more enforcement should guarantee that car drivers stick to the speed limits.

Promotion of the social climate and the mutual respect of each road user
In several studies inconsiderateness and ruthlessness in road traffic are mentioned as a problem from pedestrians and cyclists (see e.g. Hydên, Nilsson & Risser 1998; Risser 2002; Ausserer, Kaufmann & Risser 2000). Awareness campaigns on the one side might help to support the mutual respect of road users. On the other side it is important to avoid conflicts between road users by diligent road planning (e.g. no mixed sidewalks and cycle paths) The planning principle of “shared space” for example seems to have a positive effect on the social climate (see e.g. www.shared-space.org or www.nationaler-radverkehrsplan.de/neuigkeiten/news.php?id=1517)

Pedestrian-friendly traffic lights
Short green phases induce the feeling of stress not only for elderly people. Pedestrians need time to cross a road. They do not want to run just to be able to cross within the given time. Besides pedestrians get impatient, if they have to wait too long at traffic lights to become green. This increases the risk of crossing the road, when the traffic light is still red.

Strong feeling of safety
If you want to increase the traffic safety for pedestrians it is highly recommended to take the safety of children and elderly as indicator for a safe design of infrastructural measures. (see e.g. Fischer, Risser & Ausserer 2004; Risser, Bein, Plichtova, Sardi & Ståhl 2004).

Finally the aspects, which make walking attractive and which prevent people from walking are summarised in the following table.
B.2. Perceived Needs

Table 7  Attractors and Barriers

<table>
<thead>
<tr>
<th>How can you promote walking?</th>
<th>How can you prevent people from walking?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wide sidewalks</td>
<td>Deficient maintenance</td>
</tr>
<tr>
<td>Separation of sidewalks from cycle paths</td>
<td>(dog excrements, snow, etc.)</td>
</tr>
<tr>
<td>Good illumination</td>
<td>Combined sidewalks and cycle paths</td>
</tr>
<tr>
<td>High feeling of safety (especially for children and elderly)</td>
<td>Missing of sidewalks</td>
</tr>
<tr>
<td>Low speeds of cars</td>
<td>Missing of places to rest</td>
</tr>
<tr>
<td>A good public transport system</td>
<td>Inconsiderateness</td>
</tr>
<tr>
<td></td>
<td>(e.g. not respecting speed limits)</td>
</tr>
<tr>
<td></td>
<td>Short green phases</td>
</tr>
</tbody>
</table>

4. Aesthetics - greenery

4.1. Introduction

Urban design, in particular place’s arrangement, has a great impact on people, their way of acting and behaving. It can influence people’s willingness to visit a place for a certain purpose, and to perform certain tasks and activities within its frames. Pioneering study of pedestrian’s behaviour in cities was conducted in New York City by William ‘Holly’ Whyte and led to foundation of the Street Life Project. Whyte was the first to see that place’s arrangement and equipment determines its quality and the perception way of users thinking.

Presently there are many tools and methods of the assessment of urban landscape quality. Some of them are dedicated to streets and streetscapes, and these ones can be perceived as extremely important. A street is not only a part of a transportation network, but it is also an activity centre where people perform different tasks and activities.

Studies conducted in the field of landscape architecture and environmental psychology have proved that people do have positive aesthetic, emotional, and physiological responses to nature (e.g. exposure to the trees may influence people’s health). They proved that a place is considered more aesthetic and valuable when greenery is one of the place’s components, as well. Studies carried out in Japan and US (Sommer, Summit, Todorova, Lohr) revealed that people have explicit preferences towards different trees and plants forms and species, and that trees are the factor with the greatest influence on preference. According to the savannah hypothesis of Gordon Orians, all the preferences are evolutionary-based. Since a street is a fundamental part of a city and greenery seems to be the factor determining place’s aesthetic value, it can be assumed that street-side greenery may have a great influence on pedestrians’ perception of a streetscape and the way they behave and act in it. Consequently, street-side greenery may contribute to transform a street into a vivid place, highly evaluated and frequently used by pedestrians.

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1 Also in the economic meaning of this word.
2 The ‘savannah hypothesis’, proposed by Gordon Orians, predicts that some human responses are based on innate knowledge of productive human habitats.
4.2. Study on greenery influence on street perception and performance of selected activities

In 2008 research on social significance of street-side greenery was conducted by Magdalena Blaszczyk and Marek Kosmala from the Department of Landscape Architecture of the Warsaw University of Life Sciences. The aim of the research was to recognize the relationship between street-side greenery, as a factor influencing streetscape’s aesthetics, and people’s willingness to perform selected activities (and therefore to perform tasks connected with them).

4.3. Method

The research was conducted with the usage of colour photographs of the streets which were evaluated by respondents. The main research was preceded by a trial one, in which 18 photographs of the streets were evaluated. The photographs presenting streetscape perspective were obtained from the Internet database. The photographs had several features in common (for instance: not distinguished architecture of buildings, small number of people on the frame, similar weather conditions (and therefore similar colourings of pictures). The only thing which distinguished them in an obvious way was density of greenery.

Pictures used in a trial research were grouped into three street categories:

- with greenery,
- with greenery and street furniture,
- with greenery and water (river or fountain).

Within every category there were pictures representing 3 levels of greenery density: high, medium and low. Two pictures were assigned into each of nine subcategories and placed on the survey questionnaire in a random order. 66 students of the Warsaw University of Life Sciences participating in the survey were asked to mark on a five-step rating scale their willingness to perform 5 different activities (mainly connected with recreation) on streets presented on 18 pictures.

Results revealed that the respondents valued pictures from the greenery and water category much higher than pictures from other categories, which proved water to be the factor dominating over others. Since the main objective of the research was to recognize the influence of greenery on people’s perception of the streetscape and their willingness to perform different activities, a decision to exclude pictures from greenery and water category from the main research questionnaire survey was made.

12 pictures representing two main categories (greenery, greenery and furniture) were used in the main survey. To each of 3 subcategories representing levels of greenery density (high, medium and low) 2 pictures were assigned and placed on the survey questionnaire in a random order.

The respondents were asked to evaluate their willingness to perform 4 activities in places presented on each of 12 pictures. The activities were: to live, to walk, to sit down over a coffee, to do shopping. Respondents marked their answers on a 5-step rating scales spreading from ‘not at all’ to ‘very much’.³

³ The research tool was based on the Scenic Beauty Estimation method, in which ten-step rating scale is used to evaluate visual attractiveness of landscape (Daniel & Boster 1976).
4.4. Results
116 adult respondents participated in the survey. The survey was conducted for 2 weeks in 2 Polish cities: Warsaw and Lodz. 171 people were asked to participate in the survey, 55 of them refused to do it. For the purpose of interpretation of the survey results, the following set of variables was used to group the respondents:

- **gender:** women (54,3% - 63 persons), men (45,7% - 53 persons)
- **age:** 18-25 years (32,7% - 38 persons), 26-35 years (27,6% - 32 persons), 36-60 years (28,5% - 33 persons), > 60 years (11,2% - 13 persons),
- **education:** elementary (1,7% - 2 persons), professional (8,6% - 10 persons), secondary (38,8% - 45 persons), university degree (50,9% - 59 persons),
- **place of living:** village (8,6% - 10 persons), town up to 5 thousand citizens (22,4% - 26 persons), town 5 - 100 thousand citizens (14,7% - 17 persons), city > 100 thousand citizens (54,3% - 63 persons).

In order to work out the results, a number system was applied. Every answer given by a respondent collected 1,2,3,4 or 5 points. 1 point was given for the answer: ‘not at all’ and 5 points were given for the answer ‘very much’.

Following results were obtained in the survey:
Increase of greenery density on the photographs, entailed a growth of respondent’s willingness to perform all of the activities (Figure 12).

Photographs belonging to greenery and furnishing category got insignificantly higher notes than pictures belonging to greenery category. In general, the respondents perceived furniture as a factor that did not influence their willingness to perform four activities (the influence of street furniture on the respondent’s answers was seen only when pictures belonging to low density of greenery + furnishing category were evaluated). On the other hand, greenery was a factor which influenced respondent’s perception in a much bigger way.

![Figure 12](image1.png)

**Figure 12** Number of points given to 12 photographs grouped into 6 street subcategories; low density of greenery, medium density of greenery, high density of greenery, low density of greenery + furniture, medium density of greenery + furniture, high density of greenery + furniture (processed by M. Blaszczyk).

![Figure 13](image2.png)

**Figure 13** Percentage value of different forms of activities presented with relation to the lowest evaluated street category (‘low density of greenery’) and the lowest evaluated form of activity (‘to sit down over a coffee’ – 385 points = 100%) (processed by M. Kosmala).
The highest rated activity (Figure 13) preferred by the respondents was: ‘to walk’ (5669 out of 6960 points, which is 81.45% of a total score), and afterwards: ‘to sit down over a coffee’ (69.28%). Two other activities received similar scores: ‘to do shopping’ was given 4180 points (60.06%, and: ‘to live’ was given 4176 points (60.00%); all activities got the highest scores on pictures belonging to: the high density of greenery category and the high density of greenery plus furniture category.

The highest rated picture belonged to the high greenery density and furniture category. The picture was given 1975 points out of a maximum of 2320 (85.13% of a total score). The lowest rated picture belonged to low greenery density category and was given 933 points (40.22%) in total.

Photographs belonging to the same subcategories got surprisingly similar notes, which confirm the accuracy of the research assumptions and methods used.

Analysis of the variables revealed the following:
Compared to men, women tended to give 12 points more to pictures with medium and high greenery density (this was particularly characteristic for women of the age 26-35 years).

The youngest respondents (18-35 years) and the oldest ones (older than 60 years) tended to give higher scores to pictures with greenery and furniture category. For the oldest group of respondents, the results may be a consequence of the necessity to rest while doing all kind of activities.

No relation between respondents’ education and the way they evaluated photographs was seen.

Residents of cities bigger than 100 thousand citizens gave exceptionally high notes to photographs with high density of greenery. This may reveal their positive attitude towards the presence of greenery in places they prefer live and stay (most likely, the places they live and stay lack greenery).

4.5. Conclusions
Results of the research unambiguously show that the respondents notice all the components presented on every photograph and appropriately classify them in a more or less conscious way. Surprising, similarity of evaluation of photographs belonging to 6 subcategories constitutes a proof for a strong relationship between presence of greenery and people’s way of perceiving a place and their willingness to perform the selected activities.

The results show that street greenery has a fundamental meaning for the street evaluation by people, as well. In this context, results of the research correspond with the ones from other studies carried not only in reference to streets, but also to other kinds of space. The studies proved that nature and greenery play an important role for the way people perceive certain places and the way the places function and work. A research program of Kathleen L. Wolf is a good example of it. The program investigated consumers’ responses to the urban forest in central business districts of cities of various sizes. Survey respondents from all regions of the United States favoured trees in business districts, and this preference was further reflected in positive district perceptions, patronage behaviour, and finally in product pricing.

The results proved street-side greenery to be a factor influencing activities which people perform, particularly activities connected with movement (walking) and recreation and leisure (sitting down over coffee, doing shopping). In this context, greenery seems to be indispensable for fulfilling pedestrian’s quality (aesthetic and other) needs. It is highly probable that street-side greenery somehow determines pedestrian’s decisions to perform
B.2.2. Preconditions and how they are perceived

Task on 3 levels (strategic, tactical and operational), especially on the strategic level, when the decision: ‘to walk or not’ is made. Therefore, street-side greenery can be perceived as a factor increasing walkability.

Similar results were obtained in a study presented in ‘Walkable route perceptions and physical features: converging evidence for en route walking experiences’ (Brown 2007). The research was conducted in Salt Lake City and based on guided walks using a 2 (gender) x 3 (route walkability: low-mixed-, or high-walkability features) design. Results achieved showed that ‘areas of high walkability lacked environmental incivilities (e.g., panhandlers, trash), and had adequate traffic safety (e.g., from intersections, moving cars), pleasant aesthetics (e.g., trees, flowers), and diverse destinations (e.g., shopping centres, grocery stores) (Brown 2007). However, in the context of this research, greenery presence is one of features of equal rank which contribute to the increase of walkability.

Notes given to all the activities point out that the respondents perceive a street not only as a part of a transportation network, but also an interdisciplinary and mixed-use place providing a range of choices and opportunities for people. The choices and opportunities can be made on a social level and should let people strike up acquaintances, adapt themselves to a certain group of users and so on... A street ought to create a sense of place that is convenient, visually attractive, and people/pedestrians oriented.

Finally, it is worth mentioning that results obtained in a trial research also seem significant. Water as a streetscape component had a great influence on people’s willingness to perform different activities (and therefore to stay in the street for some time). Both water and greenery are natural elements. High notes given to photographs containing these elements reflect people’s favour of (or even a strong demand for) natural elements in an urban environment.

5. How policy makers, stakeholders and planners perceive the needs of pedestrians

5.1. Policy makers

The underlying assumption is that policy makers think that they know what people want or what they like to have. The results from the pilot study of the ASI project (Assess implementations in the frame of the Cities-of-tomorrow programme) shows that providers and policy makers have a different perspective about the importance of Quality of Life (QoL) indicators. The following figure shows some significant differences in importance rating of indicators by users and experts. Overall, users tend to evaluate a smaller set of indicators as very important as compared to experts. In general, experts rate quality and transport related aspects, such as urban furniture and accessibility of public transport, as more important than users do. This may be due to the fact that accessibility of public transport is important only to a minority of citizens in the case of this pilot study (carried out in Umbertide, Italy 2005). The results presented in Figure 14 underline the importance of collecting user judgements of indicators for urban QoL: experts may not assess user perceptions accurately.

5.2. Stake holder

Defining stakeholders in pedestrian related issues is not a straight forward task. A number of involved organisations, authorities and agencies can be potentially characterised as stakeholders. Furthermore NGO’s and other citizen groups dealing with pedestrian issues could be considered as stakeholders. In a broad sense stakeholder can be every legal entity who may have a role or an interest in either the users of the urban space or in planning, operating, preserving and maintaining the urban space. Local authorities can be definitely...
B.2. Perceived Needs

considered as stakeholders since they have an institutional role in dealing with the whole spectrum of pedestrian issues. Other public agencies that interact with pedestrians include Police, Transport Planning and Public Transport authorities, etc. Each one of them has different roles and responsibilities and is interested in different aspects of the pedestrian functions. For example a school board can be considered as a stakeholder since they have to take care of the area around school as well as of the routes taken by pupils. Similarly, an old age nursing home or recreation place for elderly people should secure the existence of special facilities and provisions in the vicinity of its premises. It is therefore a rather complex task to cite all stakeholder perceptions regarding pedestrians. As in the case of planners – see next section – stakeholders (must) interact with pedestrians in order to assimilate their perceptions and act accordingly.

Figure 14  Subjective evaluation before implementation: differences between experts and users in importance ratings of indicators

5.3. Planner

Urban space planners in most states in Europe and elsewhere accomplish their planning tasks based on planning guidelines and specifications as well as on urban design standards. Many aspects of urban space and hence of infrastructure and facilities for pedestrians are specified in less or more detail by such manuals. For example there may be standards for minimum, average and desired space per person in different pedestrian facilities under normal circumstances. There are also design standards for designing an open space for specific use, a playground in a park, etc. Furthermore there are rules for designing a pedestrian route, a pedestrian sidewalk, etc. Several aspects are considered in such planning and/or design tasks such as safety, comfort, accessibility, etc. In fact many of the preconditions required by pedestrians to accomplish their tasks - see introduction - are taken into account as important parameters in planning/designing urban space.

Specifications and standards are instituted by the responsible authorities and organisations in long intervals of time and after taking into account relevant research and studies which lead to suggestions by expert people involved in these. Guidelines and standards are
supposed to reflect people functional needs, having in mind that gaps between “desired” and “feasible” will always exist. However, needs and wants of citizens, in our case pedestrians, evolve and in some case may change faster than guideline books and urban space design standards, though it is also possible that standards are often ignored in the application stage. In any case, it is not accidental, that in the findings of many European projects the need for new guidelines in many scientific areas has been emerged as an important issue and priority at the European level. On the other hand many could argue that it is a common practice, researchers to propose and suggest new research. The truth is somewhere in the middle. Apparently it is a quite common phenomenon to face inconsistencies (imbalance) between real needs of people, and provisions / attributes offered by infrastructure for pedestrians in too many cases. Both quality and quantity aspects are quite often missing in the infrastructure provided for pedestrians, but what changes faster is the perception of people about what is important, what is acceptable and what brings satisfaction.

In this respect there is a continuous need for planners to receive input from the society and the urban space users about what pedestrians need and seek. This process needs to take place in a systematic and structured way by exploiting sound and proven methodologies and techniques in capturing, analysing and interpreting people needs, preferences and priorities.

On example is to carry out special surveys along with data collection and observations. These methods can provide the necessary information which in turn may be used to alter/modify existing guidelines and standards.

Another issue is that planner must take into account not only a unique pedestrian user class, but must think of many different pedestrian classes. These classifications of pedestrians are based on different criteria (see table 8). Age, trip purpose, trip length, health status and other special needs are some of the criteria that can be employed to categorise pedestrians and consequently identify their primary needs when performing various tasks as pedestrians.

The needs of all these pedestrian classes are certainly varying. In this respect it is quite difficult for planners to take into account all or the majority of pedestrian needs in order to provide them with an attractive, safe and comfortable walking environment. There is certainly a compromise between demand and supply, more often governed by financial constraints, but also by other constraints of local nature.

In this respect, PQN can definitely fill – at least partially – the existing gap between perceptions of suppliers of urban space infrastructure and perceptions of users, i.e. pedestrians. Several recommendations can be drawn to facilitate planners and decision makers towards a better pedestrian environment, taking into account mainly quality aspects of walking.

<table>
<thead>
<tr>
<th>Based on mobility needs</th>
<th>Based on trip purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small children</td>
<td>Commuting / transfer</td>
</tr>
<tr>
<td>Elderly</td>
<td>Shopping</td>
</tr>
<tr>
<td>People with special mobility problems</td>
<td>Exercising</td>
</tr>
<tr>
<td>Stroller accompanying persons</td>
<td>Wanderers</td>
</tr>
<tr>
<td>Frequent pedestrians</td>
<td>Recreation</td>
</tr>
<tr>
<td>Non frequent pedestrians</td>
<td>Walkers by profession (postmen)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>
6. Examples of different methods for the evaluation of perceptions of preconditions

6.1. Quality circle

AFNOR, the French Organisation for Standardisation, has introduced the so-called quality loop, (Figure 15) which shows the relationship between the perceived, the expected, the targeted and the delivered quality of services. The first two of them pertain to the customers side, whilst the other two to the operator’s (Supplier’s) side. The loop in fact results from a series of interactions between these two worlds, thus creating four distinctive gaps. The larger the gap is between two successive elements of the loop, the greater the problem in the particular PT line or system. Improving service efficiency and quality means closing the four gaps.

The term **Targeted quality** is used to denote the level of quality that the company (PT operator) aims to provide for its passengers. **Delivered quality** is the level of quality that is achieved on a day-to-day basis in normal operating conditions. The term **Expected quality** is used for the level of quality that is requested by the customer and can be defined in terms of explicit and implicit terms and **Perceived quality** is the level of quality perceived, more or less objectively, by passengers in the course of their journeys. Finally, another term, **Desired quality** can be also defined. Desired quality reflects the level of quality that the company wishes to reach on the basis of the expected quality, external constraints and financial conditions. The term desired quality however can be also used for the PT customers and corresponds to a level higher or equal to the expected quality.

The above concept can be used in the research of the pedestrians needs with respect to quality and in particular in relating perceived quality needs to the supply side which includes, among others, provisions and facilities for pedestrians. Proper adjustments are required so that this concept is understandable and exploitable in the case of pedestrians. The next chapter contains these adjustments and the way the quality circle concept can be transferred to pedestrians.

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**Figure 15** Quality Circle

- **Expected**
- **Targeted**
- **Perceived**
- **Delivered**

**Measurement of Customer Satisfaction**

- **FINAL CUSTOMERS**
  - Passengers and City Dwellers

- **SERVICE CONTRIBUTORS**
  - Operator, Authorities, Police, Road Department
6.2. PPS’s place diagram

The Project for Public Spaces place diagram is a tool developed to help evaluating places. Accordingly, every successful place, no matter if it is a street or plaza, can be described by four key qualities, such as:
- sociability,
- uses & activities,
- access & linkages,
- comfort & image.

The qualities are essential to create people-oriented places. They constitute preconditions for people to visit a place, stay in it, and perform different tasks and activities. The qualities are used by people as the basic criteria to judge a place.

Comfort and image are the key attributes with the greatest impact on people’s decision to visit a place. An image of a place is created by the ‘intangibles’, such as safe, clean, walkable, sittable, ‘green’… The intangibles are reflected in many kinds of measurements (e.g., crime statistics, environmental data).

Access and linkages refer to the way to get to and to get through a place. A successful place has a good visual and physical connection to the surroundings. It provides a sense of safety and functions for people with special needs. Accessible places are walkable, readable and

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5 Project for Public Spaces (PPS) is an American nonprofit organization dedicated to helping people create and sustain public places.
B.2. Perceived Needs

convenient to public transport. High level of pedestrian activity is the best indicator for a successful and accessible place.

Uses and activities are the reason for people to visit a place. Activities may make a place unique and create community and place identity. A variety of opportunities to participate in is a guarantee of a good balance between different groups of people using a specific space.

Sociability refers to all the social activities which make people interact with each other. This key quality is the most difficult to attain. However, when it is attained, it may entail strong sense for a place, and community and place attachment. Places of high sociability are always positively perceived by people.

The 4 qualities are objective measures which can be used with regard to a place as well as with regard to people and the criteria they use. People’s perception of a place can be evaluated based on the evaluation of the qualities. A variety of questions may be used to evaluate the attributes (e.g., Is the place visible from outside? Does the place make a good first impression? Are people using the space or is it empty? Do people seem to know each other by face or by name?). And finally, a variety of measures can bring answers to these questions (number of people, traffic data, property values).

6.3. EU-projects ASI, HOTEL

The main objective of the two EU projects ASI (Assess implementation in the frame of Cities-of-Tomorrow) and HOTEL (How to Analyse Life Quality) was to find out how Quality of Life (QoL) is assesses with regard to town planning and design, transportation and mobility. The final outcome was tools and checklists of how QoL could be assessed. This includes also the perspective of users (pedestrians) and how they perceived different objective criteria. The following indicators could be used to assess QoL.

Indicators from the EU projects ASI (Assess implementation in the frame of Cities-of-Tomorrow)

<table>
<thead>
<tr>
<th>Mobility</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Satisfaction</strong></td>
<td><strong>Importance</strong></td>
<td></td>
</tr>
<tr>
<td>Vicinity of the public transport network? (Do you think it is near enough?)</td>
<td>A public transport network which is easy to get to</td>
<td></td>
</tr>
<tr>
<td>Availability of the public transport network? (Is it frequent enough?)</td>
<td>A public transport network which is frequent</td>
<td></td>
</tr>
<tr>
<td>Pavements? (Thinking about elements like steps, barriers, narrow passages and quality of the surface)</td>
<td>Being able to move freely on the pavement</td>
<td></td>
</tr>
<tr>
<td>Crossing points? (Are they near enough or do you have to make de-tours?)</td>
<td>Time needed to reach your destination is short</td>
<td></td>
</tr>
<tr>
<td>Time it takes for you to reach your destination (thinking about one of your daily trips)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Satisfaction</strong></td>
<td><strong>Importance</strong></td>
<td></td>
</tr>
<tr>
<td>Separation of pedestrians and cyclists?</td>
<td>Pavements separating pedestrians and cyclists</td>
<td></td>
</tr>
<tr>
<td>Safety?</td>
<td>Enough places where you can cross the road</td>
<td></td>
</tr>
<tr>
<td>Speed of the traffic?</td>
<td>That drivers obey speed limits</td>
<td></td>
</tr>
<tr>
<td>Security?</td>
<td>Security</td>
<td></td>
</tr>
</tbody>
</table>
Indicators from EU-Project HOTEL (How to Analyse Life Quality)
The aim of the project was to develop an evaluation tool for assessing quality of life in the transport and mobility area and setting up guidelines for a databank in order to store assessment results with respect to quality of life from different disciplines and different countries.
7. Recommendations

7.1. Specific recommendations

Weather
Climate is often solely viewed as a natural event. The fact that the built environment interacts with the surrounding climate is frequently ignored or disregarded. Adverse climate conditions at street level can be minimized up to a large extent, through adequate urban design strategies.

The importance of microclimate control must be properly addressed by urban designers and pedestrians thermal discomfort conditions put into focus within the research on travel behaviour by researchers from the various fields of knowledge, including geographers, sociologists, health and sports related professionals, architects and town planners, among others.

Furthermore, in places with warm to hot summer conditions “shade” is a factor worthy of investigation as a prime walkability attribute. Results could be used in a standard network or forecasting studies to estimate the effects of shading improvements (of public spaces and in particular over pedestrian walkways) on walking, providing some insight for assessing the potential of street shading in the reduction of short trips by car in favour of walking.

Aesthetics
Street-side greenery is a place element, presence of which influences the place evaluation by people. It also influences people’s decisions to perform selected activities. Creating a streetscape, it is worth to consider whether trees and other plants should be entranced to the place on a bigger scale. Results of the trial research presented in the Chapter above show that greenery is a factor influencing activities which people perform, in particularly activities connected with movement (walking). It seems highly probable that presence of greenery is indispensable for fulfilling pedestrian’s quality needs and as such influences intensity of pedestrian movement.

Public space
The recommendation regarding public space can be summarised as the following: Wide sidewalks which are well maintained and where places to rest are provided attract people to walk more. It also should be avoided to combine sidewalks with cycle paths. To lower the speed of car drivers it is recommended to extent the areas of 30 km/h zones and at the same time use infrastructural measures (e.g. humps) and more speed enforcement. Awareness campaigns or “shared space” have a positive effect on the social climate and support the mutual respect of road users. Pedestrian-friendly traffic lights with sufficient time to cross the road increase the safety feeling of pedestrians. Use the safety of children and elderly as indicator for a safe design of infrastructural measures.

7.2. General recommendations

Given that the ultimate goal for pedestrians is to have available a high quality space to walk and perform their various tasks according to their needs, certain questions arise. A first question is what makes up quality for pedestrians, i.e. how people perceive quality for pedestrian movement. A second question is how you measure quality. The third is what somebody can do to move closer to the set goals.

The recommendations provided below attempt to give answers to these questions based on the COST-358 PQN research work:
B.2.2. Preconditions and how they are perceived

1. It is necessary to map at every distinct period of time the current level of pedestrian satisfaction regarding various aspects of pedestrian movement. This should include quality and all the elements (attributes) that contribute to quality as perceived by different groups of pedestrians. The existing pedestrian facilities and other provisions offered affect these perceptions and thus a first relationship between users and existing facilities can be achieved. This mapping in fact covers the demand and supply sides regarding pedestrians in a specific built environment.

2. There are more than one ways to do this and obviously more than one tools and methodologies to accomplish it; which one to choose is not the important issue. The important issue is to select one, implement it properly and maintain it for a period of time (say 3-4 years) in order to have consistent and comparable results. This will help the interested people to deal with all relevant issues and set up priorities. Using special indicators and descriptors about pedestrian demand and supply sides, can assist all interested to make temporal as well as cross section comparisons. The reader can be assisted in using such indicators and descriptors from the contents of PQN Final Report Part B Documentation.

3. One such tool is the so-called Quality Circle that enables policy makers or local authority practitioners and pedestrian planners to compare the perceived quality level offered, to their expectations and at the same time to compare offered quality to the targeted one set by the responsible authorities. What again is important in this case is to define which attributes of quality are considered significant and which are not.

4. Specialised pedestrian (user) surveys are a powerful approach to capture the importance of the various quality elements for various pedestrian groups. These surveys should attempt to identify the existing quality gaps and also to measure their impact on pedestrian satisfaction and consequently the level of pedestrian movement.

5. The reader is encouraged to look at the PQN Final Report Part B Documentation and also to use various other relevant sources dealing with “how to measure walking”.

6. Attributes which have been found to be important for the quality of pedestrian movement include: pedestrian safety, pedestrian security, presence of greenery, aesthetics of pedestrian environment, existence of specific facilities and provisions (resting places, toilets, water supply, protection from adverse weather conditions etc), cleanliness and others according to the area under consideration. Associating their importance and the satisfaction these attributes offer to pedestrians, enables the identification of intervention actions towards improving pedestrian movement.

7. In the following sections more detailed recommendations are provided about these attributes which have been derived from the PQN research work.

References


B.2. Perceived Needs


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The Influence of Perceived Safety and Security on Walking

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The ultimate security is your understanding of reality  
H. Stanley Judd

Summary

In the current chapter we highlight two types of risk that are of importance for pedestrians: the risk of being involved in an accident and the risk of being victim of criminal offences, violence or threats. In most cases it is the latter type of risk that is of importance for pedestrians, and which influences their behaviour. From a theoretical perspective the perception of risk has traditionally been studied from a rational perspective, i.e. as a deliberate calculation of pros and cons in a given situation. Recently, theoretical developments have aimed at including feelings as an explanatory variable for risk perception. Due to methodological challenges, there is still little empirical support for the quite common-sense assumption that our feelings govern our way of making judgements of risk.

Although both anecdotal evidence and some single studies indicate so, the bulk of properly performed empirical research concludes that there is little relationship between perceived safety and security and the strategic decision to walk, in other words the modal choice situation. Apparently, there are other important elements of the perceived physical and social environment that essentially influence the decision to walk. Results also indicate that people express a higher degree of worry when they consider to walk than when they are actually on their way. Still, for some groups, and in some situations, feeling unsafe might be an influencing factor in people’s decision to walk or not.

There seem to be considerable national and regional differences in how perceived safety influences children’s opportunities for walking in everyday life. In some inner city areas, especially in large cities, fear of crime or fear of accidents might give considerable limitations to children’s independent mobility. In more rural areas and especially in Northern Europe, this seems to be a more marginal explanation.

Once the pedestrian has made the strategic decision to walk, perceived safety plays a larger role. Multivariate analyses have shown that when everything else is controlled for, pedestrians who are afraid of crime and threats tend to adapt their behaviour more, like choosing another route, than pedestrians who do not experience fear.
B.2. Perceived Needs

1. Introduction

Safety is a fundamental and essential need for the human organism and as important as the need for social interaction and sex. As human beings we are always interested in maintaining our own safety and that of those around us. Still, feeling safe is only one of our fundamental needs. Often we find ourselves having to deal with conflicts of interest, and we have to trade off between the perceived benefits and risks of our actions.

In the current chapter we will look at pedestrians’ perception of risk, in other words their assessment of safety and security. We distinguish between the influence of risk perception on the pedestrians’ decision prior to walking and the influence it has while walking. In each of these two sections we will first outline some theories that are relevant to that specific topic. The second half of each section contains empirical evidence and will provide some answers to questions the reader might have. These findings may also, we hope, raise some new questions. Alongside the presented theories we see a good opportunity for the reader to pursue a further scholarly treatment of the topic outside of this handbook.

Strategic and tactical levels of decision making

In this handbook a distinction is made between behaviour at a strategic, tactical and operational level. Strategic decisions are made prior to conducting a trip, like what type of transport mode I should use, which airline I should choose, at what time of day I should go etc. Tactical decisions are made during travel and refer to decisions about which side of the road I should walk on, where I should cross this street etc. Operational decisions concern the microscopic, rather automated adjustments we make from moment to moment during travel, such as how I should walk to avoid stepping into that puddle, and on which side of that lamppost I should steer my path. Although the operational level of decisions is largely automated, it can easily shift to conscious monitoring. All three levels are closely interrelated, influencing each other reciprocally: a single threatening event or what is perceived as excessive workload might influence future decisions to walk as well as present behaviour (Summala, 1996). On the other hand, new information and knowledge offered by, e.g., media might modify strategic decisions leading, eventually but not necessarily, into changes in behaviour on tactical and operational levels (Summala, 1996). In the current chapter we look at how safety and security considerations can influence our decisions at the strategic level, for instance whether we should walk or not, and at the tactical level, for instance whether to cross the street here and now, or not. We do not deal in particular with the operational level, as there is not much research that has looked at this from a pedestrian point of view.

2. The influence of safety and security on the decision to walk

2.1. Theoretical background

There are several theoretical approaches that deal quite specifically with how people experience risk and feelings of unsafety. However, as the current section is about the strategic decisions people make related to the process of walking, more general theories and approaches about decision making processes are also relevant. In the following section we will therefore first give a short overview of some of the most relevant decision-making processes. At first glance, some of these theories might seem a bit unrelated to the topic of this chapter, but we can note that perceived safety potentially plays a role in all of these theoretical approaches. For example, the theory of planned behaviour deals with attitudes. Whether a certain mode of transport is considered as safe or not has often been included as one of the attitudes that might influence the behavioural intention to use it. Hence the theory might be said to implicitly take risk perception into consideration. We subsequently present
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approaches considered to be more directly relevant to the concept of risk perception, the psychometric paradigm and the affective approaches to decision making. These should not be considered different theories, but rather reflections of different aspects of the concept of individual risk perception.

2.1.1. Planned behaviour
A perspective that is useful for describing the decision making process is the theory of planned behaviour (Ajzen, 1985, 1991). According to this theory, people’s attitude, their subjective norm and their perceived behavioural control determine their behaviour indirectly via their intentions. When applied to the behaviour, e.g. walking, people’s attitude is determined by beliefs about the likely consequences (health, injury) of walking weighted by the evaluation of how good or bad these outcomes would be. The subjective norm regarding walking is determined by beliefs about what important others think of walking weighted by the motivation to comply with these important others. Perceived behavioural control is determined by beliefs about factors which may facilitate or impede walking, weighted by the perceived power of these factors. According to Ajzen (2006) the more positive the attitude and subjective norm towards walking and the larger the facilitating factors are, the stronger the person’s intention to walk will be. Given sufficient actual control of the behaviour, people are expected to walk as soon as an opportunity arises.

2.1.2. Decision making from a maximising perspective
Traditionally, researchers have used a rational approach to decision making. According to the maximising perspective people integrate in a deliberate manner as much information as possible with information already present. Then they weigh carefully the pros and cons of every alternative, and finally they come to the appropriate decision. When the decision of which travel mode to use is very important, people evaluate each travel mode carefully. They try to collect information about for example costs, time, ease of use, but also about safety or security-risks related to particular travel modes. The evaluating is often done by considering the qualities of one travel mode at the time and seeing how each travel mode’s qualities shape up to some set of desired characteristics. Although people sometimes take all these steps to come to a decision, this extensive process does not give an accurate view of the decision making process in real life.

2.1.3. Decision making from a satisficing perspective
Simon (1955) pointed out that people simply do not extensively go through the phases for making decisions because human decision making is limited by available information, available time, and the information processing ability of the mind. People are assumed to have neither the wish nor the capability to perform extensive search processes and thoroughly assess the alternatives found with every decision regarding travel mode choice. According to the satisficing strategy people search for the first alternative that is ‘good enough’. This alternative has to meet certain levels for relevant qualities of alternatives. One such quality can be the perceived safety or security related to a travel mode, for example walking, cycling, driving, and using public transport.

2.1.4. Habitual behaviour
In contrast to the perspectives of planned behaviour and the maximising and satisfying strategies, which view decision making as a rather conscious process, the perspective of habit execution argues that many of the choices people make, for example travel mode choices, are a consequence of the execution of a habit (Aarts & Dijksterhuis, 2000). This perspective asserts that people are often found to base their choices for travel modes not so
much on a deliberate evaluation of alternatives and their qualities, but rather on the execution of their habit (e.g. Aarts, Verplanken & Van Knippenberg, 1997; Verplanken, Aarts & Van Knippenberg, 1997; Hannes, 2009).

Habits such as using the car when one could also walk, are created when the behaviour led to valued outcomes in the past but does not do so anymore. Some habits can also be actions, which are rewarding in the short term, but do not align with longer term goals. Breaking habits is difficult. People who always use the car to go to work only seem to be willing to think about other options, such as cycling or using public transport, when radical changes in their situation (e.g. new job in new city) force them to reconsider their automatic choice of the car.

2.1.5. The psychometric paradigm and risk perception

In 1978, Fischoff, Slovic, Lichtenstein, Read and Combs published a study where risk perception and attitudes towards risks were measured by means of psychological scaling (Fischoff et al., 2000). This approach and the encompassing theoretical framework has later been named the psychometric paradigm. The main aim of the study was to examine the usefulness of psychological questionnaire techniques for studying perceived risks. By this, the study lays the foundation for a theoretical assumption that risk is a quantifiable psychological construct, which is influenced by a wide array of social, cultural and individual factors. Perceived risks and benefits of a wide array of hazards were measured in two separate samples. In addition, all respondents rated each hazard on nine 7-point scales reflecting characteristics of the hazards hypothesised to influence the perception of risk:

- was the risk voluntary,
- was the effect of the risk immediate,
- was the risk known to science,
- was the risk known to those exposed,
- was the risk controllable,
- was it a new risk,
- was the risk chronic or catastrophic,
- was it common or dreaded,
- to what degree were the consequences severe.

By means of principal component analysis (factor analysis), the nine risk characteristics were reduced to two factors. Factor one is termed ‘technological risk,’ which includes voluntariness, immediacy of effect, knowledge about risk, control, and newness. The second factor is termed ‘severity’, which includes chronic-catastrophic, common-dread, and severity of consequences. These two factors were later renamed ‘unknown risk’ and ‘dread’. Moreover, based on this factor analysis, all risks were placed in a factor space: a mental map of all the hazards was created based on their score on the two factor dimensions (e.g., nuclear power had a high score on the items ‘certain to be fatal,’ ‘dread’ and ‘catastrophic’, and was also rated to be high on ‘involuntariness’, ‘delayed effect’, ‘unknown’, ‘uncontrollable’, and ‘new’).

2.1.6. The optimism bias

A common feature in most of the approaches mentioned above is the more or less implicit assumption that the individual is rational and makes deliberate decisions concerning risk activity and responses to risky situations. However, in psychology it is common knowledge that people’s decisions often are subject to various cognitive biases. One such cognitive bias that has particular relevance for risk perception is the optimism bias. Research has indicated
that people tend to underestimate their own risk of being involved in a hazardous situation compared to others (Slovic, 2000). Further, this tendency for optimism bias is greatest for hazards where the individual believes he or she has substantial personal control over the outcome, such as lifestyle risks. Thus, in the situation where people have to choose between walking and taking the car to their job, they might underestimate the health risk of a sedentary lifestyle, and overestimate the risk of becoming involved in a traffic accident while walking.

2.1.7. Affective decision making theories

Research in the decision-making field has increasingly moved its attention from cognition to the role of affect. The Dual Process Theories have suggested the existence of two fundamentally different ways of approaching reality: one is rational, logical and analytical; the other is more intuitive, automatic, fast, narrative and nonverbal, and works through images and representations. Although some decisions are made by accurately assessing logical arguments, it is believed that the majority of behavioural choices depends on an affective basis (the experiential system). This is particularly evident in dangerous situations, when emotional reactions such as worry, anxiety, fear or dread are generated, thus orienting people’s decisions and behaviour. Such an automatic and fast system has ensured survival for the human species over the long period of evolution and also today, it remains a natural and common way to respond to risk (Slovic et. al, 2006).

In most situations we do not have the time to carefully consider the risks and benefits of a given action. Thus our decisions usually take place in an automated and fast manner, as heuristics. The term affect heuristic has been employed to characterize situations where people use such readily available representations, rather than making rationally calculated decisions (Finucane et al., 2000; Slovic et al., 2004; Slovic et al., 2005a; Slovic et al., 2005b; Slovic & Peters, 2006; Slovic et al., 2007). Several studies have shown that perceived risk and perceived benefit are negatively correlated, and that this correlation is stronger the less time we have available to make careful rational considerations (Slovic et al., 1991; McDaniels et al., 1997; in Finucane et al., 2000). This has been suggested as an argument that people’s judgement of risk and benefit are guided by their general affective evaluation of a given situation or activity.

However, it should be noted that the affect heuristic is only one of many possible shortcuts that we can make, and that it does not work all the time. In the original experiment by Finucane et al (2000), the affect model did not work for most of the subjects (Backer-Grøndahl & Fyhri, 2008). 31% did not change their mind on the non-manipulated dimension, and 23% changed in their risk assessment in the opposite direction than predicted.

Taking the more rational theories on decision making, such as utility maximising behaviour, as well as the affective theories into account may lead to a better understanding of how people make choices (e.g. driving instead of walking). Habitually jumping into the car even for short rides, may lead to skipping a deliberate evaluation of alternative travel modes, activating simply the acquired habit that emotionally represents the most effective, easiest and most appealing solution (Hannes, 2007). Perpetuation of a habit can be particularly strong when people have no motivation (in terms of desire) to change their existing habits. In that case, people also tend to justify their choice (e.g. to use a car) with any available argument denying negative consequences of car use (e.g., costs). The purpose of such a negation is to avoid cognitive dissonance accompanied by unpleasant feelings and discomfort. Considering the principles of risk perception mentioned above, it can be expected that people who like and want to use a car, might perceive walking and using public transport as more risky and less beneficial, thus less attractive.
On the other hand, a positive change of attitudes towards walking does not imply that people start walking automatically. In line with motivation theories (Prochaska & DiClemente, 1986), changes in behaviour occur when the desire to adopt a new behaviour is strong enough to contrast the discomfort associated with the renouncement of immediate awards of the original habits. Again, the affective balance (desire-discomfort) will play a decisive role in these trade-offs. Similarly, those situations perceived as clearly risky, will generate strong negative emotions and will have an imperative effect on one’s behaviour and thoughts, thus leading one to avoid those feelings by avoiding the situation.

2.2. Empirical findings
People’s behaviour emerges through interaction between the person and the environment. The decision to walk or not to walk is influenced by individual factors as well as by the perception of the physical and social environment. This section summarises some of the findings concerning how perceived safety and security influence people’s strategic decisions related to walking. Very few studies have actually attempted to apply risk-related theories, such as the psychometric paradigm, to the field of transport in general and to walking in particular. Other more general theories of behavioural change, such as the theory of planned behaviour, have been applied to the field of transport a number of times, but not in relation to perceived risk or feeling unsafe. In general, empirical research in this field is rarely theory-driven; it is more often driven by the nature of the application. Hence, the empirical findings presented in this section can only be loosely related to the previous theoretical section.

2.2.1. Risk perception at the strategic versus tactical levels
It has been argued that the distinction between strategic and tactical levels is important in relation to risk perception, as it has been hypothesized that people’s fears and anxieties are much stronger when they sit at home imagining what can happen on a certain journey, than when they are actually conducting that specific trip. However, there have been few attempts to actually test this difference empirically. One reason for this is that the comparison of risk perception at strategic and tactical levels is quite difficult to actually carry out from a methodological point of view. Some questions concerning risk perception, which are meaningful in a strategic situation, are without meaning in the operational situation and vice versa (e.g. ‘how risky would it be to walk from your home to the nearest railway station?’; ‘how afraid do you feel right now when you are walking in this street?’). One notable exception was a study aimed at comparing these two situations (strategic and tactical level) for bicyclists and metro users. Respondents were asked about risk perception and feelings of safety while they were at home and while they were travelling (Backer-Grøndahl et al., 2007). The results indicate that people express a higher degree of worry when at home (strategic situation) than when they are using a certain mode of transport (operational situation). Even if this study did have some methodological challenges, and concerned other transport users, it confirms the proposed difference between the two levels, and it also functions as a justification of the separate treatment of these two types of decision situations.

2.2.2. Risk perception, security and safety
Feelings of unsafety can be related to fear of accidents (safety-related risk perception) as well as to fear of crime, violence and strangers (security-related risk perception).

Backer-Grøndahl et al. (2009) used an internet based survey in Norway to investigate the subjective perception of risk in relation to different transport modes. They measured risk perception both in relation to safety issues, i.e., perceived risk for being involved in an accident, and security issues, i.e., perceived risk for unpleasant experiences such as violence and threats. Perceived risk was operationalised as ‘feeling of safety’. They asked
each respondent about his/her perception of ten different modes of transport. For walking, people reported higher perceived risk for security issues than for safety issues. That is, people appear to be more afraid of situations where they think they are likely to be exposed to threats, violence, and other unpleasant situations, than of being involved in an accident as a pedestrian. Looking at all transport modes on this safety-security dimension, pedestrians actually turned out to be the ‘exception’; the general tendency was for private means of travelling to be related to high perceived risk of accidents, whereas public means of transport was related to high perceived risk for unpleasant situations, see Figure 1. Strictly speaking walking is a private transport mode, as there are no professional operators in charge. The pedestrians themselves are responsible for ‘the performance’ of the transport system. However, from a risk perception perspective walking is placed together with the public modes of transport, i.e. people being more concerned with security than with safety. This makes sense, as pedestrians, to a larger extent than bicyclists and car drivers are exposed to the public scene of a typical urban environment. Statistically, they also run a far greater risk of being exposed to violence than bicyclists, car drivers and motorcyclists (Amundsen, 2008).

As could be expected, pedestrians felt more afraid at night than during the day. ‘Unpleasant people’ and ‘bad lighting conditions’ were reported as being the factors contributing most to feeling unsafe at night, whereas ‘other road-users not being considerate’ was the equivalent factor during the day. This may indicate that pedestrians are more afraid of being involved in an accident during the day, while at night perceived risk of unpleasant situations is more salient.

![Figure 1 'Risk profile' of ten modes of transport. Respondents’ perception of worry for accidents and for being involved in an unpleasant situation (crime, violence, harassment). Mean scores from 1 to 5. From Backer-Grøndahl et. al. (2007).](image)

2.2.3. Associations between perception of the physical and social environment and walking

In general, unsafe roads are often considered one of the main factors hindering cycling and walking (Elvik, 2000). If people could choose their mode of transport based on their own preference, in a situation where cars do not cause unsafe or unpleasant situations, the
volume of walking and cycling would most probably increase substantially. Sælensminde (2004) calls this the ‘natural volume’ of transport modes.

Below, we describe results of several studies that have examined the relationship between perceived safety and security and walking. In most cases, the data concerning perceived safety and security have been collected as part of larger data collections. Most studies investigated individual and environmental correlates of walking in general, for recreation or transport, or as a component of physical activity. The studies used self-reported walking behaviour as a dependent variable and obtained people’s perceptions of the environment through a survey. The perceptions of the environment included, for example, unattended dogs, crime and safety concerns associated with recreational facilities, traffic volume and speed, street lights, and strangers. In the studies, regression models were used to show associations between the variables. Different groups were the subject of study: adults, elderly, children and children’s parents.

Results of these studies show that the relationship between perceived safety and security and walking seems not to be very strong. Addy et al. (2004) found that traffic volume, unattended dogs, crime and safety concerns associated with recreation facilities were not associated with walking. Giles-Corti & Donovan (2002), however, found that people who perceived their neighbourhood as safe were more likely to walk. Humpel, Owen, Iverson, Leslie & Bauman (2004) examined associations of perceived environmental attributes (weather, aesthetics, accessibility, and location) with walking for different purposes. They found no evidence of a relationship between safety and neighbourhood walking, walking for pleasure or walking to get to and from places. Duncan & Mummery (2005) also found no associations between safety and recreational walking and physical activity. Suminski, Poston, Petosa, Stevens & Katzenmoyer (2005) examined the relationships between features of the neighbourhood environment (functional, safety, aesthetics, destinations) and walking for transportation, walking a dog, and walking for exercise by U.S. adults. The feature ‘safety’ described neighbourhood traffic volume and speed, lighting, and crime. They found that women who perceived their neighbourhood as safe walked more often for exercise and walking a dog than women who perceived their neighbourhood as unsafe. Troped, Saunders, Pate, Reininger & Addy (2003), however, found no associations between unattended dogs, streetlights, and heavy traffic on one hand, and recreational and transportation-realated physical activity on the other. Booth et al. (2000) attempted to identify perceived environmental influences associated with physical activity participation in older populations. They assessed self-reported physical activity and a range of perceived environmental factors in a randomly selected sample of 449 Australian adults age 60 and older. Perceiving the footpaths safe for walking (i.e. no uneven paths or dogs) was associated with the elderly being physically active.

To sum up, the results of these studies show that the relationship between the perception of the physical and social environment and walking seems to depend on the attributes taken into account. A positive perception of the safety in the neighbourhood seems to lead to more walking. However, from the literature mentioned above, it is not clear which elements of the physical environment contribute to a safe feeling. Characteristics like high traffic volume are associated more with increased security than with decreased safety, even though it might be less safe from a traffic safety perspective. Apparently, there are other important elements of the perceived physical and social environment that essentially influence the decision to walk.

2.2.4. Reduced mobility due to fear of crime

‘Fear’ can have a very direct impact on the decision to walk as it can lead to the exclusion of certain transport modes, because of for example anxiety, fear for crime or traffic (un)safety or fear of participating in traffic. Fear of crime is often related to being outside and having the perception of being vulnerable, as was illustrated in the study by Backer-Grøndahl et al.
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(2007) mentioned above. Especially vulnerable road users like pedestrians may have a fear of becoming a victim of criminal acts, such as being pushed, threatened with violence, robbery, physical attacks, being stared at or people making remarks. Also, handicapped people have a fear of crime when using public transport (Crime reduction website; Department for Transport website; Stafford & Pettersson, 2002 and 2004; Stafford, Pettersson, Young & Mather, 1999b).

One of the consequences of fear of crime is that people travelling with public transport take precautionary measures like avoiding travelling alone, avoiding certain routes or stops and choosing a seat close to the driver. Some people may also avoid public transport completely, especially at night. It has been suggested that possible alternatives like the car are preferred and individuals without alternatives stay at home (Green, 2006; Stafford & Pettersson, 2002). Research has shown that the decision whether to use public transport or not is based on the whole trip, including walking to and from the bus stop or train station (Alm & Lindberg, 2004). Research in 1996 and 2002 in the UK reveals that the introduction of additional safety measures like the presence of personnel, proper lightning and CCTV can account for an increase in train travellers of 11% (Committee of Public Accounts, 2006). In Stockton (UK) 40% of the questioned citizens stated using public transport more often if they feel safer (Stafford & Pettersson, 2002).

As we can learn from the different studies discussed above, being a pedestrian plays an important role in the negative feelings and the final decision whether or not to use public transport (Stafford & Pettersson, 2002; Stafford et al. 1999a). Groups who are put off most from travelling because of fear are mainly women, elderly, ethnic minorities and the underprivileged. For those groups using public transport and walking is an important way of staying mobile and taking part in society, as they often don’t have alternatives (Colliard, 2003; Gwilliam, 2002; Crime reduction website; EU Equal Opportunities Unit, 1995). However, Hoehner et al. (2005) examined perceived and objective environmental measures and physical activity among urban adults. No associations were found between feeling safe from crime and perceiving active neighbours and recreation-based or transportation-based activity.

2.2.5. Reduced mobility due to fear of (new) accidents

Having been involved in an accident oneself often causes a reduction or change in mobility. Some people do not want to drive their cars anymore, or do not want to be passenger. In some case parents or partners are extremely concerned about family members travelling. Research in the UK (Ellis, Stores & Mayou, 1998) reveals that 18 of 43 questioned parents introduced new mobility rules after an accident in which their children were involved. Sometimes the limitations where very drastic and the children were not allowed to bike or walk alone anymore. This means a serious restriction of independent mobility.

2.2.6. Reduced mobility in children due to parents’ fear

Although the importance of children’s independent mobility for their general development has been generally acknowledged, children are more and more restricted in travelling alone. This is often based on parents’ feelings of fear. Zwerts (2008) researched the travel mode of school of children between the ages of 10 and 13. Fear for accidents and fear for crime were the most important reasons for parents to bring their children to school by car, even if walking was an alternative. Also, children reported traffic safety and fear for crime as less attractive aspects of cycling and walking, as well as poorly maintained public spaces.

For a lot of children, walking and cycling is their preferred mode of transport because of the freedom and independency it brings (Mitchell et al. 2007; Zwerts, 2008). The children
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reported that the most important reason they do not come to school with their preferred mode of transport is the fact that they ‘are not allowed’. The reasons parents give their children most often are safety reasons: road safety and fear for crime.

A questionnaire in Oxfordshire (UK) (Hurdle, 1999) reveals that fear of strangers is a reason for 85% of all parents to accompany their children to school. Unsafe traffic was the reason in 50% of the cases. In the United States (CDCP, 2002; Falb, Kanny, Powell & Giarrusso, 2007) the reasons for not allowing children to walk have been reported as, in descending order: distance (62%), traffic safety (30%), weather (19%), crime (12%), school policy (6%), other (15%).

Whether parents have more fear of traffic or more fear of crime depends partly on the location where they live and where their children have to go (Tranter & Pawson, 2001). In rural areas road safety plays an important role while in urban areas fear of crime is more important (Stafford et al., 1999a; Klöckner, 1998). Researchers in the inner city of London (DiGuiseppi, Roberts, Li & Allen, 1998) found that 90% of parents were very or rather afraid that their children would become a victim of crime (kidnapping, being attacked) and 89% was very or rather afraid of road accidents. Characteristics of the surrounding environment also play an important role in the intensity of the fear and if it results in the rejection of children’s independent mobility (Björklid, 1996; Klöckner, 1998; Lam, 2001). Research from other countries find far lower figures for what is often called ‘stranger danger’. In Norway, for instance only 11% of parents reported this as a reason for accompanying their children to school (Fyhri & Hjorthol, 2009b). Similar low scores regarding ‘stranger danger’ have also been reported in Finland (Kyttä, 2004)

Italian research (Prezza et al. 2005) states that the fear of crime against children often consists of fear of petty crime like drugs and theft, and fear of certain groups to which people may prejudiced like gypsies, immigrants, and the homeless. Parents’ fear is often not related to events, which have actually happened to themselves or their children. Parents recognise that they are influenced by media campaigns about criminal acts against children. These results indicate that the perception of social danger in the area of residence has been correlated on the one hand to the level of mothers’ personal fear of crime and on the other hand to the size of urban context; mothers who live in smaller cities and have a stronger sense of community perceive their environment as safer for their children than those mothers who have high levels of fear and live in large cities. Parents state that their fear for their children (and for themselves) is probably the consequence of amplified media campaigns on criminal acts against children. A sense of community, connections with neighbours and availability of green spaces was considered beneficial for children’s development and can be considered a protective factor against feeling unsafe. As expected, heavy traffic represented a risk factor for both parents and children.

Fear for crime and road accidents may lead to an increase in children being brought to school by car and thus to a more unsafe route to school (Tranter & Pawson, 2001; National Center for Safe Routes to School; Ker & Tranter, 1997). This vicious circle may also have an impact on feelings of crime (Mullan, 2003). As a reaction to a (perceived) unsafe road environment, fewer youngsters cycle and walk or play outside. This leads to a decrease in social activities and social contact, again leading to an increased fear of strangers. And this fear might lead more parents to think that their children cannot go to school alone. Protection of children against threats that certain modes of transportation bring with them might lead to a generation with an acquired fear for those modes of transportation resulting in more people being dependent on their car (Department for Transport, website).

Timperio et al. (2004) also examined associations between perceived aspects of the local neighbourhood (e.g. traffic density, road safety, strangers, traffic lights/ crossings) and walking and cycling among children as a means of transport. Parents reported their child's
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(five and six-year-olds and ten to twelve-year-olds) usual walking or cycling to local destinations and their perceptions of their neighbourhood. Ten to twelve-year-olds were also asked about their perceptions of traffic, strangers, road safety and sporting venues, and their perceptions of their parents’ views on these issues. For 10 to 12-year-old children, analyses showed that boys, whose parents believed there were no lights or crossings for their child to use, were 60% less likely to walk or cycle. Also girls, whose parents believed that their child needed to cross several roads to reach play areas, were less likely to walk or cycle. Perceptions of heavy traffic and road safety concerns, however, were not associated with walking and cycling among children. Also, no associations were found between parents’ concerns about strangers and children’s walking or cycling in the neighbourhood.

Another study, looking at factors influencing independent mobility for children using multivariate analysis, found that distance to school and child age are the most influential variables (Fyhri & Hjorthol, 2009a). ‘Objective’ descriptors (subjectively assessed) of the traffic environment explained independent mobility indirectly though the parents’ experience of how safe the road to school is. Another study conducted by Maria Johansson (2006) in Sweden, found that an objective descriptor of the traffic environment explained independent mobility, whereas subjective expressions of trust did not. These results might seem contradictory, but they do in fact point together to an important implication: any measure aimed at increasing walking and cycling for children via improved traffic safety will only be effective if parents’ experience of traffic safety is improved. Thus, any physical measures improving traffic safety need to be supplemented by information or campaigns in order to be effective for increased independent mobility.

All in all, there seem to be considerable national and regional differences in how perceived safety influences children’s opportunities for walking in everyday life. In some inner city areas, especially in large cities, fear of crime or fear of accidents might give considerable limitations to children’s independent mobility. In more rural areas and especially in Northern Europe, this seems to be a more marginal explanation.

3. The influence of safety and security on mobility decisions while walking

3.1. Some theoretical considerations of risk perception while walking

In the current section we are interested in looking at how risk perception may influence people’s behaviour while walking, at a tactical level. The theories covered in the section about the strategic decision to walk, tend to be concerned with trying to explain the components of risk perception, or to describe how it is shaped – the purpose can be said to be one of taxonomy. However, few studies have actually attempted to predict behaviour based on these approaches. To find theories with behaviour prediction as an aim we should change, or maybe narrow, the perspective from general transport users to car drivers. There exists a whole body of literature describing different driver behaviour models, i.e. at the tactical/operational level. One important common feature of these models is the central role of motivation as a key element in the model description. The most prominent of these is Wilde’s (Wilde, 1994) target risk theory, more commonly known as risk homeostasis theory. All of these models predict that the driver’s behaviour is motivated by the goal of achieving a certain outcome related to risk level.

For Wilde’s model this outcome is a targeted risk level that differs between individuals, but that is fairly static within society as a whole. By weighting potential risk benefits, risk costs, safety benefits and safety costs the individual seeks to achieve risk homeostasis at a level that by definition > 0. In another well established model, Näätänen and Summala’s zero risk
theory (Summala, 1988), the desired outcome is zero risk, i.e., drivers monitor risks, adapt their behaviour and pace their driving speeds according to a perception for which the level of experienced risk of an accident is zero.

It is quite intriguing that there is so little common ground between transport-related risk perception research and driver behaviour models, as both areas of research deal with experienced risk. An important difference between the driver behaviour models and the risk perception models, and a potential explanation, has to do with methodology: risk perception models are mostly based on survey methods and people’s self-expressed behaviour (if any behaviour measures at all), whereas driver behaviour models first and foremost are theoretical models based on direct behavioural measures or indirect measures (accident rates).

One thing that is apparent both in the risk perception field of research and the driver behaviour field of research is the growing attention to the importance of involving the concept of affect (or emotions) into the explanations, as mentioned in the previous section. Within risk perception research this can be said to date from the introduction of the affect heuristic in 2000 (Finucane et al., 2000). In some of the driver behaviour models, emotional aspects have been a naturally inherent part of the described mechanisms, but only recently has there been any attempt made to include emotions as a guiding principle for actions in such a model, through the introduction of the Risk Monitoring Model (Vaa, 2003). At present this model is of a rather theoretical nature, and is yet to be tested empirically.

Walking close to heavy or busy traffic is an unpleasant experience for pedestrians, but those places that are generally recognized as dangerous do not necessarily have to be dangerous in terms of the actual number of accidents (Elvik et al., 1999). A typical explanation for this is that individuals tend to behave in a more cautious manner in situations they perceive to be dangerous. The flipside of this is that people will behave less cautiously in situations where they feel safer or more protected. The notion of risk compensation is typically an expression of the latter phenomenon. Risk compensation refers to people’s tendency to adjust their behaviour in response to perceived changes in risk levels, and is often used as an explanation when measures aimed at improving safety do not work as effectively as intended or when they have a negative effect on accident rates. An important feature of walking, as opposed to car driving and other motorised modes of transport, is the lack of physical protection. As a result, it can be hypothesised that soft transport modes might be involved in rather different processes of risk compensation than for example motorists. For motorists, the effect of a safety measure aimed at reducing accidents (e.g. ABS-system) may be reduced by risk compensation by the drivers, whereas a safety measure aimed at reducing injury from accidents (e.g. airbags) are not (Bjørnskau 1994). For pedestrians, it can be proposed that this distinction between accident-reducing and injury-reducing measures is not as apparent, since most accidents will eventually lead to an injury for an unprotected soft-mobility user.

3.2. Empirical findings

3.2.1. Route choice

Walking in general and use of public transport are the two modes of transport with the highest fear of crime. In both cases physical contact with strangers is possible but there is often no quick escape. Walking alone is often perceived as more dangerous than in a group (Van Vlierden, 2008).

A study conducted in Sweden aimed at investigating worry and feelings of being unsafe in various ‘travel-related’ places, for instance railway stations and parking lots (Alm & Lindberg, 2000). The point of this study was to investigate how people perceive the ‘whole journey’. This is perhaps particularly important in relation to risk of violence or of being threatened.
The results showed that people reported experiencing worry and feelings of being unsafe most frequently when walking, followed by being at a bus stop. Airports and ferry terminals were the least frightening transport related places. The Department for Transport (2004) confirms that the walking parts of a public transport trip (e.g. during the access and egress trip or during a transfer), are often considered the least safe part of the trip and even less safe than the time spent in the vehicle or at the station or stop. Especially pedestrian underpasses are frightening and often avoided due to feelings of enclosure and poor quality (graffiti, litter and other signs of disorder). Also streets in the vicinity of stations and parking garages often cause feelings of fear.

Stafford and Petterson (2004) found that women who use public transport after dark feel unsafe in parking garages and other enclosed places like stations, in the train, underground and while walking in the vicinity of the station. Generally speaking the underground has the highest scores (62% of the women) of feeling unsafe, followed by the train and bus (40%). Men’s scores were substantially lower: between 18 and 32%. The perceived risk of becoming a victim of crime seems to be higher after dark and in enclosed spaces (Crime reduction website; Stafford & Pettersson, 2002 and 2004; CROW, 2007; Social Exclusion Unit, 2003). This corresponds with research by Greene (2003), who found two basic characteristics of the built environment, which play an important role in the perception of risk: the visual field (how much can I see?) and the visual control (can I be seen?). People feel the safest if they have a good overview of the space in which they are moving and if they have the feeling that they are supported by other users.

In a previous COST-action, a study was conducted looking at comfort among pedestrians in six European cities. Eight different factors were identified. In a subsequent survey pedestrians who stated that they could have chosen different routes were asked for their main reason(s) for the choice on the current trip. Among the most common answers were time use (38%) and walking distance (33%), while as many as 15% mentioned the surroundings. However, the most important factor to explain comfort when walking was to feel safe and secure (Øvstedal & Ryeng, 2002).

In addition to asking about factors contributing to perceived risk, Backer Grøndahl et al. (2009) asked their participants about five different behavioural adaptations, some strategic and some tactical, related to 10 different transport modes. Behavioural adaptations in this context can be seen as safety precautions. Of all the adaptations for all transport modes ‘choosing another route while walking’ was the behavioural adaptation most reported. 67% of respondents said they would ‘sometimes’ or ‘often’ do this as a consequence of feeling unsafe while walking. Support for the previously mentioned distinction between worry about accidents and unpleasant incidents, such as crime and threats, were also found when investigating behavioural adaptations. Thus, for pedestrians most behavioural adaptations would occur as a result of worry about unpleasant incidents, rather than as a result of worry about accidents. In this respect walking is more akin to public than private modes of transport, which are typically associated with fear of accidents.

Being close to motorized traffic exceeding the speed limit fills cyclists and pedestrians with dread (Vlassenroot & De Mol, 2007). But, as mentioned earlier, perceived and objective safety are not necessarily related. A typical example of this is the finding that ordinary marked pedestrian crossings seem to increase accident risk for pedestrians (Elvik et al., 2009). This has been attributed to the fact that pedestrians behave less carefully when crossing the street at marked intersections than they would do if just crossing the street where it is not allowed. In other words, they reduce the potential positive effect of the risk reducing measure by risk compensation. However, a theoretical discussion of safety measures aimed at improving safety for pedestrians and bicyclists, indicated that compensation was not normally the case. 78 out of 125 submeasures were assessed to have a positive effect on both objective and subjective safety, while 25 have negative effects.
on objective and subjective safety. This is taken as an interpretation that in most cases risk compensation does not occur for pedestrians’ safety measures (Sørensen & Mosslemi, 2009).

Thus, there is not always a clear relationship between feeling unsafe and the objective risk in a situation. This should not be interpreted as people not being able to accurately judge risk. In most situations people are actually quite good at assessing risk levels. Research shows that in big American cities there is a relation between locations perceived as risky and locations that are objectively high risk areas (Pucher & Dijkstra, 2003).

3.2.2. Mobility of the elderly

For elderly, walking is a way to maintain their mobility and overall health situation. Their walking behaviour though, is different from other pedestrians because of age-related individual characteristics like walking speed, need for assistance, limited mobility and fear of falling (Borst et al., 2008). The main goal of the research of Borst et al. (2008) was to investigate the influence of street characteristics on the attractiveness of streets preferred by elderly. They selected different factors, which may potentially influence walking behaviour for elderly: pedestrian infrastructure, traffic volume, public transport, shops and businesses, green areas, reported crime and information about what neighbourhood looks like (tidiness, blind walls) and asked respondents to mark the streets they liked and disliked. Elements related to presence of other people were positively associated with the perceived attractiveness (shops, catering establishments, businesses, bus and tram stops). Also safety measures (zebra crossings) and traffic volume had a positive score on walking conditions. A possible explanation could be that higher traffic volume also indicates wider streets and more activity.

Bernthoft et al. (2008) investigated the risk perception and behaviour of pedestrians and cyclists aged 40-49 and people older than 70. One of the topics on the questionnaire was route choice when walking in their hometown. Both groups appreciated pedestrian crossings and signalized intersections, but the older people tended to find it more dangerous to cross a street without those facilities and when there are cyclists and roller skaters on the sidewalk. The younger group though, preferred street lighting more than the older group, perhaps because they go out more in the evening. It is also interesting to note that reduction of travel time (fast, direct) was an important issue for the younger group. Sidewalks are important for both groups. When questioned how the two groups behave in certain risky situations, the older group seems to be more cautious, choosing pedestrian crossings, not walking against red and returning after having started crossing a signalized intersection when the light turns red. Both groups cross the street sometimes in other places, but only if there is a clear view and light traffic. The most important reason for older people to cross where they are (not using a special pedestrian crossing) is because it is inconvenient or difficult to make a detour. The younger group though, crossed the street often where they were because there was no reason not to do it.

In a random sample of elderly between 65 and 80 years old in the United States, 9% reported a serious fear of falling. Although more women than men reported fear, for both groups the fear of falling increased with age. As a result they seldom left the building where they lived (Arfken et al. 1994). Research shows that among women between 54 and 77 years of age in the UK, 10% were afraid of falling (Martin et al. 2005). One third had already fallen on the street. Australian research of women between 70 and 85 shows that fear of falling was larger than fear of being robbed on the street (Bruce, Devine & Prince, 2002). Fear of falling has an impact on the amount of outdoor walking elderly engage in and their activity pattern (Lachman and Howland, 1998 – cited in Jørstad, Hauer, Becker & Lamb, 2005).
4. Conclusion

Research on risk perception has increasingly moved its attention from cognition to the role of affect. These days it is generally recognized that both aspects play an important role in decision making processes. Due to methodological challenges, there is still research that actually manages to handle both these issues and prove their relative contributions.

From an empirical perspective it is just as important to make the distinction between two types of risk that are important for pedestrians: the risk of being involved in an accident and the risk of falling victim to a criminal offence, violence or threats. It is the latter that is most important for walking behavior.

Some studies report quite high numbers of self-reported mobility restrictions due to unsafe environments. However, general surveys using well-controlled designs and proper sampling methods tend to find quite low relationships between perceived risk or feeling unsafe and strategic decisions about walking.

There seems to be considerable national and regional differences in how perceived safety influences children’s opportunities for walking in everyday life. In some inner city areas, especially in large cities, fear of crime or fear of accidents might give considerable limitations to children’s independent mobility. In more rural areas and especially in Northern Europe, this seems to be a more marginal explanation.

Once the pedestrian has made the strategic decision to walk, perceived safety plays a larger role. Pedestrians who are afraid of crime and threats tend to exhibit more behavioral adaptations, like choosing another route, than pedestrians who are not afraid. Perceived risk of accidents tends to have less of a direct impact on behavior. An important and often cited exception to this is the rather rare occasion when traffic safety measures lead to increased risk due to the risk compensation phenomenon.

5. Recommendations

Surveys using well-controlled designs and proper sampling methods tend to find quite low relationships between perceived risk or feeling unsafe and the strategic decisions about walking. From this, one could draw the erroneous conclusion that this aspect should be disregarded in the planning and design of pedestrian facilities. There are quite strong regional or geographical differences, and research has shown that people are rather good at judging risk. Thus, these findings should act more as a reminder that feeling safe is a fundamental need for human beings, and that the provision of safe and secure transport systems is a fundamental prerequisite for attracting more people to walk. In other words making walking safe is a necessary, but not sufficient, condition for increased walking.

Normally, measures directed towards providing safe and secure transport are seen strictly from a transportation perspective. However, we have learned that there are considerable differences among groups of the population. Typically, young females feel more unsafe than middle aged men. This means that we also have to consider such measures from a welfare and equity point of view. In other words, even if such initiatives may not shift large quantities of people from motorised to non-motorised transport, they might increase the mobility and independence of groups of the population who now feel restricted in their everyday travel.

Finally, the relationships between behaviour and perceived safety are stronger for the decisions made at the tactical level than at the strategic level. Most safety measures for soft mobility transport tend to increase both perceived and objective safety. The general rule is
therefore that any safety measure for pedestrians will have a positive influence on both safety and mobility. However, there are some quite notable exceptions to this rule, such as ordinary pedestrian crossings (unsignalised, not raised). To avoid the negative trade-off between increased mobility and safety, designers should therefore make sure to consult good quality literature on the effect of both these parameters when planning new constructions.

References


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B.2.3. The Influence of Perceived Safety and Security on Walking


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Mullan, E. (2003). Do you think that your local area is a good place for young people to grow up? The effects of traffic and car parking on young people’s views. *Health & Place, 9* (4), 351-360.


B.2. Perceived Needs


What does walking mean for groups with special needs? - Tasks and how they are perceived

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Summary

In this chapter we focus on the needs of specific pedestrian groups namely children, elderly and sight impaired persons. The chapter starts with a general description of these three groups followed by three case studies focusing on how different tasks and preconditions are perceived by them. In the conclusion at the end of this chapter we give an overview of common problems of the specific groups (children, senior citizens and impaired). However, the functional difference between the groups also lead to differences in the way they perceive walking, as well as the strategies they develop for safe and comfortable walking.

1. Introduction

Mobility is one of the preconditions for being able to participate in social life: individuals perform activities because of economic, social, recreation and other personal reasons. Taking part in activities implies to be able to travel to various destinations where specific activities take place. If the travel possibilities don’t allow someone to participate in social life in an adequate manner, this person will suffer from a decreased participation (World Health Organization, 2001) due to “transportation poverty” (Bourgeois, 2002), meaning that one has to live with disadvantages concerning his/her own out-door mobility and reduced access to relevant points in the public space. In the following we will describe the perceived needs of vulnerable groups of pedestrians who experience some kind of restrictions in their mobility. The chapter aims at appraising the situation of these groups within a wider European context through the description of concrete case studies realized in the different European countries or cities. In this chapter we describe the – perceived – needs of three specific groups: children, elderly and sight impaired persons.
B.2. Perceived Needs

1.1. Children

Children are still growing up and developing functionalities and skills, which makes it necessary for them to move a lot. Walking in this context is a very important transport mode for children and it can be easily integrated in their everyday activities like going to kindergarten, school, sports institutes, to friends, to the bakery, etc. Children, however, have special needs when it comes to participation in road traffic and they can definitely not be considered as small adults. They perceive traffic from a different angle than adults as they are smaller. Moreover we cannot expect children to be familiar with traffic rules and their brains are not developed that much that they are able to cope with complex traffic situations (PROMISING, 2001).

Because a lot of parents are afraid that their children will be involved in an accident, they drive their children to school. This typical pattern has different consequences for children’s development ranging from getting too little exercise to causing additional risks for those “remaining” children who still walk to school (Steiner, Cirder, Betancourt, 2006). But it also means that children have less time to spend in public space with other people and their peers. By walking, children are able to get acquainted with their nearest vicinity, to experience objects, events and human relations. A varied environment which offers contact-possibilities in different age-groups supports the development of children. Necessary experiences for life, and particularly social experiences, can in particular (and some people state ‘only’) be acquired when children are able to move freely in public space and when they have a certain freedom to decide with whom they want to play and for how long. It allows them to develop social skills that are needed in society.

The following table illustrates the development of children’s mobility (Rauh, Kose, Lechner & Riegler, 1995).

Table 1 Development of mobility (Rauh, Kose, Lechner & Riegler, 1995)

<table>
<thead>
<tr>
<th>age</th>
<th>mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crawl</td>
</tr>
<tr>
<td>2</td>
<td>walking</td>
</tr>
<tr>
<td></td>
<td>exploring the near area of home</td>
</tr>
<tr>
<td></td>
<td>integration in groups of older children</td>
</tr>
<tr>
<td>3</td>
<td>exploring their own street</td>
</tr>
<tr>
<td></td>
<td>contacts in the neighbourhood</td>
</tr>
<tr>
<td>4</td>
<td>first attempts on the fairy cycle</td>
</tr>
<tr>
<td></td>
<td>exploring adjacent streets</td>
</tr>
<tr>
<td></td>
<td>groups of equally aged children</td>
</tr>
<tr>
<td></td>
<td>self-subsistant contacts with the adult world (e.g., to buy something)</td>
</tr>
<tr>
<td>5</td>
<td>way to kindergarten (until 1km)</td>
</tr>
<tr>
<td></td>
<td>kindergarten- / school-acquaintances</td>
</tr>
<tr>
<td>6</td>
<td>way to school</td>
</tr>
<tr>
<td></td>
<td>school-bus, line-bus to school</td>
</tr>
<tr>
<td></td>
<td>a village is in the action-radius (way to bath, to playing- or sports-areas)</td>
</tr>
<tr>
<td>7</td>
<td>a small-town is in the action-radius</td>
</tr>
<tr>
<td></td>
<td>first (forbidden) expeditions by bike</td>
</tr>
<tr>
<td></td>
<td>bus in city-area</td>
</tr>
<tr>
<td>10</td>
<td>a city or neighbour-villages are within the action-radius</td>
</tr>
<tr>
<td></td>
<td>bicycling in the whole home-area and first bicycling in neighboured villages</td>
</tr>
<tr>
<td></td>
<td>use of buses and trains</td>
</tr>
</tbody>
</table>
1.2. Elderly

Senior citizens want to live an independent life and the ability to reach necessary locations like shops, doctors and public transport on foot increases their level of independence. These daily ways offer the chance for older people to keep fit physically and mentally (see Schlansky, Hasenstab & Herzog-Schlagk, 2006). But older people may experience mobility restrictions. Some move slower than before, hearing or visual perception may deteriorate, and reaction or decision times may increase (PROMISING, 2001). Older people mentioned in several studies that they stay at home because they are afraid of the road traffic which is, in their view, too dangerous (Glasl, Rauh, Skala, Stadthuber, 1993; Bernthoft et al., 2008; Borst et al, 2008).

The results from the EU-project SiZE (www.factum.at/size-project) showed that senior citizens wish more possibilities to sit down and have a rest. These results were confirmed by a study in Vienna where more than 60% of the interviewees stated that there are not enough seats offered in public space. Interestingly, there were no significant differences between age groups (Wunsch, Haindl, Ausserer, 2007). Thus places to rest are not only important for senior citizens but make walking more convenient for all age groups. Frequent seating possibilities on footpaths make it possible to cover longer walking-distances. When people sit on a bench they can observe the environment, look at people walking, running or strolling by, and they can establish social contacts through small-talks which may help feeling more connected to society. So older people should have pickup points in their direct living-area that allow them to get involved in appropriate mental and/or physical activities (see Schlansky, Hasenstab & Herzog-Schlagk, 2006).

Senior citizens also wished a more attractive environment with zones with a maximum speed of 30km/h or even lower, traffic islands and enlargement of sidewalks at crossings. These aspects are considered very important to increase the feeling of comfort and safety for older people. Furthermore, there is the wish for continuous pavements and the avoidance of underpasses or footbridges as they have a positive impact on the life quality in road-areas (Glasl, Rauh, Skala, Stadthuber, 1993).

1.3. Persons with an impairment

If we want to talk about persons with impairments we should question ourselves what ‘impairment’ means. When is someone disabled and what causes ‘dis-ability’? There are different understandings of disability depending on the era and the culture. The ‘medical model’ distinguishes permanent or temporary limitations related to the physical, sensory or mental possibilities someone has and can be regarded as a ‘threat-as-different’ approach. The solutions are typically focussing on taking away barriers for specific groups, like ramps for wheelchairs and tactile guidelines for blind and sight impaired. Barrier Free Design or Design for Special Needs are typical examples of this approach. A ‘threat-as-normal’ approach anticipates on differences amongst users (Froyen, 2005). Here the focus is on the elimination of physical and other barriers created by society that disable individuals and limit their opportunities in life. When reducing barriers and mechanisms that create barriers to participation, user involvement can be considered as essential as disabled people and older people themselves are experts in their own needs (Øvstvedal, 2010). If we look at pedestrians the main challenge is to prevent someone to become ‘architecturally dis-abled’ because of the way public space has been designed.

The group of people with impairments is very diverse and includes wheelchair users, people with reduced or lacking vision, hearing-impaired persons and mentally disabled. But also other groups have to be counted with like those who are permanently or temporarily disabled, people with an artificial limb, sticks or other walking aids. However, because this group is so heterogeneous there are sometime conflicting needs concerning infrastructure.
Wheelchair users for example prefer a sidewalk without any curbs. On the other hand, blind or vision impaired persons need these curbs for orientation (Thomas, 2006). From user point of view it is therefore important that design is logical and transparent so they know what to expect. Disabled persons have to get informed that they should pay attention to, or to get warned (like crossing main roads) if sudden changes occur in their ways. In an inclusive design the needs of all possible road users are taken into consideration in such – preferable even without stressing it too much.

1.4. Mobility needs of various target groups
Pedestrians have various mobility needs which depend on different aspects like the trip purpose (e.g. for shopping one needs a shopping bag or trolley which implies the need of space), the time period (needs before, on an after the trip) or the target group, who is carrying out the trip. In the following table the needs of children; elderly, impaired people are discussed as well as the needs of pedestrians in general. The tables are classified into needs before, on and after a trip.

The tasks which pedestrians have to perform can be distinguished in different ways. One can differentiate walking trips according to their purpose or one can divide tasks into three different temporal aspects like pre-trip, on-trip and post-trip tasks. In the following table various tasks of pedestrians are combined with general mobility needs of pedestrians and with the needs of special groups in particular:

Table 2 Mobility needs of (vulnerable) pedestrians: Needs before a trip

<table>
<thead>
<tr>
<th>Mobility needs of special pedestrian groups</th>
<th>Mobility needs of all pedestrians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td></td>
</tr>
<tr>
<td>maps where sports fields or playgrounds are marked</td>
<td>specially developed maps for pedestrians</td>
</tr>
<tr>
<td>playing-streets should be marked</td>
<td>pedestrian-maps that are simple &amp; easy to memorise</td>
</tr>
<tr>
<td>speed-limits should be noted in the maps for children and also roads where parking is prohibited</td>
<td>marking dead end roads for pedestrians (not only for vehicle-drivers)</td>
</tr>
<tr>
<td>Elderly</td>
<td></td>
</tr>
<tr>
<td>maps with marked underpasses, footbridges &amp; stairs</td>
<td>internet-route-planners for pedestrians with respect to special needs which can be mentioned by the user (like direct route, most comfortable way etc.)</td>
</tr>
<tr>
<td>although areas with opportunities to rest should be pointed out on the maps</td>
<td>information about weather conditions, shopping times, road works</td>
</tr>
<tr>
<td>big differences in level should be mentioned in the maps</td>
<td></td>
</tr>
<tr>
<td>speed-limits for drivers may be marked on maps for older pedestrians in order to give them the possibility to avoid roads with higher speeds</td>
<td></td>
</tr>
<tr>
<td>Disabled People</td>
<td></td>
</tr>
<tr>
<td>same markings like for older pedestrians should be given in maps</td>
<td></td>
</tr>
<tr>
<td>pointing out temporary existing road workings within internet-route-planners</td>
<td></td>
</tr>
<tr>
<td>offer hot lines for route planning or “SOS-questions” could be very attractive for blind or visually impaired people</td>
<td></td>
</tr>
</tbody>
</table>
### Table 3 Mobility needs of (vulnerable) pedestrians: Needs on the trip

<table>
<thead>
<tr>
<th>Mobility needs of special pedestrian groups</th>
<th>Mobility needs of all pedestrians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td>Providing pedestrian guidance systems comparable to those for car-drivers (not only to the most famous sight-seeings)</td>
</tr>
<tr>
<td>guidance should not be mounted too high so that children are able to recognise it</td>
<td>provide information for pedestrians in the form of pictographs which are easy to understand (also integrated in road traffic signs)</td>
</tr>
<tr>
<td>besides guidance in a written way, pictograms should be used (especially at places which are attractive for children like playgrounds etc.)</td>
<td>give &quot;route deviation&quot; information for walking routes</td>
</tr>
<tr>
<td>areas where many children tend to be should be:</td>
<td>adequate location of crossings (zebras, traffic light crossings, underpasses or bridges) in order to satisfy the three requirements:</td>
</tr>
<tr>
<td>comfortable &amp; clear</td>
<td>shortest route, continuity and safety</td>
</tr>
<tr>
<td>free of parked cars</td>
<td>provide sufficient time for crossing</td>
</tr>
<tr>
<td>equipped with many crossing aids especially over main roads</td>
<td>reduction of conflicts between motorised or bicycle traffic and pedestrians where ever possible (segregated or separated pedestrian routes, or speed reduction)reduced waiting times for pedestrians</td>
</tr>
<tr>
<td>speed-limited (with enforcement)</td>
<td>adequate mutual visibility of pedestrians and drivers</td>
</tr>
<tr>
<td>provided with wide pavements</td>
<td>reduced width of carriage-ways to cross and</td>
</tr>
<tr>
<td>guaranteeing good visibility of children for drivers</td>
<td>reduced speeds of vehicles</td>
</tr>
<tr>
<td>Elderly</td>
<td>shelters and protection against bad weather (bus stops etc.)</td>
</tr>
<tr>
<td>if mobility barriers are on the route, alternative routes should be sign-posted</td>
<td>smooth &amp; non-slippery surfacing for</td>
</tr>
<tr>
<td>the guidance should be such that also older people with deteriorated vision are able to read it clearly</td>
<td>comfortable walking</td>
</tr>
<tr>
<td>areas with many older people should:</td>
<td>reduction of vehicle speeds especially on links of the network with mixed traffic</td>
</tr>
<tr>
<td>provide opportunities to rest (like benches)</td>
<td>appropriate lighting</td>
</tr>
<tr>
<td>provide continuous pavements at crossings</td>
<td>clear snow, ice or dead leaves from pedestrian walking facilities as soon as needed ( → high level of service)</td>
</tr>
<tr>
<td>be free of underpasses and footbridges</td>
<td>clearance of sidewalks from dog excrements</td>
</tr>
<tr>
<td>be free of large level differences</td>
<td>repair holes and otherwise damaged surfaces as soon as needed</td>
</tr>
<tr>
<td>be speed-limited (with enforcement)</td>
<td>provision or areas free of vehicles (&quot;meeting points&quot; where people can stop, sit, talk together, etc. near the main pedestrians’ destinations)</td>
</tr>
<tr>
<td>Disabled People</td>
<td>same measures as for senior citizens</td>
</tr>
<tr>
<td>like for children, guidance should not be mounted too high so that wheelchair-users are able to recognise it without problems</td>
<td>for blind or vision impaired people audio guidance should be provided</td>
</tr>
<tr>
<td>for blind or vision impaired people audio</td>
<td>information about building sites along the road should be given</td>
</tr>
<tr>
<td>guidance should be provided</td>
<td>areas where disabled persons pass should be:</td>
</tr>
<tr>
<td></td>
<td>equipped with crossing-aids (continuous pavements for wheelchair-users, audio-signals for blind people or vision impaired persons)</td>
</tr>
<tr>
<td></td>
<td>speed-limited (with enforcement)</td>
</tr>
<tr>
<td></td>
<td>easy to overview</td>
</tr>
<tr>
<td></td>
<td>equipped with backings like lifts or escalators or free of underpasses or footbridges</td>
</tr>
<tr>
<td></td>
<td>equipped with accessible control elements like traffic lights or automates that are mounted not higher than 1,30m</td>
</tr>
<tr>
<td></td>
<td>equipped with tactile guidance for blind pedestrians</td>
</tr>
</tbody>
</table>
2. Children’s risks on their way to school - Example of Tallinn

2.1. Introduction

The number of children who are taken to school by car has increased considerably. Many parents have decided that it is best to take their child to school by car, because this enables them to transport their child in safety almost to the school gate. However, increased motor traffic in the immediate vicinity of the school poses an increased danger to those children who travel to school on foot or by bicycle. The existing traffic schemes around schools have not been designed to accommodate such specific motor traffic; there are often no places for cars to stop, or bicycle facilities or pavements. Children who go to school by public transport, bicycle or on foot usually face more dangers on their way to school than those children who are taken to school in their parents’ car. They have to cross roads, walk on streets which are poorly designed or maintained or cycle on busy roads.

Road traffic accidents involving children happen more frequently in areas where children are physically active, i.e. primarily around schools and the places where they live. Children’s everyday journeys are mostly related to school attendance. It is clear that the neighbourhoods of schools are areas where road traffic accidents involving children are likely to happen, since much of the pedestrian traffic involving children is concentrated around schools. Road traffic accidents are often related to a deficient or outright dangerous traffic solution for roads, their intersections, and pedestrian crossings.

It is not really important whether a child gets involved in a road traffic accident while travelling from home to school or vice versa, or while simply walking in the neighbourhood of the school after the end of the school day. The risk of road traffic accidents in the neighbourhood of schools and other children’s institutions is higher, since children are less protected road users with less traffic experience and often with little sense of caution.

The aim of the present study is to analyse the road traffic accidents involving children that have happened in the Nõmme district of the city of Tallinn and the traffic dangers faced by the school pupils of Nõmme on the basis of the results of the project “My Route to School”.

2.2. Road traffic accidents involving children

The number of road traffic accidents involving children and the number of children injured in such accidents have remained stable throughout the years, although in recent years, a small decline can be detected (see Table 5).

<table>
<thead>
<tr>
<th>Mobility needs of special pedestrian groups</th>
<th>Mobility needs of all pedestrians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabled People</td>
<td>At the end point of the walking trip pedestrians do not have to worry about parking possibilities or about fees for parking. They, however need information with respect to:</td>
</tr>
<tr>
<td>With respect to public buildings disabled persons want to be informed about barrier-free entrances</td>
<td>Points of interest in the surrounding</td>
</tr>
<tr>
<td></td>
<td>Time Tables of public transport (in order to plan their way back)</td>
</tr>
</tbody>
</table>
Table 5 Road traffic accidents involving children in Estonia in 2000–2008

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidents involving children</td>
<td>270</td>
<td>335</td>
<td>350</td>
<td>335</td>
<td>317</td>
<td>345</td>
<td>354</td>
<td>336</td>
<td>236</td>
</tr>
<tr>
<td>Children killed</td>
<td>10</td>
<td>17</td>
<td>11</td>
<td>8</td>
<td>9</td>
<td>13</td>
<td>8</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Children injured</td>
<td>270</td>
<td>370</td>
<td>383</td>
<td>360</td>
<td>341</td>
<td>378</td>
<td>404</td>
<td>382</td>
<td>269</td>
</tr>
</tbody>
</table>

Source: Estonian Road Administration 2009

In 2007–2008, 1061 road traffic accidents in total were recorded in Tallinn, in which 42 people were killed and 1210 were injured. Accidents involving children numbered 180 (see Figure 1); of those, 22 took place in Nõmme. In those 22 accidents in Nõmme, 29 children were injured and 1 child (aged below 18) was killed (see Figure 2). In the district of Nõmme, 22 road traffic accidents involving children occurred in 2007–2008.

Figure 1 Share of road traffic accidents involving children among road traffic accidents resulting in either injury or death in Tallinn in 2007–2008 (Source: Estonian Road Administration 2009)

Figure 2 Share of road traffic accidents involving children among road traffic accidents resulting in either injury or death in the district of Nõmme in 2007–2008 (Source: Estonian Road Administration 2009)
The largest share of accidents involved pedestrians and cyclists.

The car crash where a 17-year-old boy was killed happened at the intersection of Vabaduse Boulevard and Valdeku Street. The vehicle veered into the oncoming lane, hit the traffic island in the middle of the road with its front left wheel; consequently the driver lost the control over the vehicle, which rolled over and hit a tree on the left side of the road.

The number of accidents caused by children's own errors has decreased year by year, but their share is still large enough to indicate that children themselves are often responsible for accidents. Four out of every ten children were involved in the accident due to their own negligence or breach of traffic rules.

The largest share of road traffic accidents in Nõmme in 2007–2008 consisted of accidents involving pedestrians (see Figure 3).

A number of child-pedestrians created the dangerous situation themselves and consequently also caused the subsequent road traffic accident. The most common causes of accidents were crossing a street in front of an already dangerously close approaching vehicle and crossing against a red light.

Accidents involving cyclists and moped drivers were mostly caused by violations of traffic rules: ignoring YIELD signs and breaches of the so-called right hand rule (half of the incidents) at intersections, and crossing the street using a designated pedestrian crossing without dismounting. Cyclists on pavements also failed to stop at intersections and rode out in front of approaching cars or into cars on the intersection.

![Figure 3 Causes of road traffic accidents involving children in the district of Nõmme in 2007–2008 (Source: Estonian Road Administration 2009)](image)

According to the Register of Road Traffic Accidents, the most frequent accident locations were at such points where a pedestrian decided to cross the street outside a designated pedestrian crossing or intersection, or on a designated pedestrian crossing if the pedestrian ignored the red stop light.

The analysis of road traffic accidents shows that the accidents involving children in Nõmme were more numerous at the beginning of the academic year (September/October) and at the end of the academic year (May-June). In six calendar months, no road traffic accidents happened with children in Nõmme (see Figure 4)
B.2.4. Needs and assessment of specific groups

2.3. Material and methods

There are seven general education schools in the district of Nõmme, four of those are basic schools (Nõmme Private School, Kivimäe Basic School of Tallinn, Nõmme Basic School of Tallinn, Rahumäe Basic School of Tallinn) and three are upper secondary schools (Tallinn Music School, Nõmme Upper Secondary School of Tallinn, Pääsküla Upper Secondary School of Tallinn) (see Figure 5).

In the academic year 2007/2008, 2,902 pupils studied at the general education schools in Nõmme (Nõmme 2009).
For the present study, we have used information obtained from the Estonian Road Administration regarding the road traffic accidents involving children that have occurred in Tallinn and the district of Nõmme, and the 2008 results of the project “My Route to School”, administered by the Road Administration.

Commissioned by the Estonian Road Administration, the project “My Route to School” was carried out in Tallinn in 2008. Four schools in Nõmme also participated in the project (see Table 2).

Table 6  Schools in Nõmme participating in the project “My Route to School” in 2008

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>NUMBER OF PARTICIPATING PUPILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pääsküla Upper Secondary School of Tallinn</td>
<td>24</td>
</tr>
<tr>
<td>Nõmme Upper Secondary School of Tallinn</td>
<td>21</td>
</tr>
<tr>
<td>Nõmme Basic School of Tallinn</td>
<td>23</td>
</tr>
<tr>
<td>Kivimäe Basic School of Tallinn</td>
<td>17</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>85</strong></td>
</tr>
</tbody>
</table>

The survey was prepared in the form of a school assignment for the fourth grade. 130 questionnaires and maps of school surroundings were distributed in the schools of Nõmme as part of the project “My Route to School”. 85 completed questionnaires were returned: 45 children from secondary schools participated and 40 primary school.

The pupils were given a questionnaire and a 1:750 scale map of the school and the surrounding streets (see Figure 6) and they were asked to describe in short their route to school and to mark such intersections, pedestrian crossings and streets which they regarded as dangerous. The children also pasted symbols (home, school, intersection, traffic lights, zebra crossing, warning sign etc.) describing their route home on the map (see Figure 6)

![Figure 6 The questionnaire and a map used in the “My Route to School” project](image-url)
2.4. Results

Most of the 4th grade pupils who participated in the “My Route to School 2008 project” attend schools within their home neighbourhood and live in relative proximity to their school. 39 pupils (46%) go to school either on foot or by bicycle. 29 pupils (34%) use public transport. The number of pupils taken to school by car is 17 (20%) (see Figure 7).

![Figure 7 Choice of transport for travelling between home and school among pupils of the schools in the Nõmme district (Source: project “My Route to School”).](image)

The pupils in the Nõmme district regarded unregulated zebra crossings as the main source of danger on their way to school but they also mentioned the lack of cycle paths and lanes and the inconsideration of car drivers.

There were also several children who found that their routes to school were completely risk-free since their routes were very short and free from significant traffic; the lack of any risk was attributed to the fact that they are brought to school by car.

Intersections without traffic lights and long pedestrian crossings over several lanes were regarded as the main hazards.

![Figure 8 Traffic risks faced by the pupils on their routes to school in the Nõmme district (Source: project “My Route to School”).](image)

If we look at the different school there are some differences The pupils of the Nõmme Basic School saw traffic risk in the numerous narrow streets without pavements, which are common in Nõmme, and also regarded their school yard as a dangerous place, since too many cars park there in the mornings, creating dangerous situations for children. The pupils of the Pääsküla Upper Secondary School were found to have the safest routes between
home and school, and the most dangerous routes were travelled by the pupils of the Nõmme Basic School and Nõmme Upper Secondary School.

The children expressed the opinion that their routes to school could be safer if car drivers were more polite and careful and more considerate towards pedestrians. Speeding vehicles and reckless drivers, who even ignore red stop lights, were regarded as a hazard.

According to the responses given in the questionnaires, in the district of Nõmme, intersections were regarded as the most dangerous places for children travelling between home and school (see Table 7).

### Table 7 Dangerous traffic locations for children in the district of Nõmme

<table>
<thead>
<tr>
<th>Traffic risks for children on school routes</th>
<th>CHILDREN’S ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection of Pärnu Rd. and Õitse St.</td>
<td>Heavy traffic, approaching vehicles are not easily visible</td>
</tr>
<tr>
<td>Intersection of Lääniku St. and Õitse St.</td>
<td>Heavy traffic, narrow streets</td>
</tr>
<tr>
<td>Intersection of Pärnu Rd. and Laane St.</td>
<td>Pedestrian crossing without traffic lights, vehicle drivers often fail to give way</td>
</tr>
<tr>
<td>Intersection of Vabaduse Bvd. and Jannseni St.</td>
<td>Heavy traffic, vehicles making a turn into Jannseni Street pose a significant danger. Fail to give way to pedestrians.</td>
</tr>
<tr>
<td>Intersection of Hiiu St. and Raudtee St.</td>
<td>Heavy traffic, high fences, which are very close to the road, blocking the view on to the road. Children cannot see approaching vehicles. Intersection without traffic lights, poorly visible pedestrian crossing.</td>
</tr>
<tr>
<td>Intersection of Nurme St. and Raudtee St.</td>
<td>Heavy traffic, narrow streets, no pavements.</td>
</tr>
<tr>
<td>Pedestrian crossing over Pärnu Road in front of the Hiiu Pub</td>
<td>The cars parking in front of the pub block the view, pedestrians cannot see approaching vehicles. In order to cross the road, one must first step onto the road to make sure it is safe. Three lanes must be crossed. If the vehicle in the first lane stops, the car in the second lane may fail to do so. Drivers are reckless and inconsiderate towards pedestrians.</td>
</tr>
<tr>
<td>Railway crossing of Pääsküla</td>
<td>The railway area is very wide. Four pairs of rails must be crossed.</td>
</tr>
</tbody>
</table>

(Source: project “My Route to School 2008”)

### 2.5 Conclusion

The aim of the present study was to provide an overview of the negative impacts of increased car use, to establish the main hazards faced by school children on their way to school on the basis of the information obtained from the project “My Route to School 2008”, and to analyse the road traffic accidents in Nõmme that have involved children.

The results of the project “My Route to School” showed that the participating children regard the unregulated zebra crossing at the intersection of Hiiu and Raudtee Streets (see Figure 9), as one of the most dangerous places in the Nõmme district. The intersection is situated in a heavy traffic area, is unregulated, and the pedestrian crossing is poorly visible. The
children argued that the high fences near the intersection block their view of the road; they also mentioned the lack of bike paths and lanes. The location of a bus stop at the pedestrian crossing is also dangerous.

In 2007–2008, 22 road traffic accidents occurred in Nõmme with children below 18 involved. One child was killed in these accidents.

The road traffic accidents were caused by errors by the children themselves, deficient traffic solutions for roads, their intersections, and pedestrian crossings, as well as by the inconsiderate behaviour of drivers with regard to pedestrians.

Children in Nõmme have various transport options for travelling between home and school. They may travel on foot, by bike, use public transport or may be taken to school by car. The choice of transport depends on a number of circumstances, but primarily on the distance between home and school. The majority of children in Nõmme travel either on foot or by bike.

However, many parents have decided that it is safest to use their car to take their children to school, in order to shield them from the dangers of exposure to traffic. However, increased motor traffic in the immediate vicinity of schools poses an increased danger to those children who travel to school on foot or by bike. Children must exercise great caution while moving between cars on their way to school.

The results of the project “My Route to School” showed that the children of Nõmme regard unregulated pedestrian crossings and the inconsideration of drivers as the greatest hazards they have to face while travelling between home and school.

The zebra crossing at the intersection of Hiiu St. and Raudtee St., which is unregulated, is poorly visible and is located in a heavy traffic area, is pointed out as the most problematic and dangerous traffic location for children.
3. Senior Pedestrians’ Needs in Brno-introduction

This particular study explores the actual state and conditions of the walking environment in the city of Brno, the Czech Republic’s second largest city with about 400 000 inhabitants and situated in the centre of the south Moravia region. It is known that the age structure of the European society changes resulting in a growth of the percentage of seniors. This general increase of the average age and more specific the fact that there are more very old seniors has to be respected. In the 27 EU countries, the percentage elderly has increased from 15,1% in 1997 till 17% in 2008. This trend is also visible in Brno where at the moment 15,5% of the population is 65 or older and children between 0 and 14 just represent 13,8% of Brno’s inhabitants (source CSU, 2008). So, the ageing tendencies are apparent and this is an important reason to focus on elderly. The study includes the evaluation of needs, (dis)advantages, and possible obstacles that co-create the walking environment for senior citizens in Brno. In the introduction of this chapter more general information can be found about the elderly and their special needs. In this section we present the results of the qualitative survey among senior citizens in Brno, Czech Republic.

3.1. Aim and design of the study

The main focus of the study was to find out how senior citizens in Brno experience walking. The study focused on how seniors themselves perceive the situation during their everyday activities when walking through the city centre or in a district with different reasons e.g. just for the sake of walking or to fulfil needs like shopping, visiting doctor or relatives. In order to get answers to those questions, we conducted qualitative interviews among senior citizens in the Brno. We have chosen for in-depth interviews with the aid of a semi-structured questionnaire because it is a not rigid way of interviewing and it allows the interviewer to react on specific characteristics of the respondents (Babbie, 2000). Special consideration has been paid to individual cases, especially with respects to the respondent’s age, health condition and psychological state as we wanted to avoid delicate or ethical weak situations.

During the summer of 2008 interviews have been carried out after a small pilot study to test the questionnaire. In total 27 respondents in 10 of the 29 districts in Brno have been
interviewed for about 20 to 30 minutes. The persons have been selected randomly on the street. This means that all persons in our sample come outside and the answers have to be seen within this light. It was not always easy to find respondents that were willing to participate. The sample of 9 men and 18 women represents the demographical fact that the life expectancy among Czech men and women varies significantly: 72.4 for men and 78.4 for women (Czech statistical office, 2005). We distinguished three different age groups:

- “young seniors” 60-70 years: 4 men and 2 women;
- “intermediate seniors” 70-80 years: 6 men and 2 women;
- “advanced and older seniors” 80 and more: 3 men and 10 women.

This division is based on daily routine and general health condition. “Young seniors” for example are often still employed which substantially affects their daily routine, activities and also financial provision and possibilities connected to it. Also their health condition is in most cases better than that of the older groups.

The education level (primary school, high school diploma, university education) is distributed equally in the sample. Distribution of the level of finished education respects the proportion in the explored society (and also Gausses curve rate). Most respondents have a high school diploma or finished a professional education (around 70%). About 10% has a university degree and the rest of the interviewees only finished primary school. Nine respondents have a driving license and only two men had never had a driving licence or car, whilst only two women had driving license. From the 27 respondents, only three young seniors are active drivers (men in age 60-70), and one man (70-80) drives a car occasionally, e.g. for bigger shopping or to visit friends out of Brno. The rest of the men with driving licence do not own and drive a car anymore. The two women with driving license are intermediate seniors, one has high school diploma and second is educated at the university, but they stopped to drive after retiring.

The interviews were structured around a set of external and internal dimensions. The external dimensions consist of the three pillars of sustainable development (social, economical and environmental) and urban space. The social dimension explores into what extent walking is considered not only as a means of transport, but also as an opportunity of being involved in social life. The economic dimension considers walking as the cheapest means of transport from point of view of the individual, but as a way to increase the economical profit from point of view of retailers (in areas where car traffic was replaced by walking). The environmental (ecological) dimension considers the role of the city climate, friendly atmosphere, and presence of the outdoor activities and shared public space. The dimension urban space deals with city facilitation and maintenance questions underlining the need of an equipped public space (e.g. furniture, greenery) which is attractive and safe to walk (mentioned for example by Gehl, 2000). The subjective dimensions considered are the physical condition or personal health and psychological aspects of walking. The physical condition is especially for elderly very important as getting older often means getting weaker and a decrease of the ability to react sufficiently. The ability to walk longer distances is not always evident anymore. The psychological dimension concerns feelings and experiences connected to walking. Besides positive benefits there are also negative aspects like psychological barriers of walking caused by the fear for being a victim.

### 3.2. Findings

As a frame for the interviews we’ve used two sets of dimensions: an external and internal point of view. If we look at the results of the interviews we see that the perception about walking is based on a mix of external and internal motives. The internal dimensions (health and attitude) can be seen as an important precondition for the possibilities someone has. But the final perception about the possibilities to walk is also defined by the external dimensions.
as they can reinforce or weaken the ‘internal’ possibilities someone has. In the following paragraph we present the results grouped in themes.

3.3. Walking to stay active and fit
The majority of respondents appreciated the option to be outside, and to walk around as a social activity. Not only does the percentage of elderly grow, but seniors’ characteristics have been markedly changing too. Seniors remain active and they want to stay involved in social events even at the age of retirement, which increases their demands on mobility.

Thanks to being able to walk seniors are depending less on the mercy of others as it allows them to take care themselves of most of the things needed. Answers such as "on walks I obtain what I need" were not unusual. Admittedly, most of the respondents confessed that some of their family members or friends have a vehicle and are willing to take them shopping or wherever needed. But despite this fact a significant part of the respondents (approx. 60%) mentioned that they prefer to obtain the things they need themselves as long as their health state is good enough to make this choice.

The physical condition plays an important role in the perception about the possibilities to walk. The general health condition and the availability of specific facilities like places to rest and toilets were important reasons for the amount of trips on foot and the length. Most respondents state explicitly walking as “be-fit” activity. Two women use to walk every day longer distances above 5 km to keep themselves in good health condition. One respondent experienced walking as a “keep-move” activity. Another interviewee walks intentionally every day with the aim “to keep the body able to move". This respondent based her approach on previous serious problems to move after a period when she could not walk because of an accident. The health situation of the group of elderly participating in this research varied from the ones who walk without problems and relatively without limits to the ones who are able to walk only a relatively short distance such as a few tens of meters and who stop often to sit on a bench for a while, if there is any available at least.

3.3. More walking in attractive walking environments
The conditions for walking vary from district to district and especially the areas outside the city centre got a positive assessment. In these areas the pedestrians do not have to share their footpath with cyclists or in-line skaters and the outdoor space is considered as comfortable, nice and calm, and as appropriate for activities like walking, sitting and meeting others etc. Almost all explored districts are self-sufficient and they have their own services like shops, base medical care and pharmacies. This is generally supported by the respondents, apart from the Komárov district where the interviewees miss a pharmacy and the public transport stops (tram, bus) are too far for them. Two of the four interviewed persons in this district are not able to use public transport and do not travel into the centre any more without assistance, even though all citizens above 70 years old are allowed to use public transport in Brno for free.

The amount of public space in the centre was perceived as not sufficient or not in an appropriate state. Respondents mentioned for example that a great number of people in the city centre discourage them to go there. In general there are not enough places to rest in centre and the main pedestrian zone is completely without benches except for a few of them on the main square. Another issue that has been commented is the lack of shadow at the main square “Náměstí Svobody” and the unsatisfactory placement of the few benches that are available. Some interviewees mentioned the very expensive renovations in Brno which do not meet the needs of Brno’s inhabitants.
3.4. Need for benches and toilets

In general we can say that seniors are satisfied with the basic conditions for walking, with exception of the amount of benches and toilets provided. Comments about the need for enough places to rest came up several times. Within the parks and other places primarily designated for staying outside, there are sufficient benches and nice greenery which makes a stay attractive. Within their own neighborhood, most respondents know where they can rest, but this is more difficult if they go somewhere else. Several interviewed seniors mentioned that there should also be benches outside the green areas and in other parts of the city so they can be used on their way to a doctor or if they go shopping. An example of the lack of benches is the locality which respondents called “above the hill” which ascends from a square to a block of flats in the city quarter Vinohrady - without any possibility to sit for a while and take a rest on the top of “hill”. It is striking that this opinion about the need for more benches is not immediately shared by the ‘fitter’ seniors. These, often younger seniors, didn’t perceive a small incline as a problem for making a trip on foot and benches weren’t seen as a need to fulfil such an effort.

All respondents more or less have experiences with the lack of public toilets in the city centre of Brno and in areas they do not visit often, further away from home. If they walk within their own district they normally know where they can use the toilets and they also can go home if it
is necessary. Especially for seniors it can be a serious obstacle to “go to town” if they do not clearly know where they can use (public) toilets. The impact of lack of toilets is a reduction of their stay outside the city quarter where they live. This can be illustrated with statements like “what would I do there, if I have all I need here in their city quarter”.

3.5. Walking versus driving a car
Generally spoken, senior citizens did not perceive walking as a second-class means of transport, but rather as an equal means of transport for small distances to go from one place to another or in combination with public transport for longer distances. Nevertheless the tendencies and projection for the future of ageing on the car-dependent generation is slightly apparent in our sample as well. We found a statement of man of in the group “young seniors” who explicitly said that it is necessary for him to own car, and contrary he would feel less competent in front of his neighbours not owing the car. Two other men in this age group perceive driving as something natural and common.

Activities related to a job, actively playing a sport and driving or owning a vehicle play a role in the opinion about using a car. Those respondents who are working or actively sporting more often own and drive a car than other respondents. Though, owning and maintaining a private car is very expensive and this can be, besides health or functional problems, one of the major reasons why most seniors do not drive or own a car.

Some of the questioned persons have, apart from personal experiences with drivers’ behaviour from the pedestrians’ point of view, fairly decided opinions on motorized society as such and they are very well aware of some of the negative aspects. Respondents said that rows of parked cars make their staying outside unpleasant. They are also aware of the negative health consequence of using the car too often as it may lead to lack of physical movement. Sometimes they ask themselves why young and fit people drive to the city centre although they could take the well-working public transport. According to them this may be caused by a kind of indolence of drivers rather than economy in time (“they spend more time in traffic jams and finding a spot to park their car than they would need to walk to the public transport stop”). Similarly, many respondents underline the fact that that there is very often just one person in a car and they ask themselves whether it really is necessary to use a car in such cases – although they naturally understand that in some concrete cases it is inevitable.

3.6 Interaction with other road users: cause of stress
Considering their physical capabilities all respondents admitted that only want to cross a street on a signalized crossing when the lights are green or at a zebra crossing after the approaching driver already had started to brake for them. In three cases the respondents had had an experience with a driver who did not respect the green light for pedestrians. The “green interval” is perceived as very short and without any kind of notification about the change to the red again. It happens that immediately after the pedestrian light turns into red, some drivers start to slowly move their cars towards the pedestrians giving them an uncertain feeling. The way how pedestrian-crossing lights function and how other road users respect them is perceived as a significant stressor among respondents in Brno.

Some of the respondents have negative experiences with ruthless drivers. They experienced aggressions and reckless driving behaviour by a part of the car users, for example at junctions without lights where some of chauffeurs do not stop at all. On the other hand Brno’s senior citizens are very well aware of a positive behaviour change of some drivers resulting in more consideration towards pedestrians. Respondents from the city quarter Černá Pole for example mentioned that local drivers show more respect for pedestrians.
If we look at the coexistence of cyclist and senior pedestrians we have to remind that there are not many cycle paths in the Czech Republic as well as in Brno. As we were interested in the opinion of seniors about this issue, the survey took place at several places near the Svratecká cycling path, a 23 km long cycle track crossing the city which is very popular amongst long distance cyclists as well as citizens of Brno. Although not designed for that purpose, the cycle track is also used by pedestrians. The interviewed seniors often said that they feel threatened by cyclists and roller-skaters and from their point of view this cycle path is significantly undersized. In case when a cyclist meets a pram, roller-skater or pedestrian, one may expect a conflict. Cyclists ride at 12 to 40 kilometres per hour (on flat terrain along the river) and are much faster than elderly. Moreover, if we take the response time and the speed of elder pedestrians into consideration conflicts or even collisions may happen when seniors look around well. Although the respondents found that some of cyclists drive pretty aggressively, seemingly without considering other users like seniors, they also believed that that the situation is getting better and better as they experienced a more tolerance attitude towards them.

![Figure 13 It is not allowed to cycle in the pedestrian zone during daytime](image)

### 3.7. Conclusions

Mobility is a basic human need and the social phenomenon of the ageing of society and puts a higher demand on the transport system. Not only does society age, but the seniors themselves change as well. Current elderly have a higher level of education, an active way of living, a healthier life style (physical exertion versus diet), are aware of a broad context and the possibilities of self-development of activities (exercising, universities of the third age). Modern medicine and the overall qualitative changes of the modern society life style contribute to seniors' higher activeness and better health condition. So these days, many seniors remain active and do not abandon their habits of active life even at retirement age.
B.2. Perceived Needs Mechanisms

Self-esteem is important, and not only for seniors. Walking seems to have a positive impact on the self-awareness of seniors in Brno and can be a boost for the intrinsic value among ageing population. Thanks to being able to walk seniors are depending less on the mercy of others as it allows them to take care themselves of most of the things needed. Moreover, it is a possibility to meet people, to clear their heads, as a pleasure itself and as a pleasure for themselves.

Senior citizens consider walking as the number one means of transportation, alone or in combination with public transportation. But walking is not only a means of transport from one place to another to fulfil basic needs, it is also an important, simple and beneficial physical activity. The health point of view is especially significant when it comes to seniors. With respect to the increasing limitations of movements many respondents realize the importance of walking as an available and health-beneficial activity for advanced in age, not only for getting basic needs of everyday life, but mainly as an available “fitness” activity. The movement and health points of view of walking were by some respondents indicated as more important than for example the social benefits of meeting with friends and acquaintances. The relationship to walking is positive in all cases, even with regard to differences in the health condition of individual respondents, ranging from walking without problems and without limits till very short distances with a rest after every tens of meters.

Although the majority of the respondents perceive the car as not necessary in their life, the statements of the younger seniors reveal a tendency towards a more car-dependent aging generation. The fear of social status forfeit, perceived inferiority connected with the end of driving career, but also the questions of older drivers with inappropriate reactions in traffic (slower, etc.) need to be considered within the framework of the ageing society. This should be done with regard to progress in health service, technical discoveries, overall change of the life philosophy of modern society and related life styles. As the interviews showed, people want to be active - even at age of retirement. Being able to walk at an older age includes more concrete steps and demands on an appropriate functionality of the transport system which significantly contributes to seniors' quality of life.

4. Walking through the city with an visual impairments

4.1. Introduction

Disabled persons are often dependent on help. Sometimes they have problems even just to leave their own flat. Therefore it is necessary to design a pedestrian environment which allows disabled people to move autonomously and without the help of others. In this chapter we describe a study that has been carried out at Hasselt University focusing on the impact of visual impairments on walking behaviour (Van den Wyngaert, 2010).

4.2 Aim and design of the study

The way how we design our walking environment has an important impact on the possibilities to move and to participate in activities. Worldwide about 314 million people are visual impaired and about 85% of them suffer from low vision. About 82% of all people who are visually impaired are age 50 and older which means that the amount of visual impaired persons will increase with the aging of society (WHO, 2009). A lot of visual impairments can be prevented or treated and the amount of visual impairments in the developed countries is therefore much smaller. In Belgium for example, about 1 of every 1000 persons is blind and about 10 of every 1000 persons has bad vision which means that about 11 out of 1000 persons are visually handicapped (Blindenzorg Licht en Liefde). In the study we focused on
people with bad eyesight as it is a handicap with a high incidence often appearing at a later age. This means that a significant group of the – aging – population has to deal with the consequences of bad eyesight having immediate consequence on travel options.

The travel options of bad sighted people are reduced to travel as car passenger and by public transport and to walk. Car driving is in most cases no option anymore. Therefore, the ability to walk is an essential factor for being able to move independently, not only as a pedestrian, but also as a public transport user. Thus, design of public space and public transport play a crucial role in allowing blind and visual impaired persons to participate in social life. However, when travelling we rely very much on visual information and having a good sight is almost a necessary precondition for all travel modes. As most information related to orientation and travel possibilities is collected though visual channels (Sanchez, 2010) moving around in everyday life is not easy for this group of people. Reading forms an important barrier for sight impaired persons and braille is in most cases not considered as an alternative; just 10% of the blind read it and an even smaller group of the visually impaired (Kraushar et al., 2010). Special devices for the blind like long canes or guide dogs are often not used by visual impaired, especially not by those who got the problems at higher age. So if we want to design a public space that is attractive as possible for sight impaired persons, we need a better understanding of their needs.

In the study 5 participants with different degrees of bad eyesight have been observed when making a trip on foot while carrying a GPS and they have been questioned afterwards. The participants were asked to walk to a well-known location in the city of Leuven (Belgium), e.g. to the central market and had to choose the route themselves. The observer just followed the participant and didn’t intervene in route choice or operational decisions during the trip. On the way back the ‘fastest’ route was followed. Afterwards the participants have been questioned about the experiences during the trip and about decisions they’ve made. Each route has also been scored on relevant elements for an accessible public space like obstacle free walking routes, type of surface, crossings and special facilities for visual impaired and presence of other traffic. These elements were based on different guidelines for an accessible public space (CROW 2002, 2004; Hessen, 2006; Froyen et al. 2006; Toegankelijkheidsbureau, 2009). The indicators were grouped in the following categories: type of space, type of users, design. The scores were divided in degree of accessibility: independent, with company or not accessible.

4.3. Findings

Although we only can draw tentative conclusions because of the very small sample, the research reveals some interesting aspects that can be subject for further research. First we give an overview of the accessibility of the different routes that have been assessed based on the scoring of different relevant elements. This will be followed by a discussion about the way how the participant perceived the routes the walked and the problems they faced.

Accessibility of the routes

The following figure 14 gives an aggregated overview of the occurrence of certain circumstances along the routes that have been investigated and how often they got a positive or negative score.

About 70% of the investigated streets in the city centre have a side walk and more than half of them have a width according to the guidelines. But if the side walks are too narrow they can be really very narrow, and often in favour of more space for parked cars. Although the amount of possible ‘obstacles’ like parked bicycles or outdoor cafés on the walking route is not too high, they are in half of the cases considered as a problem. The positive scores deal with the correct implementation of the potential obstacles which makes it possible for sight impaired to react in time. Changing circumstances like road works, removable bill boards and
parking on pedestrian areas form a serious problem. Just in a few cases signalization was sufficient. For sight impaired temporary changes in the environment are difficult to anticipate on as it is an unexpected event that is not part of the mental map. In about half of the streets that have been scored, tactile information in the form of guidelines or natural elements like walls and hedges was available at a sufficient level. This also means that the other half of the streets does not have proper guidance. This can partly be explained by the fact we walked in the city centre with a lot of entrances of shops and open spaces. But lack of proper tactile information is definitely a point of attention as it means in most cases a total loss of orientation. There were a lot of height difference and the scores are more or less equally positive and negative. In general the positive scores deal with height differences along the walking route as they provide extra information about the direction whereas the negative scores deal with height difference on the route that are often bad marked. The crossing facilities are in half of the cases according to the guidelines, but especially signalized intersections should be improved as necessary elements like markings or auditive information is often missing.

![Figure 14 Scores regarding pedestrian facilities](image)

**Route choice**

Figure 16 shows that in 4 of the 5 cases the participants made route choices that were different from expected and this resulted in most cases in a longer trip. In two cases the route chosen by the test persons was even 40% longer. The assessment of the individual sections of the route shows that about half of the stretches are independent accessible meanwhile the other half of the stretches has that many uncomfortable elements that guidance by someone else is preferred.

A very important element for route choice is to avoid unknown situations or places with little guidance. Instead of crossing an open place it is perceived safer to follow the row of houses until a known street and continue from there. Lack of visual and tactile guidance also leads to walking around an open space instead of crossing it. Another thing most participants seem to avoid are place were traffic can be expected everywhere. The participants don’t like it when a clear pedestrian area is lacking or when the stretch to be crossed is too long. Cyclists are very silent and therefore feared because they are suddenly there, often unexpected and unannounced.
B.2.4. Needs and assessment of specific groups

Figure 15  Examples of details in public space making an independent trip on foot more difficult (Pictures: Hans Van den Wyngaert and http://blindverstand.spaces.live.com/).

| Routes chosen by the test persons (dark colour) and shortest route (light colour) | Assessment of the accessibility of the route (red: bad, orange: with help, green: independent accessible and yellow: neutral) |

Figure 16  Walked routes and assessment of the preferred routes
In order to avoid unknown places, most participants have a kind of network of landmarks throughout the city they use to orientate themselves. This mental map plays an important role in route choice and experiences from previous walks populate and update the mental map. It is worth walking a bit more as long as you can go from point to point following routes that are perceived safe. In general the participants are depending very much on there memory for both the route choice and for gathering information during the trip. Reading signs or information displays is for most of them very difficult and therefore of no or little help during a trip.

Although the participants of our test group still have the ability to distinguish shades, colours, forms or even parts of the surrounding environment, a white stick is considered as a useful tool to show the public they don’t see very well; in general people respond on it in a positive way by clearing the route. Special facilities for blind persons like tactile lines or strong colour contrast are considered very useful, and are often used as boundary of the walking route. Bicycles, signposts, and other clutter on the walking route are considered as a problem. Although potholes and puddles often can be detected in time when using a white stick they form a problem when walking with guidance of someone or alone without a stick.

In general we can see that there is a very strong connection between the experiences while walking (operational level), route choice (tactical level) and the decision prior to conducting a trip. Bad experiences during the trip like very narrow sidewalks, too much obstacles, a lot of potholes, difficult crossings, too much other traffic or big open spaces lead to other decisions on strategic level and even might lead to another mode of transportation if it is considered too difficult to walk independent or to look for help during the trip. For visual impaired it is of crucial importance that there are obstacle free walking routes marked with colour contrasts or tactile guidance with a surface in good condition. As soon as one these elements is missing, it is likely that it will lead – on the shorter or longer term – to another route choice, another transport mode and eventually to the decision not to travel at all.

4.4 Conclusions

Being able to reach necessary spots of infrastructure (shops, doctors, public means of transport etc.) on foot is an important factor in being able to travel independently. Walking may seem an easy thing to do, but from both studies we can learn that it requires a lot of the person concerned. As soon as someone faces physical or mental problems, walking is not that evident anymore as you have to perform an exercise and you have to deal with a lot of insecurity on the trip itself. We see that the participants prefer to choose modes of transport and routes they have experience with so they know what to expect and they can prepare themselves.

If we want more people with physical or mental problems to be able to walk, we have to enable an environment that is ‘forthcoming’ for them. This means that we need good and consistent designed walking routes with enough places to rest, to use a bathroom or to get assistance. Special navigation aids (Sanchez, 2010) or practice in a virtual environment (Lahav, 2007) could have a added value as an alternative for visual information needed to move around and it could improve the possibilities of visual impaired to use public spaces independently. It also means that we have to communicate about the quality of the walking routes and the facilities around, just to enable the choice to walk and to decide on which route to take.
5. Conclusion

The three presented case studies show that the specific groups (children, senior citizens and impaired) on the one hand have some problems in common but on the other hand perceive walking quite differently and therefore develop different strategies for safe and comfortable walking.

Inappropriate infrastructure is a problem for all road users, and not only for specific groups. The lack of pavements, narrow sidewalks, potholes and other obstacles etc. are only some examples which make walking difficult, unpleasant and dangerous. Furthermore senior citizens and impaired people especially express that the missing of toilets and places to rest (benches etc.) in public space has a negative influence on their decision to walk or the time spend outside and on their mode choice in general. The rather take the car than walk in unpleasant environment.

Also badly designed crossings are criticized. Unregulated zebra crossings are one of the biggest hazards for children (especially in combination with reckless car drivers). Furthermore zebra crossings make pedestrians feel subjectively safe which sometimes leads to dangerous situations. Crossings without appropriate facilities for impaired people are avoided. In order to walk on a safe, comfortable and barrier free way impaired people often have to take a detour in order to fulfil these basic needs.

Furthermore it is mentioned that whether people walk or not very much depends on the distance.. The longer the walking distance to public transport stops, shopping facilities, doctors, school etc. is the more walking is experienced as unsafe, complicated and uncomfortable. As a result of these perceptions other modes of transports are chosen.

Children and senior citizens complain about reckless car drivers and express their wish that car drivers should be more polite, careful and more considerate towards pedestrians. Whereas senior citizens adapt their behaviour and wait at crossings until a car stops for them, children’s parents develop their own strategies against reckless car drivers. They decide to bring their children by car to school and therefore cause more car traffic, especially around schools, which raises the risk of accidents.

6. Recommendation regarding specific groups

- If the needs of special groups are considered all other road users will profit
- Any measures aiming at increasing the traffic safety of children while walking and cycling will only be effective if parents’ experience and perception of traffic safety is improved.
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**Walking in the Urban Region – How to Save the Pedestrian City?**

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‘To plan a city is both to think the very plurality of the real and to make that way of thinking the plural effective; it is to know how to articulate it and be able to do it.’  
*Michel de Certeau*¹

**Summary**

The contemporary city has left its historical predecessor, the pedestrian city, behind, and evolved into a large, polycentric and sprawling urban region. While there are good reasons for reintroducing the pedestrian city and walking as a sustainable mode of transportation, these ambitions are not easily met in the social, cultural and political reality of the modern city. The basic alternatives from central city revitalization and market-led suburbanization to ‘smart growth’ are discussed, and the potential implications for enhancing walking are addressed. The central city is seen as the clear winner, while the suburban locations often face insurmountable problems – not only functional but also political and economic ones. Every policy promoting non-motorized transportation should, however, be seriously considered, since it contributes both to the sustainability of the city and its urban quality. One should remember, however, that the contemporary city is a social and cultural plurality, not only divided between the biological features of the human being, such as age and abilities.

**1. Introduction**

Walking is the historically dominant mode of mobility in cities: the dimensions and density of classical and medieval cities, as well as their relationship to their surroundings, was determined by their walkability. The growth of cities, as well as the introduction of motorized forms of transportation and changing work patterns during the last two hundred years changed all this, and we have seen the decline of walking into a peripheral – though indispensable - position in urban and regional mobility. The investment and attention to pedestrian and other non-motorized forms of transportation, as compared to those of motorized transportation, are marginal, and the political support for pedestrians has usually remained lip-service, partly based on the marginality of the groups dependent on walking, such as children, the youth, the elderly, or urban and suburban poor, particularly the homeless. But even when these groups have had their voices heard, the mere size and dimensions of the modern city region seems to make it impossible to rely heavily on this ancient form of transportation. It is symptomatic of the marginal position of walking that measures of accessibility have mainly concentrated on motorized traffic (Lacono, 2010).

The problems related to this development are, however, well-known: global warming and hazardous emissions resulting from growing car traffic (Wadhwa, 2005), obesity and worsening physical condition of the population (Tiwari, 2003; Sallis, 2009), car-dependency and its environmental and social impacts on the everyday life of the suburban dwellers.

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¹ From ‘Walking in the City’
(Newman & Kenworthy, 1999), and fragmentation of the green structure around cities. Planners and politicians have therefore widely adopted the general doctrine that the pedestrian city has to be reintroduced somehow: be it through the urban renaissance of the historical city centres (Lin & Cheng, 2008; Cevik, 2008), through neighbourhood planning (Rohe, 2009), through the construction of a network of garden cities or pedestrian pockets (Atash, 1994) where jobs and services would be within reach of the pedestrian, coupled with a well-functioning public transport system well connected to pedestrian paths (Southworth, 2005). A variety of measures have been introduced, promoting both public transport and pedestrian streets and pedestrian zones. Comparative research has indicated that the land-use structure and transportation system of the urban region does indeed make a difference. For instance, Konheim and Ketcham, in comparing the transport systems of the world’s financial capitals (New York, London, Paris, and Tokyo), found out that there are striking differences in their patterns of development and their transport consequences. The principal determinant was the clustering of housing and employment around transit lines (so-called smart growth). The more that daily trips can be met by walking, the more likely it is that longer trips will be made by transit than by automobile (Konheim & Ketcham, 2000). But can the pedestrian city really be saved, or will it remain one of the many utopias that the discourse of urban planning and policies are so full of?

This paper is written in connection with the COST Action 358 Pedestrian Quality Needs. The purpose of this networking project is to analyse the preconditions of walking, particularly in the suburban context, by collecting evidence of the qualities that pedestrians need in order to make the decision in favour of walking – usually coupled with a trip by public transit. The idea is to study the strategic, tactical and operational dimensions of walking from a systems theoretical perspective. The basic doctrine behind the project is "Design for All", according to which taking care of the most vulnerable road users will result in an environment that will suit us all. These objectives are far from self-evident, however, if they are assessed in a more comprehensive perspective, including social, cultural and political aspects of walking and other non-motorized forms of transportation. Walking and sojourning in public space is also inherently connected to various activities usually neglected by planners and policy makers, such as sleeping in public space, street vending and begging, and youth gathering (Khayesi et. al., 2010). “Design for All” thus often means design for the worthy, or design meant to exclude undesired activities and parts of the urban population (Figure 1).

In this paper I will briefly discuss this social, political and cultural context of the planning discourse on walking in the suburban context. This discussion will also challenge functionalism that has become all the more obsolete in our contemporary multicultural and polarized city. In its critique of functionalism, my perspective can be generally classified as cultural, in the wide sense of the term. Thus I will discuss the changes that have happened and are happening in the urban region as cultural changes, related to the meanings of urban dwelling and mobility.

The Pedestrian Quality Needs project also conceptualizes walking in systems-theoretic terms, as part of the urban system. This is natural in the contemporary situation of open urban regions, where citizens can rather freely decide where they want to live. These decisions, however, have serious consequences for their future possibilities of mobility, thus forming the basic strategic decision related to walking and other modes of transport. If one has already moved to a car-dependent area of low density, walking is no longer an option.

My concern in this paper is not so much the tactical or operational levels of modal choice, or what kind of route to take, but rather the choices of location determining the basic pattern of the everyday life of suburban and exurban dwellers, as well as the strategic decisions that planners and politicians are making in the governance of urban development.
Figure 1: Design for all? High quality pedestrian environments have to take into account the most vulnerable road users, for instance by providing even pavements, safe crossings, and resting places. However, design is often used to prevent unwanted behaviour, such as sleeping in public space. The historical centre of San Juan, Puerto Rico. (Photo Kimmo Lapintie)

These decisions, on the other hand, are related to housing preferences, to cultural values related to certain types of dwelling and mobility, as well as to political values related to land-use control. In many European and American cities, people are known to prefer one-family houses in low-density districts instead of urban and dense locations (Sanchez & Dawkins, 2001; Thalen, 2001; Howley et. al., 2009). Although this is supported by research, one should be careful not to jump into too hasty conclusions: there are also clearly urban preferences (Gentile, 2005), and they may become more widespread as the population gets older and the households smaller. In any case one is justified in saying that suburban development and the formation of the urban region is not only a matter of necessity related to urban growth, but it is also related to people’s choices and the relevant lifestyles, as well as to different household types and their demands. On top of that, there is also the political and ideological issue related to what kind of lifestyle should be promoted, and what kinds of needs satisfied.

In this paper, I shall discuss in general terms the issue of suburbanization and its latest phase, the formation of the polarizing urban region. In addition to COST Action 358 that has made international cooperation possible, this paper is mainly based on two research projects carried out at the Department of Architecture, Aalto University: Housing Preferences, Sustainable Urban Structure, and Everyday Life, funded by the Ministry of the Environment, and Power/Knowledge in Urban Development, funded by the Academy of Finland.
2. The Pedestrian City and the Suburb

The suburb as a concept has its national variations, and in many languages there are two concepts instead of one (such as förstad and förort in Swedish, and esikaupunki and lähiö in Finnish), the latter terms referring not only to the longer distance from the central city, but also to a lower social status – unlike the Anglo-American suburb, which is more typically the result of a ‘white flight’ or middle-class housing preferences. Thus the minimum requirement is that we distinguish between the suburbs that are the results of social, ethnic, or aesthetic preferences for detached housing and the countryside, and those that are results of public housing projects, with high density blocks of flats, such as the French banlieues, the Swedish förorter and the Finnish lähiöt. Lacking the corresponding English term, these are sometimes called suburban ghettos. It is also useful to distinguish the urban fringe from the actual suburban locations (Jindrich, 2010). There are also specific policies behind these types of development (such as the Swedish “miljonprogrammet” 1965-1975 (Söderqvist, 2008), and the Finnish “aluerakentaminen” (Kortteinen, 1982; Hankonen, 1992) that have to be taken into account if we want to understand the cultural meanings related to them.

There are two constants that determine the dimensions of the pedestrian and the modern city. The first is the fixed travel time budget (TTB) that has been shown to remain around 1,1 hours a day across the globe, in both developing and developed industrial countries (Zahavi, 1981, Schafer & Victor, 2000). The second is the average speed of walking, which is approximately 5 km/h. From these constants we may calculate that the distances of the city should not exceed 2,7 km for non-migrant citizens to reach their daily working and recreational destinations. Thus the original pedestrian city had to be very small in dimensions, compared to the contemporary urban region that is at least ten times larger.

A third almost-constant that can be used to predict future mobility is travel money budget (TMB), which is, however, lower in developing countries, reaching 10-15 % as societies get motorized (Schafer & Victor, 2000). This means that as GDP grows, more and more money is invested in high-speed modes of transport in order to reach destinations that were not originally accessible for the pedestrian. Schafer and Victor have predicted that this will lead to a global growth of mobility from 23 billion km a year in 2000, to the staggering figure of 105 billion in 2050 (ibid.).

The suburban city is the physical reflection of this development. The word suburb comes from Latin suburbium, meaning under or near the city (urbs). In spite of the classical origin of the concept, suburban development is a very modern phenomenon, based on the rejection of the most important principles of city building in classical and medieval times. That cities should not be allowed to grow above their ‘natural’ limits was an important requirement allowing the direct governance of the city by the free men or the bourgeoisie. Clear distinction but also harmony between the domestic space of the oikos and the political space of the polis also supported the clear distinction between the city and its surroundings (Bundrick, 2008). The city and its rural surroundings represented the order and civilization, as compared to the barbaric forests.

None of these principles are valid in the modern city, which is characterized by unlimited growth, extending urban lifestyles even to the areas that seemingly try to keep distance from the city. Motorized forms of transportation and functional differentiation have sowed the seeds of the functional urban region with its unified housing and employment markets (Wu, 2010).
In principle there are two types of dynamics for the emergence of this modern city type. Increasing car-ownership and public investment in road infrastructure has transformed earlier rural areas into a mosaic of suburban pockets and individual detached houses (Figure 2), from which people commute to the city centre or to other employment centres (Travisi, 2010). Commercial services have followed to locations with good access by car, but otherwise disconnected from the rest of the urban fabric. In some cases, public services have also found their way to these hypermarkets that have started to call themselves “small towns.” These “towns” usually cannot, however, be reached by foot; on the contrary they manage to destroy the economic viability of smaller shops closer to housing areas. The result is a growing car-dependency: the families are required to purchase at least one car per wage earner, and the children and the elderly become dependent on transportation services by their family or society. Low-density suburbs are, thus, also areas of mainly lower or upper middle classes, or upper classes in some favourable locations.

Figure 2: Detached housing in Hyvinkää, 50 km north of Helsinki, Finland. Suburban locations, even if compact enough by themselves, are often totally car-dependent, lacking services and jobs, as well as public transport within walking distance. Commuting to the bigger cities is common: for instance in Hyvinkää 1 of 4 residents commute daily to the Helsinki Metropolitan area. However, the majority of Finns prefer detached housing to blocks of flats. (Photo Kimmo Lapintie)

In contrast to this market-led development, the planners and decision-makers of the city may try to develop a more balanced or “smart” growth of the city region, by developing garden cities or suburbs with good public transport connections and local public and commercial services (Filion, 2009). Economy, but also politics dictate that these suburbs are often very dense, such as the French banlieus or the Swedish million-program förorter or the Finnish lähiöt from the 1960s and 1970s. They are often located rather far from the city centre on a land that could be purchased cheaply by the city or the developer, or simply taken to use by the governments, as in former Soviet cities (Figure 3). There are different ways that the cities and governments together with developers have carried out these huge projects of housing people who were moving to cities in great numbers. For instance, in Finland the developers agreed with the cities that they would take care of the infrastructure (that according to the law was the responsibility of the municipality), if only the cities would plan the areas according to
their wishes (Hankonen, 1992). The result was rather poor quality of the architecture and the environment, although nothing to be compared with the worst cases in France, UK, and the US. In France, the stigmatization of the faubourgs in the 19th Century led to the displacement of the ‘unwanted’ population into the periphery (Merriman, 1999).

Figure 3: The working class suburb of ‘ghetto’ Mustamäe in Tallinn, Estonia. Although providing for decent housing for those in need, social housing estates of the 1970’s in most European countries were characterized by poor architecture and poor quality in pedestrian space and green areas. Their status in the housing markets has remained low, with high concentrations of the unemployed, the working poor, and the ethnic minorities. Photo Kimmo Lapintie.

Although originally meant for the working class, or even to “all”, these developments usually have the lowest status in the urban region, being nowadays occupied by immigrants, the unemployed, and the poorest segment of the urban population. Although some cities like Helsinki have adopted systematic non-segregation policies (such as fixed percentage of all tenures in all new housing areas), many others (such as Stockholm, Malmö and Gothenburg in Sweden) are already heavily segregated, and it is not easy for others to beat the market forces, particularly in the political atmosphere of neo-liberalism that has prevailed in Europe at least until the last recession (Harsman, 2006; Brama, 2008; Söderström, 2010).

While the middle classes have fled and remained in their detached housing suburbs and the immigrants and the poor in their social housing projects, the historical city centre has become the target of the new urban upper classes, created by the growth of the new economy of ICT and business services (Sassen, 2006). Being highly competitive in both the office and housing markets, this new segment of the population has invaded the central and waterfront locations, as well as some of the pre-war working-class areas that have become gentrified. In contrast to the suburban middle class with their cars, washing machines and commuter trains, this urban upper class is more interested in high quality services, thus recreating the service class that used to exist in cities in the 19th and early 20th century (Sassen, 2006).
4. Conclusions: Thinking the Plurality

In conclusion, the suburban development during the last hundred years has resulted in a socially and physically fragmented urban region. Because of increasing mobility, it functions as a unified property-, housing-, and employment market, thus creating pockets of extreme wealth and poverty, as well as areas for the middle classes and suburban life-style. What becomes of the pedestrian city in this context? Does it make sense to discuss the ‘needs’ of the pedestrian, as a human being, as if the only reason why people don’t walk were that their basic needs are not satisfied? Is “Design for All” a viable principle for urban and transportation planning, if these “all” include those preferring urban respective suburban (or even exurban) lifestyles, the very rich and the very poor, including the homeless, the original population of the cities and the immigrants? Considering the basic needs of the human beings, urban design and planning can indeed do a lot, by providing good quality public spaces, urban greenery, safe routes with safe crossings, enough shade and public and private services along the route, etc. These qualities are, however, details in the bigger picture of suburban development.

Within this picture, the historical urban centre is the clear winner. It is rather limited in its dimensions, representing the original pedestrian city. Thus it is economically viable for cities to invest in pedestrian streets and zones and high quality street furniture and services, such as public wells, fountains and toilets. Because the customer base is sufficient, these areas also attract private services that are important for pedestrians, such as cafeterias, kiosks and shops. There will also be more and more political support for these investments, since the centre is also the main target of tourists and business visitors, as well as the preferred housing location of the urban upper classes (Figure 4).

Figure 4: Central waterfront development in Barcelona, Spain. The historical city and the waterfront attract tourists, business visitors and office space, and thus it is the natural site of investment for pedestrian quality. Here the pedestrian path is raised above car lanes, contributing to both safety and comfort. Photo Kimmo Lapintie.
The situation is totally different with the suburban parts of the city. The preferred locations for the majority of the middle classes and also the employed part of the working classes are the low-density suburban districts of detached houses, part of the clientele preferring even exurban locations in the countryside. These are mainly bedroom communities from which people commute daily to the city centre and to the other centres of employment in the regions. Commercial services are concentrated in hypermarkets or “small towns” along the highways. High car-ownership and low density together makes it very difficult for the city authorities to provide for local public services or public transport. Thus there is very little to walk to, and walking is only practiced for recreational and health reasons. Children and the elderly are easily “disabled” in these communities, since they become dependent on the transportation services of their parents, relatives or the municipality (Aldred & Woodcock, 2008). Although these problems are clearly seen, suburban development is supported by a large segment of the population, according to many surveys on housing preferences, and it often has important political support by major political parties. There is also evidence that even transit-oriented and neo-traditional development projects have not succeeded in reducing car travel in suburban locations (Crane, 1996).

Functionally, the ‘smart growth’ of the urban region seems more promising, since high density concentrations near public transit nodes makes it possible to guarantee accessibility for both the middle classes and the poor, and also public and private services can be provided locally in the sub-centres of the city. However, if the density is very high and the overall environmental quality low, these suburban developments can easily become socially segregated from the rest of the urban fabric. High concentrations of poverty, unemployment, immigration, social problems and crime easily create a vicious circle of outward movement, leading to even lower social status and finally physical deterioration of the environment. In this context, providing for pedestrian routes seems to be a side issue, but it can of course form part of a comprehensive policy against segregation e.g. through targeted measures for positive discrimination (such as providing extra funds for suburban schools and extra services for the suburban centres).

5. Recommendations

Since the time allocated for mobility remains the same across cultures, any policies promoting slower forms of transportation are essential in our attempts to reach a more sustainable urban region. These include e.g. the following measures:

- Revitalize the city centres as well as suburban centres with high quality urban design, publicly available services and street furniture (public wells, toilets, benches, etc.). This will promote not only walking but also the use of public transport, since the journey between the start and the end of the journey goes through public space.
- Take care that the modern city can also cater for the less privileged citizens, not only in terms of age or disability, but also in terms of homelessness, different ethnic and cultural background, and poverty. The public space cannot be ‘cleansed’ of its essential plurality and social mix.
- Prepare for the demographic changes in population. As the European citizens are getting older and the households smaller, as well as more varied in their cultural backgrounds, the homogenous suburban lifestyle will hardly be able to provide a suitable context for the majority of urban dwellers in the future, and it will also be seen as unsustainable from the ecological point of view. New and more varied urban settlements with higher densities should thus actively be developed.
References


B.2.2. What measures can people believe in?

What measures, interventions, policies and strategies are perceived to improve the pedestrians' situation? What measures can people believe in?

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‘The most important events are those little things that happen on the street.’
George Brecht

Summary

This section is structured around four main focus points that echo four questions relevant to the topic of perceptions and beliefs.

The first focus point deals with the question: what do people believe in? It reviews what kind of issues people discuss as being important regarding their mobility and daily lives, and draws the conclusion walking is not one of them. It then moves towards making the case that implementation of measures is key to their perception. After discussing why critical mass and good communication campaigns are crucial to walking promotion, it highlights the role played by the media and peers in influencing one’s perception of walking. It then pinpoints the need to identify specific target groups whom to address specific measures. Integrating walking within a comprehensive multimodal mobility scheme encompassing all of the activities in daily urban life is a necessary step to tap the full walking potential.

The second focus point strives to identify how interventions and measures may be perceived to actually improve the pedestrians’ situation. It first defends the idea that a substantial increase in the quantity and/or the quality of public space is paramount to the perception of progress in regard to improving walking conditions, and mentions shared space as a strategy to conquer pedestrian space in situations where space is hard to come by. Other strategies that do not privilege a space-oriented approach include time management, enhancing pedestrian status through accessorising and virtual technologies, and ways to optimise the “texturising” power of walking such as the deployment of pedestrian-tailored access to goods and services.

The third focus point deals with how policies and strategies may be perceived to actually improve the pedestrians’ situation. It delves on how taking walking for granted hinders its perception by both decision-makers and the wider public, and thus considerably delays implementing policies and strategies to improve walking conditions in a comprehensive manner. It then focuses on other contributing factors for such misperception, such as the lack of lobbying and the need for more accurate data and methods for measuring walking-related phenomena. Finally it hints upon the fact that the perception of walking needs is shifting upwards in Maslow’s pyramid, whereby safety-oriented policies slowly but surely give way more recent policies touching upon the wider subject of the attractiveness of walking and its capacity to increase quality of life, health and well-being.
B.2. Perceived Needs

The fourth focus point deals with the question which scales fit perceiving walking policies and strategies best. It identifies the reasons why walking is not perceived as fitting the scale and pace of our daily lives and moves on to describe ways of combining walking with other modes in order to enhance nearness dynamics throughout the agglomeration and particularly in suburbia. It then makes the case that a fully-fledged walking strategy does not consist of disconnected and isolated measures but rather a set of integrated measures to be conceived of as a comprehensive network deployable at the agglomeration scale.

1. What do people believe in?

The question of what measures, interventions, policies and strategies are perceived to improve the pedestrians' situation cannot be answered without first asking what measures can people believe in? In order to answer this last question, however, it is necessary to think through what exactly do people believe in, in the first place? Walking itself, in this regard, appears in doubt as an object of belief, for as one may easily notice there is still a general lack of faith – be it from decision-makers, urban planners and transport professionals, or the public at large – in walking as an efficient and interesting transport mode to accomplish our needs regarding daily mobility. Despite this initial hindrance, walking has recently met with increasing support within our urban societies, for a host of different reasons that we shall discuss more in depth in the remainder of this section.

One of the major obstacles walking promotion has to face lies with making the issue clearly visible. Even though recent progress has been made in the way most cities tackle walking-related issues, the larger picture of walking in urban settings suffers yet from a great lack of visibility, and this deficit hinders both people's beliefs in walking for daily purposes and their belief in walking promotion measures.

However, it should be noted that the ways in which walking is experienced do frame peoples’ beliefs and positive experiences can therefore become a powerful vector in diffusing walking-friendly feelings and attitudes and induce subsequent walking practices. We can distinguish three main viewpoints bounding walking experience: firstly, an individual and mostly psychological standpoint, where people experience walking framed by their own subjective and personal context; secondly, walking experiences are driven by rules produced within a socio-cultural context and appreciated within this collectively built reference point; thirdly, a technology-driven reference framework within which walking is increasingly experienced, as both the media and information and communication technologies become pervasive in everyday life and significantly impact people's experiences and practices of mobility in urban contexts. These three viewpoints will underlie the discussion hereafter within this section.

Because walking is seldom perceived as a main concern within the scope of our daily lives, it usually remains one of those self-evident subjects simply not worth mentioning. Even when discussing mobility issues, which people do quite substantially among themselves and through several types of requests to authorities regarding improvements of urban space and quality of life, walking usually slips by largely unmentioned. People usually discuss other issues such as parking restrictions, traffic congestion, deficits in public transport level of service, the introduction of car-sharing or bike-sharing systems, and so on and so forth.

When walking is mentioned at all, it is usually to point out some lack in safety or security, especially in relation to more fragile users (women, children, the handicapped, the elderly, etc. In the PQN Final Report sections B.1.7, B.1.11 and B.2.4 more detailed discussions on specific users' issues or difficulties in accessing places are included.
Daker’s qualitative UK study, focusing on how walking is experienced, takes up some other issues. For instance it has shown that walking is not considered as a real form of exercise among the participants. Although people do view walking as a kind of physical activity it is perceived as being too low in intensity, when compared to other physical activities, to be considered as proper exercise. However, walking is appreciated as enhancing positive feelings and reducing stress, as a natural way of relaxation. Most importantly, walking is essentially regarded by participants in this study in its functional role as a means of transport (for getting from A to B). Walking is also appreciated as an effective way of socialising when walking in groups (Daker et al. 2007).

When talking positively about walking, people find worthy of mention issues relating to the quality of sojourn in public spaces and public transport interfaces.

For instance, when Times Square in New York became a traffic-calmed area, people talked essentially about the armchairs: were they comfy, had you tried them on yet? This type of discussion pinpoints the fact that what people consider worthy of their attention may very well differ from what walking promotion advocates, urban designers, transport professionals and decision-makers have in mind.

2.1. People believe in what they see

It is all very well with pedestrian planning, but planning per se shows no results. Implementation, therefore, is the key to perception. The more visible measures and interventions within the environment are, the more they can be noticed and the more they gain the potential to induce change in the ways this environment is perceived. The possibility to experiment improvements on a first-hand basis is a real added plus into bringing people to grasp the changes wrought to the environment they perceive.

Below we give as an example of such an implementation strategy the pedestrian master plan of Geneva, which strives to enhance the visibility and coherence of a myriad of small measures which add up and concur to improve the life of the pedestrians.

![Figure 1](www.ville-ge.ch/geneve/plan-pietons/index.html)

Started in 1995 and wrought over the course of ten years, this comprehensive pedestrian plan over the whole of the city’s territory and neighbouring boroughs has taken some time to implement, and it is still an ongoing process in relation to opportunities that appear within larger maintenance and infrastructure programmes. This wide planning instrument gave to a host of small and dispersed measures a very strong and coherent framework within one of the 5 main actions depicted above (encouraging walking, valuing streets and squares within districts, facilitating pedestrian movements, eliminating obstacles to pedestrians and traffic calming at district level). After 14 years most actions have now been introduced and the results, while usually not spectacular in themselves, are consistently visible and add up to produce overall quality public space at a very large scale.
The Geneva pedestrian plan has been evaluated in 2004, when it was near its ten-year cycle completion, through a series of in situ interviews of 600 pedestrians at key locations throughout the city. This evaluation has shown that walking perception has indeed improved following the positive changes wrought to the environment and new practices made possible by these changes. Furthermore, people consider walking more when they have easy access to information on walking itineraries. People don’t refer to the information exactly as it is displayed but they rather use this information as a basis from which to compose their own walking itineraries that better suit their personal needs and/or moods, which vary quite substantially both in time and space. Furthermore, they wish information on walking possibilities to be found near the places they go by daily, such as shops, parks, schools, public transport interfaces and the like, rather than places which are not included in everyday practices, such as tourist offices, official buildings and the like (Lavadinho 2004, 2006b).

2.2. People believe in critical mass

Critical mass is the key in transforming perception into action. For instance, when Velo’v was introduced in Lyon (F), no one was really anticipating the effect it had in drawing up the numbers of privately-owned bicycles out in the streets, and yet their numbers have grown dramatically since the innovative bike-sharing system was introduced. Furthermore, pedestrian use of those axes regularly used by Velo’v users has also increased substantially, as if to say that this signal of the streets’ new liveability was understood for walking as well.

2.3. People believe in what is fun

Communication campaigns and awareness campaigns are quite often off the mark in terms of results: people usually react quite indifferently to these, mostly because a large part of this institution-driven publicity is meek in its form, which is drawing-based and educational-focused, rather than picture-based. This last type of publicity is most attractive and works better, because it fits better into the mainstream publicity codes generated by the private industry for most products, and those are the codes that people relate to most easily.

However, there is another path that makes people pay attention and induces new ways of looking at and practicing public space, through a process that we have designed elsewhere as ludification (Lavadinho & Winkin, 2009b, 2010). Ludification is at work whenever ordinary things from our daily itineraries are put into a different perspective by an intervention, be it through art or other means.

For instance, the city of Zurich adopted since 2001 a mobility strategy entitled “Mobilität ist Kultur” (Mobility is Culture), for a more sustainable mobility, which supports in particular the principle of a city of the short distances. As the visible tip of the iceberg of this overall strategy, a communication campaign titled “Mobilspiele” was launched in the summer of
2003 to widespread this idea to the population at large, through the use of unexpected “mises en scène” of familiar mobility aspects of urban life. This campaign was widely successful at the time and is still talked about until this day.

Figure 3 The Mobilspiele campaign introduced a new rapport to the streets and the seemingly simple gestures of parking or taking directions.
Source: www.mobilitaetskultur.ch

2.4. People believe in what they hear

People will follow the lead of positions released by the media, publicity and marketing, political debate, cultural markers (arts, design, cinema, theatre, and music), opinion leaders and community talk.

In this respect, the very fact that Times Square becoming pedestrian hit the media with such force when it opened in May 2009, with leading articles in the New York Times, USA Today and BBC News, to name but a few, is one of the most recent in a series of clear and positive signals that the tides are changing regarding walking and the renewed desire to dedicate more (and better quality) public space to pedestrians: the media, for long totally insensitive to pedestrian-friendly measures, now start to relay these in full swing, as they have started to perceive a rising public interest for these matters (to their credit, such interest may not have been there before!). This rise in media attention raises awareness of these issues and a growing interest for similar articles, thus inducing a sort of virtuous circle whereby pedestrian-related issues become ever more visible both in the media and in the eyes of the public.

Furthermore, once the media get interested in an issue, they usually start digging deeper and facts and figures previously in the shadows become highlighted, such as, in the aforementioned case of Times Square, an article by USA Today dated 27 February 2009 (thus contributing to the public debate prior to the instalment of the action itself) stating the fact that there are 4 times more pedestrians than cars crossing Times Square, which with 350'000 pedestrians per day is one or the densest pedestrian thoroughfares in the world, despite its inhospitable conditions. Such facts and figures once known to the general public, it becomes easier for decision-makers to push through actions that might previously not have gained enough public support. Media relays are therefore a useful tool to use in favour of walking promotion projects, provided such information does not backfire.
B.2. Perceived Needs

Figure 4 People take time out to relax in the chairs at their disposal in this previously traffic-choked artery of New York.
Source: BBC News website, 25 May 2009

People will also listen closely to their peers: family and friends, co-workers and personal service providers, such as their physician, personal trainer, coach, psychologist, hairdresser, pharmacist, kinesiologist, etc. Thus a well-targeted communication of the measures undertaken is essential to their perception. Targeting will be most effective when addressing not just individuals but opinion leaders and professionals which are close enough to individuals to influence them directly and have the power to spread their influence to quite a large number of individuals they are in contact with.

Regarding peer-influence the importance of the workplace is on the rise, namely through the large-scale dissemination of mobility management at the enterprise level throughout most urban regions in America, Europe and some emerging countries, as most of these plans include the promotion of active modes either to commute or exercise for instances during noon breaks. This trend will continue to grow in importance in the near future.

2.5. Different people believe in different things

Age, gender, physical condition, socio-cultural background, life styles, socio-economic status etc. influence how people perceive walking. This issue is taken up extensively in section B.2.4 of the PQN Final Report. Standing in different life cycles, coming from different backgrounds, experiencing different mobility patterns, people believe in different things. Identifying target groups according to their different beliefs is thus needed in order to successfully bond them with the measures they are to perceive. For instance, Geneva built on their “Plan-Piétons” pedestrian plan overall strategy to conceive a “Petit Plan piétons” specially addressing children.

This animation was developed by the ATE on a mandate of the town of Geneva within the framework of the mobility week 2005. Each child, provided with a simplified plan of his/her district, draws the ways he/she follows to come to the school, notes the journey time on foot, the transport mode used (on foot, by child’s scooter, by bicycle, by bus), which are the dangers and the difficulties he/she meets (lack of pedestrian crossings, lack of visibility, etc). The plan also allows marking unforeseen curiosities and events, odorous trees, nice tradesmen, accessible parks, etc. At the end of this collection of information, the puzzle is formatted in order to build a complete and original district plan, a kind of large treasure map. Thus it becomes a support to think of mobility, to imagine other means of transport than the
B.2.2. What measures can people believe in?

car. Like its “big brother” the Pedestrian Plan, the Small Pedestrian Plan also seeks to encourage walking (Sauter and al, 2008).

![Figure 5](http://www.ville-ge.ch/geneve/plan-pietons/pages/actions/ppp/02/ppp2_f.html)

Figure 5 The “Petit Plan-Piétons” is Geneva’s answer to the specific needs of children regarding walking and wayfinding in their daily territories.

Source: [http://www.ville-ge.ch/geneve/plan-pietons/pages/actions/ppp/02/ppp2_f.html](http://www.ville-ge.ch/geneve/plan-pietons/pages/actions/ppp/02/ppp2_f.html)

2.6. People don’t just believe in walking per se, but rather in walking with the city and all its transportation systems

Most urban regions strive to reach higher levels of not just active modes but rather multimodal accessibility which would entail their citizens to move around seamlessly using diverse modes of transport in function of their specific needs, the location of their activities and their scheduling. As such multimodal strategies begin to take hold in transportation policies, walking will be called in to play a larger part in this multimodal system, as walking is the glue that binds all the other modes together, namely allowing for easy transitions between modes (Lavadinho and Lévy, 2010).

Public transport operators of large cities such as TfL in London or RATP in Paris have already understood this potential and are actively thinking of ways to better include walking within the chaining habits of their public transport customers (Lavadinho and Lévy, 2010).
Figure 6  Intensive multimodal cohabitation in Biel’s Centralplatz

Figure 7  The Tube & Walk map for London highlights the synergies between walking and public transport.
Source: Quickmap, 2007
3. How may interventions and measures be perceived to actually improve the pedestrians’ situation?

3.1. What you see is what you get

Actions perceived to improve the pedestrians’ situation are first and foremost those where there is a substantial gain in quantity and/or quality of public space or other types of space allocated to pedestrian needs.

Measures that physically modify the layout of the public realm or improve its quality are usually perceived as an improvement by the pedestrians. Physical modifications usually imply a gain in the quantity of public space dedicated to walking, such as widening of sidewalks, reclaiming the streets for pedestrian or shared uses, converting large heavy-traffic avenues into urban boulevards, making room for green spaces or green corridors, and converting parking lots or disused areas to new public places. Improvements to the quality of public space may come about through renovating urban furniture or lighting, greening existing public spaces, improving visibility at crossroads, shortening intervals between green phases while lengthening the green phases themselves, changing ground textures and materials, improving walking connections and eliminating obstacles or applying traffic-calming measures.

Objective vs. subjective efficiency

Some measures are perceived to improve the pedestrians’ situation, though objectively they might not improve it nearly as much as other measures. Conversely, some measures, though objectively very effective, may not be perceived as such. Effectiveness, thus, is rather a matter of perception inasmuch as the latter induces change in the actual patterns of walking behaviour.

Experiences vs. beliefs

Beliefs change considerably according to the practical experience one has had of walking. For instance, earlier projects (WALCYNG project: Hydén et al, 1996) showed that people for whom walking is a daily practice see different advantages and disadvantages to walking compared to people who usually do not walk. One example of these discrepancies lies in the fact that disturbances due to bad weather are given more weight by those people who do not walk. Bad weather adds considerably to keeping them from walking, while people who walk regularly seem to adapt to weather conditions quite easily through the use of adequate clothing and equipment.

As to people’s beliefs, not surprisingly, as these are embedded in habitudinal practices and the latter take time to shift, there is still a certain tendency to adhere to older and/or more familiar safety and/or security-related measures, while a certain scepticism permeates the attitudes towards more recent and/or less understood measures such as the ones touching upon creating shared spaces or new types of street crossings, as have been tried out in the town of Köniz in Switzerland, for instance.

The refitting of Seven Dials, a busy intersection of seven roads in the Covent Garden district of London is a compelling example of how reallocating space to pedestrian needs encourages informal pedestrian activity and interaction with traffic. The podium of the elegant sundial needle serves as a sitting out area on what would otherwise be just another nameless roundabout (Hamilton-Baillie 2008).
3.2. Would you rather share time rather than space?
But space is not the only thing that matters to pedestrians. Better time management proposals can also be an important way to satisfy pedestrian needs.

An innovative example of time management answering specific walking needs has been tried in the Swiss municipality of Uster which has decided to install a time-oriented speed limit for its 30 kph area in the Seestrasse: the speed limit comes into force specifically during the time when kids are on their way to school. Because of the fact this tends to be perceived not as an arbitrary measure but rather a measure that visibly makes sense at those times of the day, given the high numbers of children walking through the area in droves, drivers are much more aware and respectful than what usually happens with similar traffic-calming initiatives where speed limits are space- rather than time-oriented (Flâneur d’Or, 2004).

3.3. Enhancing the pedestrian status
When discussing walking, focusing too much on effectiveness is not usually the best option. Indisputably time is a valuable good nowadays, but even cars are not only, or not even mainly, sold as time savers: Cars offer to their owners signs of socio-economic status, an important image, the sense of success and wealth, etc. These same principles are also valid for walking. Walking could in fact be promoted as a sign of wealth and success (you are the master of your time), of a higher socio-economic status (you can afford walking), as a signal of a catchy lifestyle, displaying independence and fitness.
Rising the status of pedestrians therefore strongly impacts on their well-being. There are different processes to achieve this; e.g. through accessorising (Lavadinho, 2006a) and/or accessing virtual realities in the city either through bodily plug-ins (mobile devices, wearables and such) or devices plugged into the tissues of the city itself (screens, interactive terminals and so on) giving rise to what is now commonly called the enhanced pedestrian (Marzloff: http://www.caradisiac.com/Le-sociologue-Bruno-Marzloff-la-voiture-en-ville-se-trouve-aujourd-hui-dans-l-impasse-2048.htm).

Following in the steps of street art, fashion and design in particular are now shifting their focus from previous privileged domains such as leisure and fitness walking and starting to address urban and daily walking specific needs by grasping on the walker’s accessorising potential (Lavadinho, 2008a; Viot, 2009).

Figure 9  The Stokke XPlory® pram, by a Swedish company, allows easy driving for mums and enhances social exchanges for their babies. Reportedly its 4-in-2 wheel system was designed to climb up Paris Metro numerous staircases!
Source: www.stokke.com

The rise of smartphones, of which the iPhone is the iconic symbol, has allowed for a tremendous rise in pedestrian-oriented applications for city orientation and navigation, as for instance the Amsterdam Mobile Guide illustrated below. Most cities nowadays dispose of such an interactive pedestrian guide.

Figure 10  The Amsterdam Mobile Guide designed for the iPhone allows easily locating places of interest and finding how to reach them on foot
Source: http://www.designworkplan.com/wayfinding/iphone-navigation.htm

Nearest Tube goes a step further, as it is one of the first augmented reality iPhone applications available with the new generation 3GS. The idea is to simply point your iPhone into the environment and the application will show you where the nearest tube station can be found. This is the beginning of a truly interactive way for the pedestrian to dialogue with the environment in real-time.
3.4. Optimising the texturising power of walking

Improving the pedestrians’ situation, at least from the point of view of how it is perceived, is thus not just about walking in itself, but implies addressing other needs pertaining to lateral grasping (Lavadinho and Lévy, 2010) as well. The concept of lateral grasping refers to the capacity walkers have to reach out from their walking paths and routines for en-route services & sociabilities opportunities they can thus incorporate within their travel schemes. In this respect (even more so than with physical built environment conditions) there is a wide gap between the perceived needs and the perceived offer of environments where walking takes place. One of the reasons for this lies with the fact that a lot of those needs are not simply related to the physical act of walking as such, but very much intertwined with the socially dense act of walking. Thus gaining access to goods and services, being able to play out a series of parallel activities (provided by embarked accessories, such as talking on the phone or listening to music, or provided by en-route opportunities, such as grabbing a newspaper, buying some flowers or having an on-the-go latte), encountering other people, eating and drinking, viewing urbanscapes and taking time out to sit and relax clearly play a role just as important, if not more, as being able to put a step in front of the other.

Indeed, there is more to walking than your own two feet. Considering walking, even more so than other forms of mobility, a product of derived demand to accomplish other activities, and indeed a provider of daily life opportunities, rather than a simple means of transport to move about, implies taking into account the texturising power of walking (Lavadinho and Lévy 2010) when discussing what measures and policies may improve a pedestrian situation. We immediately see that those measures and policies go infinitely beyond matters of infrastructure, and more into complex considerations such as providing user-friendly walking connectors that respond to interfacing, time-budgeting and trip-chaining needs. Granted, these are not such easily defined needs, and solutions that could satisfy this type of complex needs usually do not come by merely as a result of technical measures, and remain therefore much more difficult to implement. Yet we do start, albeit timidly, to see some
encouraging signs of public authorities, urban designers and public transport operators taking this texturising dimension of walking into account.

Figure 12 – There are quite a few challenges in fulfilling walking prerequisites: from representations fuelled by perceptions to the actual practices of walking comes the necessary step of appropriations
© Sonia Lavadinho

In this vein, a fourth aspect that greatly contributes to the pedestrian well-being is the development of a pedestrian-tailored access to goods and services, namely through innovative distribution and home-delivery processes.

For instance, within the long-term experiment Burgdorf Fussgänger- und Velomodellstadt (1996-2006), this small Swiss city tested among many other measures the system of home delivery by electric bicycle, set up in partnership with commercial partners and including major players in the field such as the supermarket chain Migros. This measure allowed for a 21% decrease in car trips in favour of cycling (+18%) and walking (+3%). (www.burgdorf.ch > Umwelt > FuVeMo).

4. How may policies and strategies be perceived to actually improve the pedestrians’ situation?

To fully develop a comprehensive walking culture, the whole palette of walking issues and solutions towards its promotion, even those people are less familiar with, have to be brought much more clearly into focus, be it through the political agenda or as a result of bottom-up lobbying, or both.

4.1. What is taken for granted remains unperceived

Yet the gravest problem facing perception remains that both to decision-makers and the public at large, walking is taken for granted and retains an old-flavour to it, which means it is not perceived as an innovative domain at the crossroads of mobility and urban planning and worthy of attention in itself. Lacking the high-tech glamour that brought again into fashion the
century-old trams and bicycles, walking remains perceived by most of its stakeholders and the public at large as the poor parent of this renaissance of the old forms of urban mobility.

As a consequence of pedestrian behaviour going on largely unawares, kept from the focused attention of even the pedestrians themselves, pedestrian needs are overlooked or disregarded by professionals, decision-makers and users alike as always being someone else’s, or indeed no one’s, problem.

It must be said however that though still hardly seen as newsworthy, walking is nevertheless, to some extent, becoming a rising trend in some milieux, mainly driven by health and sustainability concerns. This trend is bound to rise in the future as sedentary behaviour will become increasingly the focus of attention of public policies.

Things are thus changing, albeit slowly, regarding both the political and public awareness of walking. And though the tide of public opinion in favour of walking and walkable environments as a “must have” hasn’t yet reached its tilting point, an increasing number of cities are already engaging in profound changes of their public spaces that point the way towards a full recognition of walkability as a core trait of today’s urban environment.

4.2. What you don't hear, you don't see

Indeed one of the main problems walking faces regarding its perception is its lack of lobbying, which would result in a critical mass of attention that would bring walking issues into focus for debate. It doesn’t help that research on walking remains scarce and painstakingly slow in identifying the degree to which a change of environmental conditions may lead to an increase in walkability. In recent years, however, a whole current of research exploring the factors of the physical environment that influence physical activity has emerged, and researchers and professionals in this domain have since 2006 their own biannual event specifically dedicated to these issues, the International Congress on Physical Activity and Public Health (ICPAPH), where the dimensions of walking and cycling as active transport modes are discussed in depth.

Comprehensive statistics covering the whole of walking-related phenomena are particularly lacking, as shown in many of the country reports for COST Action 358 PQN, and when they do exist they mainly concern safety issues. Figures, and indeed the very ways of measuring walking data, remain quite often inappropriate, inaccurate, irrelevant or far too vague, and contribute to the general feeling that walking is an obscure and unreliable behaviour, difficult to measure, to understand and thus to address (see also: sections B.1.4, B.1.5 and B.1.6 of this PQN Final Report).

4.3. The perception of walking needs is shifting upwards in Maslow’s pyramid

Even though things are gradually starting to change in the eyes of the general public, policies perceived as an improvement are still for their widest part related to safety and/or security issues and legislative issues such as pedestrians’ legal status. Gaining pedestrian priority status, such as is given by the new Code de la Route approach in France, the Begegnungszenonen in Switzerland and other shared space policies being developed throughout Europe, is indeed perceived as a plus, provided it is known and made abundantly clear “out there on the road” to pedestrians and motorised drivers alike.

Nevertheless, and despite some progress being made in legislation itself, namely in France, Belgium, Switzerland, the Netherlands and the UK, there seem to remain quite a few
problems getting legislation translated into actual road practices, as many Country reports for COST Action 358 PQN relate (see for instance Portugal and Czech Republic).

A certain number of more recent policies touching upon the wider subject of the attractiveness of walking and its capacity to increase quality of life, health and well-being are usually well perceived by the population. Most of these policies have not yet been implemented at a large scale, but they are being experimented with mostly at the neighbourhood scale, namely within newly built eco-friendly districts.

4.4. No single walking issue is important enough to be on the map
Pedestrians themselves usually avoid “making a fuss” over pedestrian issues, considering most of the nuisances they encounter on a daily basis, when each is considered separately, as not being important enough to merit discussion with the authorities in charge of improving public space conditions. This is a pity, since obstacles of all sorts do accumulate and result in hindering walking, while remaining for the most part hidden from view and never given priority over more pressing matters that citizens do take the time to complain about.

It must also be said that in quite a few cases where citizens do petition for some sort of action to be taken regarding walking issues, public response tends to be slow and awkward, financial support hard to come by, and measures to improve the situation are sometimes perceived as not answering the actual demand, especially when the authorities do not take the time to engage in a participatory process with the population.

5. What scales for perceiving walking policies and strategies fit best?
There is a wide misperception regarding which scales fit best to represent our walking needs. As a direct consequence of this, a lot of policies and strategies remain confined to isolated public places, single streets, residential neighbourhoods, or at best medium-size sectors such as CBDs, the surroundings of transport interfaces or leisure-oriented areas, as shown with the recent surge of revitalisation operations on waterfronts.

However, a truly comprehensive urban planning strategy that fully takes walking into account at the agglomeration scale remains a rare finding, with the notable exceptions of London, Bilbao and Geneva in Europe, and Singapore and Hong Kong in Asia.

5.1. Walking is not perceived as fitting the scale and pace of our lives
Pedestrians themselves are not always able to clearly identify the full extent of their own needs as far as the scale of interventions should go, since everyday activities deploy over increasingly extended and overlapping life basins where walking is for the most part seen as irrelevant.

Nearness-deployed activities are not always an option, and when available are usually considered as poor choices, when compared to the ones accessed by other modes of transport, namely the private car. This feeling is part of an overall impression of walking as being an outdated solution to our modern mobility needs.

However, change is in the air yet again: as proximity is increasing its value in the public eye, and becomes a desirable trait of sustainable neighbourhoods, so is walking. Indeed this shift has already occurred in endless numbers of inner city neighbourhoods throughout European...
cities, and it is now starting to spread to new developments also outside city centres but which are well-connected to the core active sectors of their respective agglomerations.

Sparsely dense, poorly mixed and badly connected suburbia, on the other hand, present a fast growing problem, especially with newly built districts hosting ever increasing percentages of the population for an ever larger palette of motives (not just residential, but encompassing work, shopping and leisure as well). These suburbia challenges, that will be discussed somewhat more extensively in the section to follow, clearly illustrate the limits of proximity policies alone, and call instead for a double strategy linking proximity, through walking and cycling, and connectivity, through public transport and car-sharing, for instance (Lavadinho, 2008b).

Figure 13 – Connectivity & proximity: a multimodal strategy for optimising active modes within agglomerations and enhancing nearness dynamics in suburbia © Sonia Lavadinho

5.2. From street to network, from place to hub

Planning and especially implementing whole pedestrian networks where connectivity and continuity are respected throughout the territory remains a challenge for most cities. Even when a dense number of high quality public spaces do exist, most cities lack metro-like maps depicting the ways main attractors functioning as life hubs are connected through walking corridors covering the whole of the territory. This happens for a reason: there simply is no reflexive process on the network level for pedestrians, its immediate consequence being that no such mapping process develops on the minds of the pedestrians themselves. Thus perception of the network, when it exists at all, remains fragmented at best. This kind of integrated whole-scale policy is rarely put into action, and when it is it remains for the most part poorly communicated, therefore receiving few if any public support.

The rather slow time-scale and the sheer number of interventions necessary to bring the walking network into being, combined with a general lack of financial backup to support simultaneous large-scale interventions, usually hinder public awareness of the fact that a full-grown policy is indeed in the making.

5.3. No isolated action is enough on its own to make people walk

However, it is a sure fact that people tend to believe more in integrated sets of measures that make sense together and allow for the improvement of a whole pan of walking conditions,
rather than however many isolated measures which improve only a limited part of the walking environment but bring no added benefits to walking as a whole.

Walking will only be perceived as a true option in its own right when walking networks become an integrated part of each city mapping and indeed take their full place at the core of the mental patterns of movement of each city dweller.

6. Conclusion

In the preceding sections we’ve seen how walking has been clearly evolving in recent years towards a more positive perception by actors involved in decision-making, lobbying and planning, but also how it has gained momentum as a full-fledged issue with the media and the general public. Although a lot stills remains to be done in order to reach a consistent and comprehensive walking culture that gives its rightful place to both large-scale strategies and policies in order to set up a solid framework against which background to deploy a host of more concrete measures and interventions, we think quite a few essential steps have already been taken by numerous cities in order to increase walking potential and its level of integration with other modes in order to achieve the goal of deploying a fully-fledged multimodal urban mobility system within their territory.

One of the main problems with walking remains the finding the right scale to think and act about it. As long as communities consider it a local problem to which there are only local solutions, we will remain far from achieving its true potential. Only when walking will be recognised as a main welfare provider for our cities and a true contributor to the quality of city living, only when it will retrieve its rightful place at the core of our urban mobility systems and at the scale of our agglomerations, will walking gain momentum as a true value people may share and believe in.

7. Recommendations

We have explored a certain number of avenues towards reinforcing people’s core belief in walking promotion measures and interventions on the one hand, and policies and strategies on the other hand.

We recommend, in order to further strengthen this core belief: to gather more reliable and specific data on walking and namely walking in combination with other modes; to gather more support from the media; to gather full political commitment to the advancement of walking at the agglomeration scale, and the financing commitment to see it through; to develop more targeted public transport and car- and bike sharing uses facilitating the life of the walker; to aim specific measures at the occasional walker that makes an extensive use of individual motorised modes, namely through a rethinking of parking and Park & Ride facilities and their functions as possible hub connectors doubling as providers of goods & services; in short, to facilitate each and every transition from and to other modes; to better take into account the development of virtual technologies and accessorising, and facilitate the deployment of such technologies as they grow to become a substantial part of public space itself; to increase walking rights in the legislation and reinforce the coherence of the legal framework for pedestrian promotion policies, measures and interventions.
**Acknowledges**

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Mario Alves and my father, *envoyés spéciaux* in Lisbon, who always give me an insight on how things are going in my homeland regarding walking and other mobility issues.

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B.2. Perceived Needs


Quality Spaces in Barcelona and Lisbon

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Summary

In the context of the COST 358 Pedestrian’s Quality Needs project two anthropology COST funded Short Term Scientific Missions (STSM) were realised. The missions took place in Barcelona (2007 – Rodolfo Soares) and in Lisbon (2009 – Dani Malet). This section of the PQN report contains short accounts of the experiences from those missions.

The Barcelona STSM focussed on the consequences of developments regarding conditions for pedestrians for Barcelona citizens. It was found that the improvements made benefitted tourists more than the native population.

The Lisbon STSM highlighted city-planning transformations and socio-spatial occupations of the Baixa Pombalina and, more concretely, in the full of activity Praça do Rossio (Rossio Square), a very central square. It appeared that walking movement in such situation is mainly based on negotiation and not so much on formal rules.

1. Barcelona

Rodolfo Soares  
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Barcelona is Catalonia’s capital city, where 1,615,908 people dwell (INE 2008), the second largest city in all Spain. Barcelona is widely famous due to the architectural works of Antoni Gaudí, which have been designated by UNESCO as World Heritage Sites, and it is, therefore, not strange that it receives an estimate 14 million tourists per year (INE 2008. Events such as the 1992 Summer Olympics also helped to boost Barcelona as a major tourist destination: since 1986, in order to prepare the competition, the city embraced a huge renovation plan that re-designed the whole city.

Due to this project, Barcelona became regarded as an architectural example to follow, the modelo Barcelona (the Barcelona model), a model that finds many followers around the world, namely in South America¹ (see Capel 2002, Capel 2005a; Capel 2005b; Delgado 2007).

¹ Recently, Brazilian newspapers noticed that the Rio de Janeiro Mayor, Eduardo Paes, had signed an agreement with the Barcelona Mayor, in order to use the Barcelona model in the 2016 Summer Olympics, http://esporte.ig.com.br/mais/2009/10/23/prefeito+do+rio+assina+acordo+para+seguir+modelo+de+barc
B.2. Perceived Needs

The main change in Barcelona came through the creation of a “universal model of quality public spaces”, in opposition to “non-quality public spaces”, - degraded spaces. The city modernized itself, whole city blocks where – and still are, because Barcelona is a work in progress) – demolished, old degraded houses and buildings where replaced by modern trendy buildings. Among these buildings, we can find countless Modern Art Museums, such as the Barcelona Museum for Contemporary Art (Museu d’Art Contemporani de Barcelona – MACBA) (opposed to more “conservative” museums, see Holo 2002; Zulaika 1997), chic restaurants emerge in every street, and also innovative fancy stores.

In addition to this modernization, the centre of the city – the Las Ramblas Avenue, and the adjacent neighbourhoods – are pedestrian friendly environments: there, one can freely walk, with few restrictions to its mobility.

No surprise that many tourists visit Barcelona each year, for it offers unique conditions to tourists: Barcelona washed her face, is now a different city, a cleaner city, establishing herself as a model to follow.

But, at which price? During a one-month fieldwork in Barcelona, in December 2006, an inhabitant of the Raval, an old neighbourhood next to the Ramblas, confessed me her aversion to this project: “It’s impossible to live in Barcelona. Everything is designed for the tourists and for the people with money. They demolish our houses to build museums we don’t visit, restaurants we cannot afford. And the streets, they are so full of people, everything is so full of people that it’s almost impossible to walk.” Some Catalonian friends living in Portugal had already expressed me their dislike towards their own city, Barcelona: “I’d rather live in Portugal, at least you can walk on the streets without feeling like if you were canned sardines. Also, the architects are destroying our city, creating horrendous buildings and spaces...Have you seen the MACBA?”

In fact, the city’s inhabitants are those who are paying the price of having a modernized city: modernized spaces require modernized users, modernized people (Delgado 2007). Those who don’t hold enough quality to use this quality space (those who don’t fit in the modernized Barcelona) are pushed away.

The process is simple: it starts with a plan to modernize the area, elaborated by an renowned architect, a plan presented by the City Hall as something that with “revitalize” the life of the neighbourhood, bring new life and opportunities to its inhabitants. In the centre of that plan there’s, usually, a cultural facility, such as a Museum, which is the first building to be constructed.

That facility will then work as a material landmark, creating a new order in the use of the space: stylish stores, hotels, cafés and restaurants are opened nearby, to serve the users of the facility – which are not the inhabitants of the neighbourhood, but mainly tourists. Then, the popularity of the neighbourhood starts rising up, the economic value of the building rises, as well as the rents and the former inhabitants are forced to abandon – or, when owning their houses, they’re expropriated, receiving negligible fees - their houses and look for a new one elsewhere.

A few days before, Manuel Herce Vallejo, an urban architect who was directly involved in the Barcelona project, in an interview to a Brazilian newspaper, declared that Rio de Janeiro should follow Barcelona’s example, http://oglobo.globo.com/rio/rio2016/mat/2009/10/09/urbanista‐que‐trabalhou‐em‐barcelona‐diz‐que‐rio‐deve‐aproveitar‐jogos‐de‐2016‐para‐mudar‐modelo‐de‐cidade‐de‐segregada‐767995502.asp.
The introduction of these “quality spaces” serves two needs:

1) The need to create a material landmark, a barrier dividing old and new spaces. This landmark will then, through the process described in the former paragraph, it destroys the social and cultural relations of the neighbourhood;

2) The need to create an immaterial landmark, a cognitive barrier. By restructuring the space, by transforming something familiar in something unfamiliar, the space becomes hostile to its former inhabitants; on the other hand, the creation of wide open spaces, clean and shiny induces more empathy between tourists and the area, seen as new, modern and safe – in opposition to old, degraded and unsafe.

These new spaces, “quality spaces”, are designed and constructed with state-of-the-art urban equipments, designed to please those who use it: the tourists, the casual visitor (Greffier 2006). These are, in fact, arid spaces, without any kind of social relations, without life, contrarily to what happens with the old spaces, the traditional neighbourhoods, where one can always find someone wandering the streets, or people chatting on the streets or at some traditional café (De Certeau 2002).

The modernization of the space creates, then, creates stillborn spaces, designed to host not a permanent structure of social relations, but a structure ephemeral short-lived relations, constructed by the passers-by.

In this regard, Barcelona offers excellent conditions to some pedestrians, the tourists that occasionally wish to enjoy these spaces, in a short stay: cafés, bars, hotels, clean wide spaces, and a thrilling night life, full of parties and other cultural events.

But, on the other hand, to the permanent inhabitants, those who wish to use the streets and public spaces on a permanent basis, Barcelona is only offering hostility: these are the pedestrians who do not wish to spend much money while using the public spaces, maybe no more than an espresso and read the morning newspaper on a cheap cosy café or to catch some sun in a public park. Those who will not buy souvenirs at the museum shop or will not spend the night in the 5 star design hotels². To these pedestrians, the renovation of the city didn’t bring any improvements; on the contrary, their familiar neighbourhoods and the social relations there taking place have disappeared, for the invasion of the streets by masses of tourists has turned Barcelona into an unliveable city.

Therefore, the economic profit brought by the ephemeral visitor is favoured over the permanent inhabitants, those who not only use the spaces, but also live in them.

For that reason, the whole concept of Pedestrian Quality Needs is somehow corrupted, stained by the fact that “Quality Spaces” need “Quality Users”, a user who knows how to adequately use the space designed by the architects, and not a user³ who anarchically uses it, disregarding all the motivations who conceived it. These “Quality Spaces” hide behind them other motives, promiscuous relations between several agents – the estate agents, the City Officials, the architects, the investors -, and the real concern behind the construction of

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² It’s revealing how this (empty) wide open spaces in Barcelona where adopted by skaters and African immigrants: spaces such as the already mentioned MACBA or the Rambla del Mar, near the Marina, where adopted by African immigrants as a meeting point, and used by skaters as a skate park. According to a local inhabitant, in order to disguise the failure of these spaces, the City Officials in vain tried to dissuade these groups from using them, but since they could not dissuade them, they preferred to remove banks and all seating places, allowing the skaters to use the space, for they where regarded as having a less negative effect on the city image.

³ The skaters, the immigrants, the beggars, the prostitutes…
public spaces is not to improve the quality of life of its inhabitants, but to improve the
profitability of the space.

The question we should all ask is then: who needs quality spaces?

2. Walking in Lisbon-centre: choosing between normativity and negotiation

Dani Malet
University of Barcelona (UB)

My investigation in the city of Lisbon is fundamentally centred the city-planning
transformations and socio-spatial occupations of the Baixa Pombalina and, more concretely,
in the full of activity Praça do Rossio (Rossio Square), a very central square. Although the
centre body of the investigation deals with specific occupations related to the luso-African
(Portuguese of African descent), the informal commerce or the sem-abrigo (homeless
people), any social approach towards public space must characterize the displacements that
occur, as well as the dynamic relations between pedestrians and drivers, that occur within
the framework of the space competition regarding the usage in the motorised lanes.

For this brief analysis we will consider two general ways of interaction between pedestrians
and drivers, whose objective is to use the common space:

- those mediated by the presence of traffic lights and other traffic signs, which will name
  “normative”
- a strategic modality where, with or without the presence of physical signs, the two parts
  in conflict put into play different strategies to prevail over the other, which we will name
  “negotiated”.

Evidently, both modalities coexist in this relation since they constitute two ends between
which any encounter pedestrian-driver fluctuates. Since the “normative” way is defined by the
practical adhesion to traffic norms indicated by a series of signs and physical indicators, the
extreme paradigm would be a behaviour of total adhesion to the times and spaces
determined by these norms.

His opposite, the “negotiated” way, shows a much more ample sort of behaviours, since its
variety depends on modalities of transgression, dissimulation and specific appearance
Towards each determined situation, beyond the invariable norms of the “normative” way,
putting into play complex connections between the expectations of each part. For example, a
pedestrian can pretend that he does not know the “normative” regulation and cross a street
in red lights, putting on a lazy appearance with low head or, on the contrary, can use a
challenging pose, forcing the automobile to restrain its pace and slow down. Also, a driver
can pass a visible red traffic light if he makes it like if he didn’t had time to safely stop the
vehicle – when he actually accelerated before to surpass the traffic light. So, the “negotiated”
strategies depend on the will to envision expectations, superposing them to the existing
norms, and, at the same time, demanding from the other part recognition of the same norms
in a specific contextual situation. The edge of the “negotiated” approach can be found in one
of those displacements, without a physical normative frame, such as when the pedestrian
tries to cross a street by a point where “normative” signs do not exist. In such situation, both
parts must demonstrate their intentions to solve the displacement in terms of self-
management, that is to say, with the absence of normative indicators.
Naturally, the “negotiated” method is, at the same time, the interactive staging of a conflict, and a natural source of conflicts: the green traffic lights, the road structure, the urban roads destined for motorized vehicles are a consequence of the centralization of the urban planning. In turn, the actors involved in the concrete working of the traffic, adapt, react and generate their own strategies which they superpose upon the “normative” planning rules, in many occasions rather badly implemented.

In Lisbon, the many highways located in the city centre and the design of the road structure surrounding the city is already known. So, we will now analyse the dynamics of the groups that circulate in the city centre, downtown.

We can characterize the downtown for the existence of strong pedestrian flows, whose density explains, to a certain extent, the relation between pedestrians and drivers. The existence of crossing areas and the degree of occupation in the area creates conditions to the occurrence of negotiated modalities these spaces; however, this depends on the class of users. That is to say, groups of tourists, flows related to nightlife, leisure moments or associated to public events must present a certain spatial cohesion and physical proximity, in order to be perceived by part of the drivers as having “uncertain movements”, changing the normative dynamics in the area. For example, a group of 12 absent-minded tourists crossing a red traffic light for pedestrians, a group of 10 drunken young people who defy the car flows in the road, or a public manifestation that obstructs and collapses motorized traffic in a side street.

Compared to Barcelona, in Lisbon we can find a significant presence of slow pedestrian flows and even stagnations, caused by dense social meetings in the most central areas of the city, very concurred and cosmopolitan ones. Such dynamics – present even in very narrow and close streets – may be caused by the coexistence of human flows related to the circulation of contingents in their way to work, and to the so-called neighbourhood (bairro) practices of presence and public visualization, or even to the spatial occupations related to the very close marginal city. Indeed, the Praça do Rossio, as a key-synthesis of Lisbon, shows the coexistence of prolonged and intense social meetings, local encounters, often confronted with the pace of the surrounding circulation dynamics.

Indeed, the Praça do Rossio, as soon as nail-synthesis of the city of Lisbon, shows a co-presence of expanded and intense local social encounter, not infrequently confronted with the speed of surrounding circulation.

The prevalence of dynamics of self-management – or “negotiated” is quite high, perhaps due to the little effectiveness of the “normative” model in regard to the needs of the pedestrians in a space like this. Despite the efforts of the municipal authorities to restrain automobile flows in Lisbon’s downtown, with the specific purpose of supporting pedestrianism, we can still find an intense and often conflictive co-existence between human pedestrian flows and motorized vehicles.

Therefore, the “negotiated” modalities of displacement illustrate the human capacity of adjustment and self-management before a challenge posed by a mobility model poorly managed by the responsible authorities. It’s worrisome, mainly in downtown, a place that, by definition, should provide several walkable places, not only for local use, but also for tourists, a place that should a leisure space, allowing public representation under a concept of citizenship, exemplifying a model for the whole city – one concerned with the humanized management of the circulation and mobility relations that are, lest we forget, the foundations of modernity.
References *(Barcelona study)*


