COST 358 Pedestrians’ Quality Needs

The Future of Walking

PQN Final Report - Part B3: Documentation
COST - the acronym for European Cooperation in Science and Technology - is the oldest and widest European intergovernmental network for cooperation in research. Established by the Ministerial Conference in November 1971, COST is presently used by the scientific communities of 35 European countries to cooperate in common research projects supported by national funds.

The funds provided by COST - less than 1% of the total value of the projects - support the COST cooperation networks (COST Actions) through which, with EUR 30 million per year, more than 30 000 European scientists are involved in research having a total value which exceeds EUR 2 billion per year. This is the financial worth of the European added value which COST achieves.

A "bottom up approach" (the initiative of launching a COST Action comes from the European scientists themselves), "à la carte participation" (only countries interested in the Action participate), "equality of access" (participation is open also to the scientific communities of countries not belonging to the European Union) and "flexible structure" (easy implementation and light management of the research initiatives) are the main characteristics of COST.

As precursor of advanced multidisciplinary research COST has a very important role for the realisation of the European Research Area (ERA) anticipating and complementing the activities of the Framework Programmes, constituting a “bridge” towards the scientific communities of emerging countries, increasing the mobility of researchers across Europe and fostering the establishment of “Networks of Excellence” in many key scientific domains such as: Biomedicine and Molecular Biosciences; Food and Agriculture; Forests, their Products and Services; Materials, Physical and Nanosciences; Chemistry and Molecular Sciences and Technologies; Earth System Science and Environmental Management; Information and Communication Technologies; Transport and Urban Development; Individuals, Societies, Cultures and Health. It covers basic and more applied research and also addresses issues of pre-normative nature or of societal importance.

www.cost.eu

Legal notice of the COST office:
Neither the COST Office nor any person acting on its behalf is responsible for the use which might be made of the information contained in this publication. The COST Office is not responsible for the external websites referred to in this publication.
Pedestrians' Quality Needs

The future of walking

PQN Final Report - Part B3 Documentation

PQN project - Working Group 3 Durability and Future Prospects

November 2010

PEDESTRIAN QUALITY NEEDS
www.walkeurope.org
Colophon:

Authors: Daniel Sauter (Chair Working Group 3 Durability and Future Prospects)
         Dragana Bazik
         Karen Bickerstaff
         Emil Drápela
         Les Lumsdon
         Lucia Martincigh
         Iris Mühlenbruch –
         Nicole Muhlrad
         Mário J. Alves
         Manuel João Ramos
         Barbro Rönsch-Hasselhorn
         Karel Schmeidler
         Thérèse Steenberghen
         Miles Tight
         Rodney Tolley
         Hans Orru
         Kati Orru

Reviewers: Raphael Denis Huguenin
           Susanne Iwarsson
           Stein Johannessen
           Wolf-Rüdiger Nickel
           Willem Vermeulen

COST 358 PQN : Chair : Rob Methorst – Rijkswaterstaat Centre for Transport and Navigation
               Vice-chair : Jim Walker – Walk21

Version: Final
Date: November 2010
Contact: e-mail : daniel.sauter@urban-mobility.ch
         telephone : +41 44 382 0288
         address: Urban Mobility Research
                   Mühlebachstraße 69
                   Zurich 8008
                   Switzerland

Publisher: WALK21
          www.walk21.com Cheltenham (United Kingdom)


Year of publication: 2010


© COST Office, 2010
If source and author are quotes, no permission to reproduce or utilise the contents of this book by any
means is necessary, other than in the case of images, diagrams or other material from other copyright
holders. In such cases, permission of the copyright holders is required. This book may be cited as:
Contents

B.3.1. The future of walking – looking into the crystal ball.  
Daniel Sauter and Mário J. Alves  
Perspectives  
(picture by Manuel João Ramos)  
B.3.2. How ideologies influence walking policy.  
Daniel Sauter  
B.3.3. The "doom scenario" (... or can we avoid it?).  
Nicole Muhlrad  
B.3.4. The end of walking? The future of transport systems and its impact on pedestrians.  
Mário J. Alves  
B.3.5. Trampling over paradoxical trends and visions of European walkability.  
Manuel João Ramos  
B.3.6. The future of walking in Europe: Revisiting expert opinion ten years later.  
Rodney Tolley, Les Lumsdon and Karen Bickerstaff  
Trends  
(picture by Manuel João Ramos)  
B.3.7. The impact of an ageing society.  
Iris Mühlenbruch and Barbro Rönsch-Hasselhorn  
B.3.8. Walking and health.  
Hans Orru and Kati Orru  
B.3.9. Tourism and recreation.  
Thérèse Steenberghen  
B.3.10. Changing lifestyles.  
Emil Drápela  
B.3.11. Changing urban structure and its impact on walking conditions  
Karel Schmeidler  
Visions  
(picture by Manuel João Ramos)  
B.1.12. From the past for the future: visions and interventions.  
Lucia Martincigh  
B.3.13. A vision of public place: relational urban space.  
Dragana Bazik  
B.3.14. Visions for a walking and cycling focussed urban transport system  
Miles Tight  
B.3.15. The future of walking: summary, conclusions & recommendations.  
Daniel Sauter and Mário J. Alves
B.3. The future of walking
The future of walking – looking into the crystal ball

Daniel Sauter
Urban Mobility Research, Zurich, Switzerland
daniel.sauter@urban-mobility.ch

Mário J. Alves
Associação de Cidadãos Automobilizados, Lisbon, Portugal
mariojalves@gmail.com

‘The best way to predict the future is to shape it.’
Willy Brandt

1. Introduction

“The future belongs to walking and cycling.” This enthusiastic claim by a research report written in Switzerland in 1999 is not yet mainstream policy. In fact, the future of walking is not much of a topic at all neither in research, policy, nor in public debates. Also “future of transport” reports rarely contain information about active modes such as walking and cycling. This may come as no surprise given the fact that walking has been neglected by state institutions for decades.

While professionals and advocates in the field are focusing mostly on the present situation and how to improve it, there is a growing need for a long-term perspective. How will it be to walk and sojourn in the future? What do we know about walking trends? How will the current developments in society, the economy and the transport system affect pedestrian activity? What are the threats and opportunities? What measures, interventions and strategies can help improve the pedestrians’ situation in the long term?

The authors in this publication deal with these research questions from many different perspectives. Based on literature, inspired speculation and their own assessments, they try to lay a foundation of knowledge on which the debate can be built. They look at evidence from the past that may inform the future; they describe today’s trends and explore probabilities of change; they develop visions and investigate opportunities and threats.

2. Methodological approach

A classical method for finding a consensus among experts about the future is the so called Delphi technique which employs an iterative process to find common ground on likely future developments. The group evaluated this option but abandoned the idea due to lack of financial and human resources. Instead, the participants adopted a format in which the individual members analysed different topics chosen according to personal interest and background expertise and the group then discussed their insights during the meetings.

2 The report assembles 13 contributions written by 17 authors with many different professional backgrounds, living in 10 different European countries ranging from North to South and East to West.
3 More information on the Delphi method can be found in the contribution by Tolley et al. in this book.
In terms of methodological approaches two main formats can be distinguished:

(i) **Forecasting:** Analysing current trends and potential developments. Which trends and scenarios are most likely and what are their effects on walking?

(ii) **Back-casting:** Developing a vision or objective and back-tracking the steps needed to achieve it. Which future is desirable and which interventions are necessary to reach the desired goal?

We employed both approaches being aware of their advantages and potential shortcomings:

(i) **Trends and scenarios: forecasting**

Forecasting scenarios usually means focusing on fields in which problems have recently arisen and awareness has been created. This momentary view often leads to short-lived trends being extrapolated, thus, overlooking the longer-term developments. The assumed growth of the problems also implies that the trends will lead to disaster if nothing is changed. In the ultimate form, pessimistic scenarios turn into a kind of dystopia, a negative vision where doom and gloom reign and an apocalypse looms at every corner. Such drastically dark scenarios are often created in politics to provoke re-actions. Even though research-oriented scenarios often contain both, a more optimistic and a more pessimistic version, the main focus is still on avoiding the latter and not on creating conditions for a positive scenario. Forecasting scenarios often result in idealizing the past. In the light of the seemingly growing problems, the past appears as the “good old times” and serves, in turn, as a projection for the future. This implicit “forward-to-the-past-scenario” is, obviously, very limited in its power to predict the future.

(ii) **Visions and the path to achieving them: back-casting**

Creating a vision is the opposite of forecasting: A vision for the future often tends to be painted in bright colours with (over-) optimistic hopes for progress and enriched with technical solutions that seem to eliminate all problems. Contrary to the trend scenarios, the past and current situations are looked upon here as the dark and troublesome times which can finally be overcome. The main function of a vision is, therefore, to inspire politicians and the public and to create a positive future, one that is worth investing in and fighting for. The method of back-casting means that a vision or objective is formulated and then the incremental steps necessary to achieve it are defined. These intermediary goals on a path to a desired outcome can contribute to a clearer view and awareness of causalities. Negative influences and ensuing reactions are, however, often ignored, painting too straight a line to the planned ideal situation. Visions are often criticised as unachievable, as unrealistic dreams or as even crazy ideas about the future. These insinuations are often an attempt to prevent any changes to current trends. A vision helps one to feel in control and to take an active role in shaping the future according to values and desires, while following a trend implies only a small margin of manoeuvrability and a certain inevitable outcome.

Any kind of planning, policy or debate about the future is based – either implicitly or explicitly – on a trend-scenario, a vision approach or a mixture of both. Planning and policies always imply an idea of what reality will look like once the plan or policy is implemented. To make this methodological prerequisite transparent is, therefore, a necessity for any debate in society.

---

4 Positive trend scenarios are rare. They can be more often found as visions (see below).

5 This happens most often when mathematical models are used.

6 The ‘negative’ version is usually the one termed “business as usual” meaning that the current trend – which is seen as problematic – is extrapolated into the future.

7 Negative visions or utopias (dystopias) are much rarer and are usually developed in the scenario approach as described above.

8 The word “vision” has that double connotation also in everyday language: someone can be considered to be ‘a visionary’ (having goals going beyond today’s thinking) or ‘to have visions’ (to be crazy).
While forecasts and back-casts are usually described in linear form, the many repercussions, contradictions, interrelations, feedback loops and consequent impacts are not discussed and, thus, overlooked. Forecast scenarios help to create an image of the future based on likely developments, often given in probability terms. Disturbing or even disruptive factors may blur this picture and, thus, are often eliminated. Back-tracking on the other hand often underestimates the resilience of a system and of people: how they cope, learn and adapt to situations creating a new starting position after the first intervention.

Similarly, supposed positive effects suddenly have non-intended negative side-effects and expected negative impacts turn out to be positive in the long run. Many cities today, for example, are glad that a shortage of money or certain political constellations at a previous time prevented them from building large motorways through their centres or ripping up the tram network. What was once considered a disadvantage has turned into today’s benefit.

While a trend or vision may be positive in one respect, it may be negative in another. It can also be positive for one group of society, while another one might suffer from it. We see this currently in inner cities that are transformed into highly attractive and expensive pedestrian places for tourists and the well-to-do while lower and middle-classes are pushed out to the suburbs.

It is these paradoxical developments of complicated interrelations and domino effects, of co-existing and contradictory trends, as well as unintended or unexpected results of visions that need to be addressed when discussing the future.

3. Time horizon and scope

Our time horizon is 2030, i.e. 20 years into the future; the geographic scope is Europe. Looking back the same number of years, we find ourselves in 1990, the year after the fall of the Berlin Wall. This marks not only the end of state socialism in Eastern Europe but also the start of a new geopolitical era. Technological changes, such as mobile phones, begin to influence our daily activities. What about walking? We can identify some basic trends in these years, however timid, slow and limited they are. Evidence seems to grow for the following tendencies:

- a slow change in the recognition of walking, particularly in the field of city planning and public space policies;
- a stop or at least a slow down of the decline in the number of walking trips and the time spent walking in some countries and especially in city centres;
- a continuous shift from mono-modal to multi-modal trips, mainly in cities and in countries with good public transport services;
- a gradual increase of leisure walking at the expense of utilitarian walking;
- a growing popularity of staying outdoors, particularly in places that formerly did not have such a tradition (e.g. Northern European countries);

Seen in the short-term, all of these changes are slow and gradual with their developments and impacts differing widely between countries. In Eastern and Southern Europe, where motorization rates rose considerably in the last decades, this renaissance of walking might be a phenomenon still to come. In the long-term, however, these signals seem fundamental and far-reaching since walking was on the decline and ignored by policy makers for decades. What can we expect for the next 20 years? Which trends will continue? Will they look incremental or fundamental in the long-run?
The only thing we can assume with certainty is that the basic characteristics of walking and the fundamental needs and abilities of pedestrians won’t change, since they are inherently human. However, changing environments, policies and technologies will require different, additional or new answers and measures to meet these needs. Climate change, the aging of society or the likely rise of oil prices, for example, will create new challenges for transport and walking policies.

The inherent uncertainty of the future allows, or even requires, an essay-oriented style, rather than a traditional scientific approach. The latter would have limited the freedom to explore ideas, whereas the group has written these papers using analysis, intuition and informed speculation to create new insight. The authors’ personal views unavoidably flow into their analysis. By presenting the thoughts and material openly, we hope that the reader can build his or her own critical opinion and, above all, be inspired to think beyond what has been written. We believe that only by successfully thinking beyond the short-term contingencies, will we be able to create a future for walking and ultimately a healthier and fairer society.

4. Structure of the publication with a short overview

The publication is divided into three main parts: perspectives, trends and visions each comprising several chapters.

4.1. Perspectives

Perspectives relate to the double meaning of putting issues into a broader and longer-term context and at the same time providing personal views about some of the crucial issues for the future. The contributions in this part provide an overview of some of the major developments that have affected walking and sojourning in the past and will probably have an impact on the two activities in the future as well.

Daniel Sauter (Switzerland) analyses the interaction between the major ideological paradigms in the 20th century and the impact they had on walking policies and their implementation. The debates are illustrated in eight areas: land-use, public space, safety, environment, health, economics, culture and institutional framework. These themes weave through the transportation debates of the past 100 years like a thread, always appearing in new forms depending on the ideology of the times. This long-term socio-historical analysis can serve as a basis for drawing conclusions on the future of walking.

For Nicole Muhlrad (France) the promotion of walking is an essential policy element to avoid the “doom scenario” consisting of increased social inequalities, poorer life quality, economic slump, deteriorating health and rising violence as a result of higher petrol prices and climate change. It is crucial that such policies are implemented now since the current trends suggest that negative impacts will arise in the short-term rather than the long-term.

Mário J. Alves (Portugal) points to the fact that higher awareness of the limits to space, energy and environment will be needed in the future. In a differentiated and a critical assessment two contrasting scenarios are debated, the first one on the basis of business-as-usual with cheap motorised private transportation and the second one under the assumption of a sharp increase in the cost of individual motorised transportation. In the long-term (2050 and beyond) the author sees three post-car scenarios that will impact on walking in different degrees: the ‘local sustainability’ scenario, ‘regional warlordism’ and ‘digital networks of control’.
Manuel João Ramos (Portugal) is “trampling over paradoxical trends and visions of European walkability”. While the author recognises the importance of bold visions in order to shape current and future trends for managing urban mobility, he warns of the shortcomings of uncritically pushing forth the “walker” agenda in contexts where gentrification and tourism become options for resurrecting urban centres at the expense of a more general drive towards reassessing pedestrian quality needs in the overall conurbations.

Rodney Tolley, Les Lumsdon and Karen Bickerstaff (United Kingdom) report on a research project done 10 years ago, which predicted trends in walking in Europe for the coming decade. Expert opinions showed a consensus at the time that in a context of rapidly rising motorisation, there would be less everyday walking – although more for leisure and health – but certainly more talking about walking. 10 years after it can be said that the expert predictions have proven to be right in many ways. Though they noted that the quality of life issue was closely linked to walking, the scale of the re-focusing away from walking per se towards a broader concept of liveability was perhaps unanticipated.

4.2. Trends
The contributions in trends deal with specific issues and developments relevant for walking or they have a specific geographical focus. The papers address the important challenges in the future, starting with the impact of an aging society, health, tourism and recreation, changing lifestyles as well as changing settlement and urban structures, which are all closely related to the general theme of planning for pedestrians.

Iris Mühlenbruch and Barbro Rönsch-Hasselhorn (Germany) discuss the development of mobility patterns of elderly people in the coming decades. We know that society will get older across Europe both in absolute and relative terms. However, the impact of this trend on walking is hard to predict because of conflicting trends. Elderly people will be healthier and, thus, may walk more but also drive longer. External factors such as oil price or region in which elderly people live may have a bigger effect on their mobility patterns than demography. Larger differences among the elderly will require a better adaptation of the built environment to the needs of the most vulnerable pedestrians.

Hans Orru and Kati Orru (Estonia) review the clear benefits of walking for personal and public health. Though well known for a long time, research has only recently proved and quantified this empirically. It is now widely accepted that everyone should get at least 30 min of moderately intense physical activity each day. Based on this evidence there are strong arguments in favour of walking and measures to reduce car use in future transport and urban planning policies. The paper ends with key policy recommendations to increase the amount of walking as one of the easiest ways to maintain and improve public and personal health.

Thérèse Steenberghen (Belgium) starts from the general consensus that tourism is expected to continue to grow in the next decades. Based on current behaviour and observations it is clear that walking is part of the tourist experience and is causing a positive impact on the quality of pedestrian space in tourist destinations. However, these positive impacts are not without their problems - commercialisation of public space being one of them. Therefore, it is crucial to find a balance between tourist needs and the characteristics of the place and its society.

Emil Drápela (Czech Republic) reviews the major changes in life styles in the Former Eastern Bloc, especially in the Czech Republic. Although at slightly different rhythms most countries in this area of Europe went through massive structural changes that resulted in economic growth and, therefore, the acquisition of cars by large percentages of the
population. Desertification of city centres and increased suburban sprawl became part of these sudden changes which had an impact on mobility patterns in general and caused a reduction of walking in particular. However, these countries are also facing a progressive aging of their populations, a group of society that still walks most and, thus, slows down the trend. The author also recognizes a gradual change recently to policies that favour pedestrians and improve walking conditions.

Karel Schmeidler (Czech Republic) analyses the urban trends and the subsequent changes in mobility patterns in Eastern Europe in the last two decades. Until the 1990’s walking was valued by state policies – the former regime did encourage and invest substantially in leisure walking. However, the last decades were marked by distinct pro-car policies with negative consequences for pedestrians. These lead to higher car ownership and further the choice of living in lower density suburbs out of reach of public transport. The article finishes by recommending policies to reverse existing ones and create pedestrian friendly cities.

4.3. Visions
The papers in this section provide a vision of what the future might be like and what we could learn from the past to create a (more) pleasant future for pedestrians. The rich cultural and architectural heritage contains a wealth of ideas that have proven successful and that could serve as a reference for the future. The new communication and interaction networks provide a new conceptual framework in which public spaces can be seen as relational spaces. The three alternative visions presented in the last contribution illustrate the role walking, as well as cycling, could take on in future urban areas.

Lucia Martincigh (Italy) reviews the visions of ideal cities throughout historical times. Since Roman civilisation, philosophers, urban planners or architects had visions of ideal urban environments. One common thread is that the pedestrian was most often the good measure of the quality of spaces. Squares and streets were always imagined bustling with people walking, trading or talking with each other. Equally the distribution of space and architecture in these visions is always favourable to the public realm and its qualities for interaction. Even in the Twentieth Century when visions based on the automobile started to appear there are examples of pedestrian friendly utopias. Based on these humanist visions from the past the article ends with recommendations on attaining them in the future.

Dragana Bazik (Serbia) has a vision of the future of public space as multiplex relational environments. With the ubiquity of wireless networks and devices people will be able to use places for multipurpose activities. This will imply new ways to think about public areas and their design – to focus more on content and operational issues than on its physical aspects. To illustrate what these spaces might look like and to point out some clues on what is necessary for them to appear, some examples around the world are mentioned and put in context of this relational framework.

Miles Tight (United Kingdom) constructs three visions for 2030 from archetypal urban environments common in the United Kingdom. Each of these visions is based on significantly different modal splits from the reference year 2010. Vision one takes best practice of Northern European cities as model where modal split is more favourable to cycling and walking though car usage still represents one third of the trips. For vision 2 and 3, urban environments are imagined in ways to accommodate radical changes on the present modal split – in both these visions cars will only be the mode of choice in 5% of the trips. If the first vision needs courageous but attainable gradual changes, the author suggests that more radical changes are necessary to attain the last two visions. They will need careful back-casting – therefore making this exercise in envisioning an essential part of the planning process.
Acknowledgements

We would like to thank our colleagues in the PQN project, in particular the chair, Rob Methorst, the vice-chair, Jim Walker, and all members of the working group on the Future of Walking for the many inspiring debates, exciting ideas and promising perspectives developed during the course of our Action. Many thanks also to the external paper reviewers, Raphael Denis Huguenin, Susanne Iwarsson, Stein Johannessen, Wolf-Rüdiger Nickel, and Willem Vermeulen for their valuable time, their professional input and their constructive suggestions. A large thank-you also goes to the language reviewers, Susan Fillmore and Allen Maurer, for their careful reading of the papers and their understanding and patience with our language quirks as authors.
B.3. The future of walking
B.3. The future of walking

Drawing by Manuel João Ramos, Lisbon, Portugal
B.3. The future of walking
How ideologies influence walking policy

Daniel Sauter
Urban Mobility Research, Zurich, Switzerland
daniel.sauter@urban-mobility.ch

‘We can chart our future clearly and wisely only when we know the path which has led to the present’. Adlai Stevenson

Summary

This paper analyses the interaction between mainstream ideologies of the 20th century and their impact on walking policies. Five distinct periods of thought can be identified that have treated walking and public space differently. Between 1910 and 1930, inspired by the Futurists, the spirit of the time glorified technology and advocated unhindered speeds of cars, resulting in a sharp increase in pedestrian casualties. During the Great Depression and the rise of totalitarian regimes, discipline and the subordination of people, including pedestrians under the new rules of car traffic, were enforced. The years after the Second World War saw mass motorisation, construction of motorways and cities getting invaded by cars. It was only in the mid-1960’s that the Limits to Growth started to be recognised and first measures were taken to create pedestrian precincts and to introduce lower speed limits for cars. The neo-liberal era starting in the early 1980’s preached deregulation and the virtues of market-forces, which led to the refurbishment of public spaces in city centres, gentrification, more urban sprawl and also the ‘discovery’ of the pedestrian as consumer and the promotion of walking for health.

This long-term socio-historical analysis is intended to serve as a basis for identifying opportunities and threats in the future. Although it is not clear if a new ideological paradigm is actually emerging, several changes that will affect walking and public space appear on the horizon: in economic terms, efficiency, incentives and cost-benefit issues will be important; in society, trends can be seen towards a rebirth of community solidarity and, as a negative scenario, an increase in authoritarian regulation and the exclusion of non-mainstream groups; technology, finally, will be seen as the answer to problems such as peak oil, climate change and the looming forces of re-regulation and taxation. All of these developments will impact on walking and public space, providing opportunities in some cases and posing threats in others.

1. Introduction

The past shapes the future. If we aim to improve the situation for walking, it is worthwhile to look into the past to see which factors have been of importance. If we know what was decisive in the past, we may be able to draw conclusions for the future. A first, speculative attempt towards such an analysis is the aim of this paper. It is inspired by the questions: Why do certain issues relevant for walking come up at certain times and not at others? Why are the issues then treated in a specific manner and not in another?

This article analyses the interaction between the major paradigms of thought in the 20th century, the main political issues debated relevant for walking and public space and the resulting structural changes, i.e. the effects on planning, design as well as on perceptions and walking patterns (see figure 1: analytical framework).
B.3. The future of walking

The focus of the research is on developments in Western European societies starting at the beginning of the 20th century with a particular focus on the last three decades: this era will have the most influence on our immediate future. The study will neither satisfy the historians nor the sociologists since none of the subject-specific methodologies are employed. Instead, a more phenomenologically-oriented approach is used to explore potentially new insights.

The analysis is divided into two introductory parts followed by the main analysis. The first introductory part (chapter 2) looks at the spirit and ideology of the times (‘zeitgeist’) i.e. at the major paradigms of thought in the past decades. The second introductory part (chapter 3) describes the issues which have been debated in public and in politics over the same period that are relevant for walking and public space. The central part of the study looks at the influences of the ideologies and debates on walking and public space. Each era is dealt with in a separate chapter starting with Futurism (chapter 4) and ending with a brief outlook to the future (chapter 9). The conclusions in chapter 10 also contain a summary with an overview of the issues and ideological paradigms.

The results presented here are the draft outline of a larger project still in the planning stage about the social, cultural and political history with regards to walking in the 20th century. Many thoughts are, thus, still fragmentary. But, hopefully, the reader will find enough aspects as inspiration to continue own explorations.

2. Spirit and ideology of the times (‘Zeitgeist’)

Periods in history can be described by their mainstream thoughts, the political powers representing them and their formative influence on people’s lives. Depending on the research interest, these periods can be analysed over longer stretches of time (e.g. ‘Middle Ages’, ‘Renaissance’) or over shorter phases1, e.g. over several decades. In this paper we attempt to describe the main characteristics and major paradigms of thought in the 20th century – and the powers linked to them.

---

1 Historians term such phases as an ‘epoch’, an ‘era’ or ‘age’. According to the Oxford Advanced Learner’s Dictionary an ‘era’ is “a period of time, usually in history, that is different from other periods because of particular characteristics or events”. In this paper the terms, ‘era’, ‘period’ or ‘phase’ are used equivalently.
2.1 The mainstream ideas and their material expressions

The spirit or ideology of the times, which even in English is often referred to as ‘Zeitgeist’, describes “the general mood or quality of a particular period of history, as shown by the ideas, beliefs, etc. common at the time” (Oxford Advanced Learner’s Dictionary\(^2\)). It can also be said that the ideology comprises the social, political and economic structures, the technological developments and the built infrastructure, in which the ideas are cast in more fixed forms\(^3\).

Thus, the spirit of the times also expressed in the material forms it takes. The ideology and its materialisation are two sides of the same coin and are intertwined in a dynamic and dialectical relationship. The materialised forms may last much longer than the ideology itself and may shape the lives of many generations to come.

A paradigm announces itself before its time, usually with a pioneering piece of work, for example in a theory, a new technology or a piece of art that catches the still unconscious sentiments. The effects of the new idea, however, may not unfold or evolve into mainstream thought for a long time.

A new era is never totally new. It builds on the previous one and alters and modifies its approaches to certain topics in accordance with the new ideology. Strong trends from the previous phase may continue but they are guided and dealt with differently. There are usually longer transition periods between changing paradigms which results in overlapping phases of slow change for years. Relatively clear-cut points such as at the end of the Second World War are rare.

Ideologies are never implemented and lived by in their ‘pure’ form. What we see in real life is often ‘only’ its pragmatic version. Although, for the sake of clarity, we assume a dominant ideology and trend during a certain era in this article\(^4\), the ‘Zeitgeist’ is never quite as uniform in reality and may include several, sometimes parallel and or even contradictory elements. There are also differences between countries when an ideology ‘takes over’ and in the way it shows itself in the details of social, cultural and political life\(^5\).

Extraordinary historic events can trigger or shape a change to a new paradigm substantially. Such events can change the course of history, for example, the assassination of Archduke Franz Ferdinand of Austria in 1914, which led to the First World War. While some of these events come as a surprise to the powerful and force them to change policies against their will, other events may be used by the elite as an excuse for implementing long planned changes\(^6\). Naomi Klein describes in “The shock doctrine” how natural disasters, financial crises and political unrest have been used to implement the neo-liberal agenda in a number of countries (Klein 2007). Seizing the opportunity of the moment and using a dramatic event as a catalyst for change is, however, not new and not restricted to powerful elites alone although in most cases only they have the means to take advantage of such situations.

---

\(^2\) See: http://www.oxfordadvancedlearnersdictionary.com => Zeitgeist.

\(^3\) This theoretical approach could be linked to Volker Bornschier’s theory on the careers of societal models (see Bornschier 1996, orig. 1988). Due to the limited space in this article, it is not possible to discuss this link.

\(^4\) In some instances excerpts from documents that have had a crucial impact on the ideology of the era will be presented; in other instances documents are referred to which analyse or explain the era in a nutshell.

\(^5\) This also has to do with the fact that the persons in a society have been shaped at different times by different ‘Zeitgeists’ and, thus, still bear this cultural and social heritage in themselves.

\(^6\) Changes that were unacceptable before can in such instances be implemented without much resistance.
2.2 The sequence of ideologies since 1900 – with a speculation about the future

The past 100 years could be divided into five main eras with distinct ideologies and societal concepts, structures and related events. The following short descriptions are intended to give a quick overview based on certain keywords and vague time frames. Each ideology and its corresponding material evidence will be discussed in more detail in the following chapters with specific references to the political debates and their effects on walking and public space.

![Figure 2: Overview of ideologies and the powers linked to them during the 20th century](image)

The main ideological paradigms since around 1900 include the following stages:

- **Futurism, Taylorism/Fordism, World War I and ‘Golden Twenties’**; F.T. Marinetti’s Futurist Manifesto in 1909, with the glorification of speed, celebrating the unleashed power of fast cars and technology in general etc.; the introduction of a new production (and consumption) paradigm by the Ford motor company (model T), which lead to wide distribution of cars in North America; First World War with some of the futurist ideas being ‘implemented’, followed by the so called ‘Golden Twenties’ with a more peaceful version of implementation; a first shift from the paradigm of production to the one of consumption.

- **World Economic Crisis, Nationalism, Totalitarianism and World War II** (Fascism, Nazism, Stalinism); starting in the late 1920’s and ending mainly after the Second World War; however, in some countries longer; also varying degrees of crisis and totalitarianism; widespread poverty; in social and political terms: the individual is supposed to serve community/national interests; The Athens Charter of 1933: in its functional approach cities, spaces and humans are seen as ‘machines’, the idea of segregation between modes is launched; first attempts to spread the car to the wider public also in Europe (Volkswagen) and to build highways (Autobahn), although all first used for military purposes.

- **Consumer society and mass motorisation (‘take-off‘), Keynesianism (introduction of welfare state) and Social Conservatism**; starting after the Second World War until the end of the 60’s and early 70’s (=> Cold War). Marked by untainted optimism and blind faith in progress after the war years; take-off point of consumer society; cheap energy playing a decisive role for the success of this paradigm; spreading and ‘democratisation’ of cars; sub-urbanisation: owning a house in the suburbs as ultimate goal; building of shopping malls on green fields; growth of leisure society, increased mobility in general:
B.3.2. How ideologies influence walking policy

- ‘Limits to Growth’, Social Liberation, Solidarity, Individualism, ‘Generation 68’; starting in the late 1960’s and extending through the 70’s into the mid 80’s. This phase starts with rebellion of young people against rigid social norms: emancipation of women, liberated sexual relations, new music styles, anti-war demonstrations (Vietnam); values such as individuality, autonomy and non-hierarchical relationships are gaining ground; social justice issues, universal solidarity and care for the environment become important; the Club of Rome publication on ‘Limits to Growth’, the oil crisis in 1973 and the accident at Three Mile Island mark the turning point; environmental organisations are started (e.g. Greenpeace) and legislation for more environmental protection is introduced; terrorist activities in several Western countries during the 1970’s (e.g. in Germany, Italy, Ireland/UK).

- Neo-liberalism: Deregulation & Privatisation, the end of State Socialism and of the Cold War, the Financial Crisis and Climate Change; starting in the early 1980’s and maybe coming slowly to a close? Neo-liberal policies introduced widely: privatising public services, deregulating and liberalising the economy, reducing taxes for companies and the rich while cutting social welfare; profit-making attitude permeates all areas of life; accompanied by neo-conservative ideology to discipline ‘losers’ by enforcing ‘law and order’ and increasing surveillance in public spaces; New Labour as third ideological formation of the time focuses on education, information and incentives; the collapse of state socialism in the Soviet Union and Eastern Europe in 1989 makes neo-liberal model global; terrorist attacks of 9/11 (2001) lead to wars and give arguments to curb civil liberties; financial crisis starting in 2008 and subsequent global economic crisis impact on perception of the role of the state.

- Outlook to the Future: maybe greener technology, economic incentives & coercion, paternalism & neighbourhood solidarity; new era possibly starting after the financial crisis? What might the new paradigm bring? In economic terms, issues such as efficiency, incentives and cost-benefit ratios will likely be important, elements of true-cost and pay-per-use schemes may be implemented; continued economic pressure on city centres; in society, signs of a rebirth of community solidarity to re-conquer neighbourhood public spaces as well as tendencies towards increased authoritarian regulation and exclusion of non-mainstream groups; healthy lifestyles become even more important, danger for increased coercion; technology will be seen as answer to problems such as peak oil, climate change and the looming forces of re-regulation and taxation; increasing numbers of electric and hybrid cars leading to less noise and pollution but a possible increase in road danger for pedestrians; great potential to improve pedestrian safety with technologies that tame car traffic.

3. Main political issues debated that affect walking and public space

Looking at the past decades we can identify eight main areas of public and political debates and structural changes relevant to walking and public space. The overall issues remain fairly constant but the treatment of the issues changes over time. New aspects of an issue appear while others disappear or are treated differently. The way these issues are treated affect walking and public space, for example, in terms of planning and design but also regarding walking behaviour and perceptions of and by pedestrians.
This section gives a brief overview (in keywords) of the main political issues related to walking and public space that were debated in the past 100 years. They, of course, overlap in reality and are presented separately here for analytical reasons only. In fact, one can detect a growing trend towards more integration which means that the issues become more interrelated and complex.

The following chapters will analyse in more detail what effect these politically debated issues have had on walking and public space against the background of the dominant ideologies and spirits of the times.

- **Land-use and city planning, sub-/peri- and re-urbanisation** (*land-use*)
  Discussion points include(d): segregation of functions (living, working, shopping and leisure) (influenced by the Athens Charter); the dream of country/suburban living made possible by the car; urban sprawl: building extensive networks of motorways / roads, new housing and shopping malls on the outskirts with decisive effects on distances, accessibility, mode choice etc.; re-urbanisation; gentrification; increased investments in public realm.

- **Public space: allocation and distribution to users and uses** (*public space*)
  Discussion points include(d): use of public (road/street) space for what and when; who has the liberty, privilege and priority when moving and sojourning in public (road) space; right of way, separation vs. sharing space, channelling movements (e.g. of pedestrians), diversity, publicly vs. privately owned spaces, segregation vs. integration, activities allowed on the street (e.g. children playing etc.), place-making, public realm planning as place and link, liveability and walkability, living streets; control/ surveillance; law and order, social exclusion.

- **Road danger (reduction): safety and security** (*safety*)
  Discussion points include(d): how traffic/roads can and should be made safer; responsibility in case of accident; speed and speed limits, their enforcement, traffic education (for drivers and the ‘public’, mainly children), liability insurance, vehicle equipment (black box, speed limiters, Intelligent Speed Adaptation [ISA], safer car fronts, pedestrian detection systems etc.), traffic calming measures, woonerf, Shared Space, social safety design, Vision Zero and Sustainable Road Safety programmes; on security: how security and the sense of security can be improved, safe environments, lively spaces, (video) control, terrorist threats etc.

- **Environmental effects and protection** (*environment*)
  Discussion points include(d): effects of different transport modes on the environment; who can cause how many emissions and who will suffer from them; emissions such as noise, dust on non-paved roads, ozone (NOX), particulate matter, CO2 with the effects of global warming and climate change; health effects and measures to limit or reduce the emissions and/or negative effects.

- **Health and active lifestyles** (*health*)
  Discussion points include(d): physical and mental health, healthy cities, architecture and hygiene; environments supporting active travel, health-related transport interventions, overweight and obesity and resulting illnesses, health costs, economic assessment of health effects from walking, active vs. sedentary lifestyles, empowerment and individual responsibility.

- **Economic relevance (of modes & public space)** (*economy*)
  Discussion points include(d): importance of modes and public space for the economy, e.g. in terms of employment, industries (car manufacturers, road builders), investors interests, tourism, shopping (downtown, in malls, at local markets), local resources, over-commercialisation, (most) liveable city, attractive neighbourhoods, quality of life, international competition, iconic architecture, public events, finances, subsidies.
B.3.2. How ideologies influence walking policy

- **Social and cultural relevance (of modes and public space) ('culture')**
  Discussion points include(d): cultural traditions, public interest, civic culture, walking as elementary evidence of being human, the car for everyone, community-spirit, social interaction and social inclusion, local resources, sensory experiences when walking, freedom and liberty (associated with certain modes and behaviour).

- **Institutional aspects ('institution')**
  Discussion points include(d): transport strategies and policies; data availability; investments, finance allocation and distribution (between modes, between ‘link’ and ‘place’); institutional set-up and regulations, resources for research and monitoring; number of staff in administrations, their knowledge and sensitivities towards modes, cooperation between different government levels (local - regional - federal - international).

4. Futurism, Taylorism & Fordism, First World War and ‘Golden Twenties’

This period starts around 1910 and ends towards the end of the 1920’s.

4.1 Description of the Futurist paradigm

The Italian based futurist movement, lead by Filippo Tommaso Marinetti, publishes its first Manifesto in 1909. It reflects and impacts on the mood of many people although radicalising it: The belief in unlimited technological progress. The Futurist Manifesto glorifies speed, the beauty of noise and celebrates the unleashing powers of fast cars and technology in general. The manifesto is an apotheosis of the destruction of space, violence and war. The historical development of the 20th century reflects in many ways the spirit of this manifesto (as we will see). And it starts with the First World War which ‘implements’ some of the futurist ideas.

Just as revolutionary is the new production – and consumption – paradigm of the Ford motor company in the United States, later termed ‘Fordism’.

Henry Ford introduces the assembly line for the production of his Model T based on Frederick Taylor’s analysis of work processes. By standardising work steps and dividing them up between labourers, a higher productivity can be achieved, a pre-requisite for mass production. Henry Ford also pays salaries which are high enough for workers to afford the cars they produce. This leads to an early start of the consumer society (mass consumption) in the U.S., a trend which reaches Europe only after the Second World War.

Quotes by F.T. Marinetti

“We declare that the glory of the world has been enriched by a new beauty: the beauty of speed…”

“A roaring motorcar is more beautiful than the Nike of Samothrace.”

“We shall glorify war — that sole hygiene for the world — militarism, patriotism, the destructive deeds of the anarchists, the great ideas one dies for, and a disdain of woman…”

(Sources: Marinetti 1909, Martin & Grosenick 2006)

---

7 The term ‘Fordism’ was introduced by Antonio Gramsci (1891-1937) to describe a new level of capitalism: Mass consumerism based on relatively high wages and efficient, assembly-line type production methods (See Merki 2009, p. 356). Although this development was pioneered in the United States it had a tremendous effect for the economy all over the world.

8 The method was also thought to discipline the workers since Taylor insinuated they are deliberately not doing enough: “Instead of using every effort to turn out the largest possible amount of work, in a majority of the cases this man (the worker D.S.) deliberately plans to do as little as he safely can – to turn out far less work than he is well able to do – in many instances to do not more than one-third to one-half of a proper day’s work. (…). It will be shown later in this paper that doing away with slow working and “soldiering” in all its forms (…) would result on average in nearly doubling the output of each man and each machine.” (Taylor 1911, p. 14f).
Particularly the early parts of the era are characterised by strong social tensions based on the highly unequal distribution of wealth and the effects of the war. Poverty is widespread, inflation is high and living conditions for the working class are dismal. The many general strikes are often suppressed with the force of the army. One of the reasons is the fear of communism, particularly after the Russian revolution in 1917. The street is seen as dangerous ground not only because of slowly increasing traffic but also as political breeding ground for revolution.

While the working class is losing many battles over “appropriating the means of production”, the first signs of a shift in paradigm, from production to consumption, are seen during the 1920's, accompanied by an economic upturn. Though the full effects of the consumption paradigm are to be seen only after World War II, people are enjoying their increasing purchasing power in the mid-1920’s. For the upper and middle classes cultural life becomes vibrant: music, movies and fashion. Thus, the era is retrospectively named the Golden Twenties⁹. And the upper class is also buying cars. In Switzerland, for example, the number of cars on the roads increases by the factor 6 between 1920 and 1930, from less than 9,000 to more than 60,000.

### 4.2 Car speeds increase dramatically – and kill

Around 1910, automobiles are still fairly rare. Mostly luxury vehicles of the wealthy can be seen. Transport in towns is done predominantly on foot, by bicycle and with horse-drawn carriages and wagons. Buses and trams exist in larger cities; by the turn of the century they are usually electrified (in Zurich, for example, the first electric tram is introduced in 1894).

The main streets are typically wide enough to accommodate all traffic and pedestrians can cross the street everywhere, except in large cities like London or Paris where traffic jams are already a common occurrence. In the narrow alleyways of the historic parts, however, and in some side streets, the multi-function as workplace, marketplace, meeting place and playground for children occasionally causes problems.

Car traffic is obliged to drive slowly. The speed in built-up areas is restricted to the pace of a trotting horse. However, these speed limits are increased quickly and no longer enforced, partially because the police do not have the means to do so: The policeman on his bicycle has no chance to catch-up with a fast moving car. The non-enforcement of the limits plus technical developments and constant lobbying by the automobile organisations, lead to the lifting of speed limits altogether by the end of the 1920’s. In Great Britain, for example, speed limits for cars are abolished in the 1930 Road Traffic Act.

Needless to say, the higher speeds and increasing number of cars lead to a surge of accidents with deaths and serious injuries, especially among pedestrians.

<table>
<thead>
<tr>
<th>Year (1901-1930)</th>
<th>Persons killed by motor vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901-1903</td>
<td>1 (in 3 years)</td>
</tr>
<tr>
<td>1910</td>
<td>22</td>
</tr>
<tr>
<td>1922</td>
<td>124</td>
</tr>
<tr>
<td>1924</td>
<td>129</td>
</tr>
<tr>
<td>1926</td>
<td>289</td>
</tr>
<tr>
<td>1928</td>
<td>384</td>
</tr>
</tbody>
</table>

⁹ In the U.S. the phrase used is “Roaring Twenties” and in France “les années folles”.

---

PQN Final Report – Part B: Documentation
There is only information about mortality rates but none about injuries and none about the transport mode involved in either case. But it can be assumed that pedestrians made up a substantial portion of the victims. The fact that only those persons were registered who died within one week of the accident suggests that the real number of victims is underestimated by about 60% (see Merki 1999, p. 68). In comparison: the number of road deaths in Switzerland in the year 2009 was 349 persons.

In several countries, the speed limits are lifted or eased and replaced by liability laws and/or the introduction of compulsory driver insurance\(^\text{10}\). This means that the financial risk of hurting a pedestrian is now distributed among all drivers which is not conducive to more careful driving behaviour. Often pedestrians are considered guilty in the first place without getting any compensation at all. The insurance approach also leads to an individualisation of accident causes, ignoring the structural elements such as speed and loss of pedestrian space and makes car accidents socially acceptable as a normal risk of life (Sauter 1999, p. 80).

**4.3 Dust, mud and noise as dangers and health risks**

While pollution in the form of horse droppings and noise are already a problem in the late 19th century, the diffusion of the car multiplies these problems – in cities and in rural areas\(^\text{11}\). Since most roads are not paved, dust or mud (depending on the weather) is stirred up every time a car passes by and engulfs the pedestrians. The noise of the vehicles makes horses and other animals shy away, causing dangers for the horse carriage drivers and pedestrians around them. This is acerbated by the legal requirement to honk in many situations. Even though some of these emissions also cause major health problems in the population, they are rarely addressed as health issues. Paving the roads eventually eliminates the problem of dust, but other emissions remain substantial challenges and they only become a topic in the 1970’s (similarly to traffic safety).

**4.4 First pedestrian associations emerge, but interests are difficult to organise**

During these times the political debates among the car lobbyists, transport companies and representative of pedestrians are fierce. The latter are denounced as enemies of progress and economic prosperity. While the car interests are very well organised, it is much more difficult to organise the interests of the pedestrians (see Sauter 1999, p. 106). The first Pedestrian Associations are founded in 1929 in the United Kingdom and Switzerland. Both are fairly small. The Swiss organisation’s presidency expects two million members (i.e. about half of the population) but only several hundred people join (see Nussbaum 1989, p. 241). While the U.K. organisation still exists today (since 2001 under the name of Living Streets), the Swiss counterpart folds quickly. New organisations are springing up in the 1950’s and today’s pedestrian organisation is founded in 1975 (see below)

**4.5 Social inequality reflected on the street between drivers and pedestrians**

The paradigmatic wish of the Futurist Manifesto to unleash speeds becomes an everyday reality by the end of this period with pedestrians paying a high price. The social struggle between the wealthy car drivers and the poor(er) pedestrians (and cyclists) reflects the inequalities of the society at the time. The defeat of the working class in their fight for more social justice is reflected on the streets as well: they not only lose politically as demonstrating workers against the wealthy company owners but also as pedestrians against the wealthy car drivers.

---

\(^{10}\) In the U.K. the 1930 Road Traffic Act introduces compulsory third-party insurance. In Switzerland a similar regulation together with a liability law is introduced in 1932 (see Sauter 1999, p. 80).

\(^{11}\) Mário J. Alves pointed out in a discussion, that the car was, on the other hand, also seen as solving serious public health problems, such as manure and dead animals on the streets.
In this situation, the shift from the production to the consumer paradigm starts to take shape on the horizon. The capitalists claim that workers should not strive to own the means of production (as implied by Marxist theory) but instead – as in the U.S. – should be able to buy their own products (e.g. a car). Thus, the communist revolution in Europe is cancelled until further notice. The world economic crisis, however, increases social inequality with nationalistic and totalitarian movements taking advantage of the situation and leading the masses to war instead of to consumers’ paradise. Only after the Second World War does this paradigm fully unfold.

5. World Economic Crisis, Nationalism & Totalitarianism and World War II
This period starts in the late 1920’s and ends after the Second World War.

5.1 Description of the economic crisis and totalitarianism paradigm
The so-called ‘Golden Twenties’ – which are mostly golden for the rich only – end abruptly in a period of deep, worldwide economic crisis. It starts with the Wall Street crash in 1929 and is followed by widespread unemployment and poverty and known as the Great Depression. Concurrently, totalitarian ideologies such as Fascism, Nazism and Stalinism rise in power. The degree of totalitarian or nationalistic rule across Europe varies. One of the characteristics of this phase is that individuals are supposed to serve foremost the community and national interests. This forced social unity implies various degrees of discipline and subordination for a common good, also in the field of transport (see below).

In the U.S. the car is already very popular during this time whereas in Europe it remains largely a luxury item, although many dream of owning a car already in the 1920’s. The impossibility for most to own a car adds to the visible social divide between rich and poor. The first attempts to create a “people’s car” in Europe are made in the 1930’s. The Nazis, for example, introduce the Volkswagen in 1937. The car and the concurrent building of motorways (Autobahnen) in the following years, however, serve only military purposes.

5.2 The decisive effect of the Athens Charter on the separation of modes
In 1932/1933 The Athens Charter is adopted which has a tremendous effect on the future of city planning and transport. The idea of the Charter is to make cities “more efficient, rational and hygienic” (Rubin 2009, p.1). This functional perspective builds on the image of the city as a “machine” that can efficiently provide for living, working, leisure and the transport in between. In order to achieve this, a clear separation of functions is necessary; in particular the physical separation (either vertically or horizontally) of pedestrians from cars and among the latter, of slow and fast traffic and heavy trucks. Pedestrians should not be guided along the roads but rather on separate paths at a distance from them.

Interestingly, the language used by Le Corbusier, the main author of the Charter and of related documents, resembles that of the futurists, although in a more moderate tone. It is, as Robin points out, about condemning the past and celebrating the mechanistic approach to the future: “The Declaration of La Sarraz (1928, D.S.) was the first incarnation of what would become the Athens Charter. It called for the freeing of architecture from the “sterilizing hold of the Academies” by linking architecture to the “vast resources afforded by industrial engineering” of the present “machinist age” rather than to the “anemic craftsman class” and thus effect.

---

12 Some of the authoritarian regimes last until the 1970’s (e.g. Portugal: 1974, Spain: 1975) or, in Eastern Europe until 1989.
13 The Charter was written and adopted on a boat trip from France to Greece in 1932/1933 but actually not published until 1943 by Le Corbusier and re-edited by him in 1973.
a break with the "glory ages of the past." (Rubin 2009, p. 2) The motor industry is the paradigm to be copied when creating cities: “Le Corbusier (…) often liked to compare the standardised efficiency of the motor industry with the inefficiency of the building trade.” (Gallagher 2001b)¹⁴

In the cultural world, this mechanical, functional approach is reflected in the films by Fritz Lang (Metropolis 1927) and, in a critical way, by Charlie Chaplin. In “Modern Times” (1936) and “The Great Dictator” (1940) he criticises the inhuman, totalitarian working world and politics. “Modern Times” also illustrates the dismal effects of the assembly line originally introduced by Henry Ford but no longer limited to the car industry.

It is common knowledge that this functional approach to planning the city as a machine by separating the functions (living, working, leisure) and separating the road users will have a tremendous and long-lasting effect for decades to come.

5.3 First steps to push pedestrians from the streets and to discipline them

While walking is still a major means of mobility during these years, and especially during the war, it is a time when increasing parts of the public realm are allocated to the use of the car. While pedestrians at the beginning of the 20th century can still move around and use the street space fairly freely in most towns and smaller cities, this is gradually changing with the increasing numbers of cars. Children are no longer allowed to play on their streets and pedestrians are forced to cross at specific crossing points. This whole process extends from the 1910’s until the end of the 1960’s when some small steps are taken to re-allocate spaces to pedestrians.

During the 1930’s, the main approach to road danger reduction is to educate and discipline road users, in particular pedestrians (figure 3). Children are the main target with demands to control their movements consciously (by stopping at curbs) and act according to the needs of motor traffic.

¹⁴ “But despite his love of the machine aesthetic, Le Corbusier was determined that his architecture would reintroduce nature into people’s lives. (…) (He) was convinced that a rationally planned city, using the standardised housing types he had developed, could offer a healthy, humane alternative.” (Gallagher 2001a)
This kind of education aims (unsuccessfully) to curb the ever increasing fatality and injury rates among pedestrians by teaching obedience to the newly established rules and the new rulers of the street. Furthermore, it serves, on a larger societal scale, to achieve obedience towards the state rulers and their policies. Subordination to the law, to the national interest and implicitly to the rich and powerful is required in this era concurrently.

6. Consumer-Society, Mass Motorisation (‘take-off’), Keynesianism and Social Conservatism

This period starts after the Second World War and extends into the early 1970’s.

6.1 Description of the consumer-society paradigm

The period starting after the Second World War is marked by a wave of untainted optimism and blind faith in progress. There is a basic sentiment of making a fresh start after the depression and war years. It is the beginning of the consumer society as we still know it and which gradually replaces the industrial society. Cheap energy plays a crucial role in the long-term effects of this paradigm, causing an environmental legacy up to the present. The era is characterised by

- The emergence of a broad middle class and the introduction of social security systems (old age pensions, unemployment insurance etc) based on Keynesian economics.
- Mass-distribution of consumer goods: the steady increase of disposable incomes leads to wide spread sales of consumer goods, spurred on by advertising, such goods as household appliances, entertainment equipment (radio, TV), vehicles etc. It is termed the globalising of the “American way of life”.
- An exponential increase in car ownership: Mass motorisation is possible since not only the rich, but also the middle class can now afford a car. This development, often termed as ‘democratisation’ of the automobile, is closely linked to the ideology of the car as symbol of freedom.
- A general increase of mobility, combined with a general growth of leisure activities, lead to a highly mobile ‘leisure society’.
- A dramatic increase in shipping and transport, particularly of cheap, mass-produced goods over long distances by road and air.
- A significant increase in (heated) living space per capita and a growing sub-urbanisation: owning a house in the suburbs becomes the ultimate goal for families; companies tend to these costumers by building large shopping malls on green fields outside the cities.

At the same time there is a prevailing social conservatism with regards to values and lifestyles. Values such as discipline, work ethic, paternalism and obedience to authorities are important and in part a carry over from the previous era\(^\text{15}\). Only standardised lifestyles with rigid roles for men and women and within the traditional family structure are socially

\(^{15}\) There were other elements taken over from the totalitarian era as well. Wolfgang Sachs, for example, points out that the production of Volkswagen and the building of motorways were the „continuation of the Nazi-time with the means of a market economy” (Sachs, 1984, S. 85).
acceptable. Ideologically, the family is charged with providing the emotional hub and vanishing point of happiness.

The rivalry between the systems during the cold war, which, of course, lasted longer than the discussed period here (=> 1989) not only advanced the consumer society but also was instrumental to the introduction of the welfare state and social security systems in western societies. This was based on Keynesian economics which became more or less the official paradigm, particularly in social democratic ruled countries in Europe.

6.2 Urban sprawl: sub- and peri-urbanisation begins

The issue of land-use and sub-/peri-urbanisation is closely linked to the increasing mobility and prosperity. It is no surprise that the onset of sub-urbanisation and urban sprawl takes place in the economic boom era after the Second World War. The emergence of a middle class, cheap fuel and mass-motorisation combined with the dream of country living create the conditions for this development. Large shopping malls, usually only accessible by car, spring up like mushrooms on the fringe of the city. At the same time, the core parts of the cities are devalued and the urban atmosphere is destroyed with newly built and enlarged roads, parking lots and the soaring flood of cars. Increasingly, the inner city is left to the poorer urban population while the middle classes move out to the newly built areas on the outskirts. In the late 1960’s this process is carried even further with the urban sprawl moving in two directions: First, sub-urbanisation created by the middle and upper classes moving to single family homes out in the green belt and commuting into the city by car. Second, the sub-urbanisation of the working-class with people moving to high-rise apartment buildings in newly developed parts of old towns usually along railway lines.

6.3 Loss of space and network: the car invasion

During these years a fundamental structural change takes place. The pedestrians are losing their network of paths and spaces even more to the car. While first signs of this development can be seen already before the war, the shift is now swift and radical. City planners consider people on foot to be a nuisance, mobile obstacles. The main goal is, thus, to guide their movements so they disturb the cars as little as possible. Traffic separation, as suggested in the previous era (see Athens Charter), is widely introduced as the ‘solution’. However, because space is lacking or better, needed for cars, it means that the network for pedestrians is interrupted, fragmented and becoming completely unattractive. The sidewalks are reduced to a circle around the block. Pedestrians are forced to walk detours, use underground passages, overpasses and zebra-crossings and have to wait at traffic lights. Often they are actively prevented from using certain crossings, either by construction (chains, bars) and/or by law. The freedom and mobility of pedestrians is severely curbed – it literally stops at the curb. The car takes over the road and most squares. Pedestrian spaces are turned into parking lots. Cars are increasingly parked everywhere: along the side of the road, on sidewalks, on city squares, on empty lots and on any given street corner.

6.4 Rising death toll among pedestrians despite disciplining measures

With the increasing number of cars, the number of accidents and casualties, especially among pedestrians, rises dramatically. Even in built up areas, speed limits are non-existent or very high. This approach is in accordance with the paradigm of limitless consumption. While the death toll rises, education and disciplining of pedestrians intensify. Anti-pedestrian

---

16 While Le Corbusier’s goal was to give pedestrians in the new city a continuous network of green paths, this was not implemented in the already existing neighbourhoods. So separation was introduced albeit without the intended attractive network.
propaganda and infrastructure measures that disadvantage pedestrians are widely introduced (see above). At the same time, traffic education as the behavioural adaptation to this new infrastructure continues from the previous era. Accidents are considered to be individual failures, rather than structural or political problems. Infrastructure separation and education are intended to make mobility of cars and pedestrians agreeable. By ignoring the structural inequalities (speed, unprotected pedestrians etc.) these measures, however, only exacerbated the problems. The increasing number of traffic victims, in particular pedestrians, is considered to be the price of economic growth and increasing prosperity. The unleashed mobility is associated with freedom, the victims should not stand in the way of progress.

6.5 Environmental impact of unleashed mobility is not an issue – but the long-term problem starts here

The environmental and health impact of unleashed mobility, urban sprawl and the use of resources is not a topic during this era. But, as Christian Pfister points out in his book “The 1950’s syndrome” (Pfister 1996), the fifties are the starting point for the many environmental problems we have today. Pfister claims that cheap and easily available energy (mostly fossil fuels but also electricity) is at the root of the exponential increases in power consumption, space requirements for settlements, gross domestic product, as well as in the volume of waste and the pollution of air, water and land. Without cheap energy, the profound changes in production and lifestyle could not have happened. During the industrial era (until 1950/60), the price of energy was closely linked to the cost of labour and fluctuated with the economic cycles (in good times the energy price rose, in bad times it fell). The effect was that resources were treated economically and innovation was spurred on. In the consumer society (from 1950/60), the price of oil falls increasingly behind the price of most other goods. It becomes separated from the general living costs and the costs of labour. (Pfister 1996, pp. 27., summarised translation by DS)

7. ‘Limits to Growth’, Social Liberation, Solidarity and Individualism
‘Generation 68’

This phase starts in the late 1960’s and extends through the 70’s into the mid 1980’s.

7.1 Description of the ‘limits-to-growth’ paradigm

The rapid economic growth of the years after World War II starts to show the first signs of trouble in the mid 1960’s. Among these are rising inflation rates, infrastructure shortcomings, rebellion against the rigid social norms, particularly by women and young people and anti-war demonstrations (Vietnam). The limits to growth become a major topic (see below).

Social liberation takes on many forms: the women’s movement with the aim of achieving gender equality17, cohabitation of unmarried couples (unthinkable in the 1950’s), the invention of the birth control pill, liberated sexual relations, and new music styles expressing a generational self-understanding. Generally, values such as individuality, autonomy and non-hierarchical relationships gain ground replacing those of duty, paternalism and the unquestioned work ethic.

Despite more individualism, social justice issues and the common good are emphasised more strongly than in the previous era: in particular solidarity with the Third World, respect for

---

17 It’s worth noting that the car allows women more independence from men and, thus, is an important instrument in this emancipation process. However, not all women have access to a car in this era and their mobility patterns are distinctly different from those of men.
living creatures and the environment. The ideal is a universal fairness based on mutual consideration, respect and solidarity. State regulations to further these goals are welcome while ‘oppressive’ regulations e.g. regarding social life are fought. Some groups take the term ‘fight’ a brutal step further and engage in terrorist activities in a number of European Countries\textsuperscript{18}.

7.2 Problems and political pressure lead to first environmental regulations

The problems and the spirit of the time bring the issue of environmental protection to the forefront in these years. The crucial spark is set with the publication of the report on the Limits to Growth by the Club of Rome in 1972 (Meadows et al., 1972), see box. Already in 1963 Colin Buchanan’s report on Traffic in Towns is published (Great Britain, Ministry of Transport 1963) which warns of the potential damage caused by the motor car and sets out a vision of hierarchically organised roads and the introduction of environmental areas. The latter are precursors to the 30 km/hr zones in neighbourhoods introduced many years later. The road hierarchy is divided into three levels according to function and speed, car and pedestrian spaces are clearly separated. Buchanan’s work is, thus, transitional in the sense that it develops new ideas and keeps some from the old paradigm.

These books together with the oil crisis in 1973, the signs of dying trees all over Europe and the partial melt-down of the nuclear reactor at Three Mile Island in the U.S. mark the end of ecological naivety that was predominant since the end of the war.

While some environmental organisations were already founded in the early sixties, for example the World Wildlife Fund in 1961, many others started in the 1970’s: e.g. Greenpeace in 1971, the Swiss Pedestrian Association in 1975 and the alternative Swiss car organisation (Verkehrs-Club der Schweiz) in 1979.

The spirit of the times and the pressure of environmental organisations lead to strong political moves towards more protection of the environment and people’s health. In many countries new legislation is introduced that set limits for pollution, noise levels and to the exponential growth of land-use. It is agreed in principal – but not in practice – that the problem should be solved at the source. Suggestions for fundamental changes are made, but in the end, technical solutions usually prevail, e.g. the introduction of the catalytic converter. Many progressive laws are created, but few are enforced. For example, maximum limits for pollution are set, but no legal mechanisms to enforce them exist.

\textsuperscript{18} Some of these terror movements are inspired by left wing ideologies (for example: Rote Armee Fraktion RAF in Germany, Brigate Rosse BR in Italy) and others by more nationalist or regionalist aspirations, many of the latter have existed for many years but the fights intensified during this time (for example: Euskadi Ta Askatasuna ETA in the Basque Country and Irish Republican Army IRA in Northern Ireland). One of the effects these terrorist activities have on pedestrians is that most public lockers and storage places e.g. in train stations or other public places are closed due to fear that a bomb may be placed there.
Despite the limits of growth, mass consumerism continues with ever more shopping malls being opened on the fringe of cities or even in green fields, usually near motorways and, thus, accessible only by car.

7.3 First steps towards traffic calming

During this period, the detrimental effects of the car are becoming a topic in society for the first time, and initial actions are introduced based on the idea that people (and the environment, see below) need to be protected from these effects.

First pedestrian zones are created in city centres during the late 1960’s, especially in the old, medieval cities where streets are too narrow for cars. This often also happens in reaction to suburban shopping centres with the aim of making the town core more attractive again. However, these pedestrianised schemes are often islands surrounded by a sea of pedestrian misery, with heavily travelled ring roads.

In several countries, speed limits in the built-up area are either newly introduced or lowered. In the 1960’s the speed limit (if it existed at all) is usually set at 60 km/hr. Later, towards the end of this era, the speed limit is lowered to 50 km/hr in several countries. In Switzerland, for example, this happens in 1984 after many years of test trials and political discussion.

In residential areas timid trials for traffic calming are introduced, mostly to reduce child fatalities. In 1980 the Swiss government, for example, established the legal basis for the creation of so called residential streets (Wohnstrassen). Inspired by the success of the “woonerf”-concept in the Netherlands, the speed limit in such streets is set at 20 km/hr and pedestrians have priority. Due to the technical requirements which demand a complete reconstruction of the street, few of these residential streets have been realised in Switzerland.

It quickly becomes clear that, not only in Switzerland, a new approach is needed. Instead of the expensive revamping of a few streets, area-wide traffic calming with cheaper measures is demanded. In Germany, several cities carry out large-scale trials with so called speed-30-zones during the 1980’s. The results are convincing, but political resistance and lack of funds delay their introduction. While in the early phases of residential streets, parking was often reduced substantially or even eliminated for the sake of improved safety and liveability, the discussion at the end of this era shifts towards keeping on-street parking in the 30km/hr zones, possibly with a small fee attached to it.

In the early 1970’s the number of pedestrians killed peaks in most Western countries. The subsequent slow but continuous trend to lower casualties which follows has many reasons, one of them being the success of traffic-calming measures as described above. But other reasons contribute to this trend as well, such as the continuous reduction in the number of walking trips and the curbing of children’s independent mobility. Parents start to escort their children everywhere. Research in the United Kingdom shows that the percentage of 7-year-old children whose parents allow them to walk to school independently is reduced from 72% in 1971 to 7% in 1990 (Hillman et al. 1990).

---

19 It is often active neighbourhood residents and local associations that demand to take possession of the streets again to use them for community life and children’s play. The first residential street in Switzerland is introduced in 1979 in Basel based on active lobbying by neighbours. A successful scheme even up to today (see Sauter & Hüttenmoser 2008).

20 In Switzerland, the legal basis for such zones is created in 1989

21 For the 8-year-olds these figures were: 87% (1971) and 11% (1990), for the 9-year-olds: 88% and 27% and the 10- and 11-year-olds 94% and 55% respectively. This study is being repeated in the year 2010, but no data is available yet.
7.4 More cars, roads, parking and urban sprawl: the vicious circle in full spin
The traffic-calming measures take place against a backdrop of a continued increase in the number of cars and the construction and enlargement of new roads. This includes the building of new and wider connections through the city centre, access roads from the suburbs, by-passes around the towns and new motorways between cities. At the same time parking facilities are enlarged – on the streets, in new parking lots and garages as well as in multi-storey car parks. The vicious circle of more roads and parking attracting more cars which, in turn, call for even more roads and parking is spinning with increasing speed. (see also the explanations about the “predict and provide” approach in this book by Mário J. Alves). Needless to say, the trend towards more urban sprawl is part of this circle. The newly developing individualism – a result of the changes in the 1960’s which is reaching the whole of society – is backing this trend. All this makes the situation for pedestrians increasingly unattractive.

7.5 Walking is transport too: first steps to plan and provide for walking
Although walking remains on the fringe of city and transport planning, the first signs of recognising walking as a mode of transport appear. In 1973 in Switzerland, for example, a group of pioneers starts a popular initiative to promote walking as a mode of transport and a leisure activity (hiking), both requiring a network of paths and links between origin and destinations. For cars and other motorized traffic this kind of network-thinking is a matter of course, but for walking this is new. The initiative, slightly adapted by parliament, is accepted in a country wide vote with 78% saying YES. For the first time, there are now legal requirements in place to plan and provide for pedestrians. While this success is very important there is as yet no direct follow-up since the constitutional regulation has to be implemented at the local level. Only in larger cities are the first plans for a rough network of main connections made, in particular, links to public transport interchanges and other important destinations (Sauter 2002).

7.6 Planning paradigm remains route-oriented with clear separation of modes
The planning paradigm remains – as in the previous era – oriented along linear movements. New is, that this kind of route-planning is also slowly applied to planning of pedestrian facilities. This means walking from A to B is taken into account, but not staying anywhere in between. Linear route planning goes hand in hand with traffic separation. Each mode gets its own lane with the motorized traffic taking the lion’s share of space (for both moving and parked cars). Pedestrians and cyclists are considered only when there is sufficient space left.

7.7 Progress and regress: the start of a double-edged process for pedestrians
This period is characterised by the fact that the changes – based on the values of this paradigm – are realised in a relatively short time. The momentum is astonishing. It looks like many of these developments have been backed-up for a long time only to be released faster and stronger. Nevertheless, the picture has two sides. Many positive policy and legal changes are subsequently postponed and many of the problems stay since the intervention does not go far enough and the behavioural patterns remain unchanged, i.e. the momentum on the negative side is just as big.

---

22 This group in 1975 constitutes itself formally as the Swiss Pedestrian Association although the name is very cumbersome, literally: “Association to create legal bases for walking and hiking trails”. One of the reasons for starting the initiative was the fact that the boom in building new motorways was cutting apart the network of already existing hiking trails.
This era can be seen as the beginning of a double-edged process from the pedestrian point of view. There is progress and regress happening concurrently. First steps of traffic calming and planning for walking networks are met with an unrelenting surge to build new roads and parking spaces. This and the rapidly increasing urban sprawl all leads to a continued loss of space, accessibility and attractiveness for pedestrians.

Cheap fuel (despite the short oil crisis in 1973), rising incomes and the paradigm of individualism help this process. The consuming-without-limits-paradigm is continued while at the same time some concern for fellow citizens and the environment occasionally start to kick in.

This simultaneous, double-edged process of continuously loosing space to the car and re-conquering some islands, to make traffic slightly more humane while suffering from ever increasing number of cars is characteristic for the situation of pedestrians not only for this period but also for the decades to come. As already the members of the Club of Rome stated, it is important to limit exponential growth and manage the limits. This becomes more urgent in every era as new problems arise (climate change, peak oil, space limitations etc., see Alves and Muhlrad, both in this book).

8. Neo-liberalism: Deregulation & Privatisation, the end of State Socialism and of the Cold War, the Financial Crisis and Climate Change
This period starts in the early 1980’s and is maybe coming slowly to a close?

8.1 Description of the neo-liberal paradigm
The transition period from the ‘Generation 68’-era to the new paradigm is clearly marked by the elections of Margaret Thatcher 1979 in the United Kingdom, Ronald Reagan in 1980 in the U.S. and Helmut Kohl in Germany in 1982. Their common ideological goal is to liberalise the economy.

The paradigm takes on many different forms: privatisation of public services; comprehensive deregulation of economic and social structures; tax cuts for high incomes and company profits; reduction of government spending and a general orientation towards profit-maximisation. The ideal of neo-liberalism is competition in a free market. According to this ideology the market regulates everything better than the state. The latter should mainly secure law and order (police) and create favourable conditions for businesses. Thus, it functions also without democracy. The welfare state is cut back drastically and replaced by ‘workfare’ measures. This shift is closely tied to an expansion of punitive actions against the poor and disadvantaged (Wacquant 2000).

The economic argument is the bottom line in this era. It permeates all areas of life. Literally everything is subordinated to making profit and expressed in economic terms. A general commodification of society and life takes place. This attitude spreads across all fields, is

23 The agenda of this era was being prepared for a long-time by think-tanks and economic networks (see Nollert 2005). In some countries like Switzerland this era starts somewhat later. It is only after the fall of the Berlin Wall when the paradigm starts to fully unfold. World-wide the first government coming to power based on the new paradigm is considered to be the regime of General Augusto Pinochet in Chile in 1973 after overthrowing the elected government there.

24 Privatisation means that government services and public infrastructure are put into the hands of profit-oriented private businesses. Deregulation and liberalisation mean that state laws, regulations and rules are removed to enlarge the scope of action for businesses. They often concern working conditions, consumer rights and environmental obligations.
adopted by governments, organisations and individuals and affects social relations as well as individual behaviour.

With the collapse of state socialism in the Soviet Union and the Eastern European countries and with the brutal crush of the democracy movement in Tiananmen Square in China in 1989, the neo-liberal model reaches global dimensions. It also means the end of the Cold War and, thus, the disappearance of a rivalling system. Capitalism as the only remaining economic system is strengthened also by its globalisation.

The terrorist attacks of 11 September 2001 (‘9/11’) targeting, among other places, the World Trade Center in New York as a symbol of global capitalism, are used as pretext to start the wars in Afghanistan and Iraq and to curb civil liberties in Western societies.

The financial crisis starting in 2008 and the subsequent global economic downturn are the result of the economical logics driven ad absurdum and deregulation gone too far. The crisis certainly has an impact on how the role of the state is seen. It is these long-blamed public authorities which save many banks and pump large amounts of tax-payer’s money into the economy, e.g. also in to the car-industry. The crisis may retrospectively be seen as the climax or the start of the end of the paradigm.

8.2 Accompanying ideologies: neo-conservatism and ‘New Labour’

As Kurt Wyss points out in his book on workfare (see Wyss 2007), the neo-liberal agenda is often complemented with neo-conservative and/or ‘New Labour’ concepts. The neo-conservatives argue for, among other things, more ‘law and order’, for tougher policies on crime (‘zero tolerance’) and against the welfare state in its current form. Their positions are based on conservative social values such discipline and loyalty, religion, family and tradition. Together with the neo-liberals they strongly advocate individual responsibility (irrespective of the structural circumstances). But instead of achieving this by individualism, it is the community that should support and exert that responsibility – via social control and/or the authoritarian hand of the state.

‘New Labour’ is the answer of social democracy to the first stage of neo-liberalism and neo-conservatism. It is represented by Bill Clinton (elected in 1993), Tony Blair (1997) and Gerhard Schroeder (1998) and informed by the ideas of the British sociologist Anthony Giddens. ‘New Labour’ believes in the basic good of neo-liberalism but wants to make it socially more agreeable by giving everyone a chance25. Education, information and incentives are part of the programme to offer everyone an (equal) opportunity even if their social position – original or current – is lower. The ideology stresses the potential of individuals to lead their own self-determined lives by empowering them. It concurrently

---

25 The affirmation of the basic neo-liberal agenda can be seen by the many policies of the conservatives which ‘New Labour’ continued after winning the elections, particularly in social policies but also in privatising services and deregulating market forces.
B.3. The future of walking

ignores the economic and social structures these people live in and the many structural pressures they are exposed to.

As we will see, all three ideologies – neo-liberalism, neo-conservatism and ‘New Labour’ – have a number of implications on walking and public space. While the impact of neo-liberalism is felt in both transport and public space policies, neo-conservatism and New Labour have a greater impact on public space issues.

Before we look at these implications, it is important to discuss the societal and psycho-social aspects of this era. Under the influence of neo-liberalism we witness a far-reaching change in the political climate and the culture of social interaction. People seem to learn quickly from the mainstream economic paradigm that runs according to the law of the jungle. Everything is looked at in terms of profit and loss, ignoring the consequences for the common good. Growing degrees of egoism and social disregard can be detected, possibly acerbated by increasingly rude public debates in the media and politics. While – according to the neo-liberal ideology – competition coupled with individual responsibility is supposed to serve society better than the ‘old’ values of solidarity, respect and integrity, the reality looks more like an all-encompassing irresponsibility. As we will see below, this leads to particular problems in the public space domain.

8.3 Creating attractive and walkable public spaces is good for business

A prime example of the three paradigmatic ideologies influencing the situation can be seen with public (road) space.

Since the 1960’s, as mentioned earlier, we have been witnessing a double process of a continued loss of space for pedestrians on the one-hand and a re-conquering of it on the other. Particularly the inner city spaces are seeing a gradual revival which has a lot to do with the neo-liberal agenda and the economic view regarding these spaces.

The argument goes along the line that a pleasant walking atmosphere and interesting places provide opportunities for businesses – particularly in the city centres – because they attract (more) shoppers, tourists and investors. Markets and street cafés contribute to a thriving down-town and lively neighbourhoods.

While in the former paradigms, direct accessibility by car of inner city businesses was the main economic argument – at best by providing large parking lots right in front of them – the new paradigm is about making the public realm attractive. This means that the cars have to disappear, either underground or to other areas. The paradigm is not about reducing the number of cars, parking places or traffic arteries – on the contrary – but to shift them to places where they don’t stand in the way of doing business. Street cafés, public benches as
B.3.2. How ideologies influence walking policy

well as other opportunities to sit and enjoy the city are created where once streets and parking existed. This is the discovery of the pedestrian as consumer.

This shift is also driven by globalisation and the related economic competition between cities – among large cities internationally, and among smaller cities on the national and regional level. It is hoped by city officials, that by improving public spaces, building iconic architecture and organizing large public events, high ranking marks for the most liveable city will result and this, in turn, will attract investors.

This shift is also reflected in planning. Its focus is changing from linear movements to area-wide planning. While the pedestrianised streets in the 1960’s were built for linear movements from A to B, the new paradigm is based on the notion of ‘link’ and ‘place’\textsuperscript{29}. This means, the focus is not only on (direct) routes connecting origins and destinations (‘link’-function) but also on encouraging users to stay on a street as long as they desire to enjoy the people and surroundings (‘place’-function) (see Jones et al. 2007)\textsuperscript{30}.

The shift is inspired by Jan Gehl’s cryptic phrase that “there is more to walking than just walking”. Gehl (1987) has been advocating this paradigm-change for about thirty years (see also Gehl & Gemzøe 1996, Gehl et al 2006), along with other pioneers like William H. Whyte (1980), Jane Jacobs (2000, orig. 1961), and Colin Buchanan (see Great Britain, Ministry of Transport, 1963). But it has only been since the neo-liberal era that their voices have really been heard\textsuperscript{31}. Today, the efforts have many different names such as ‘place-making’ (see Project for Public Spaces 2010a) or creating ‘liveable streets’. They also involve the testing of new concepts such as Shared Space based on the co-existence of street users (see below).

What all these changes mean for the people is that walking becomes a more holistic experience (again). They can enjoy the atmosphere of the public realm, which allows for a wide variety of experiences. Transport and city start to include the social dimension again.

8.4 Attractive spaces can lead to over-commercialisation and social exclusion

The previous paragraphs describe the positive sides of the ‘economic turn’ for pedestrians. While it is great to see these changes to more well-designed public spaces that create new and attractive conditions for walking, there are also many caveats linked to it. The approach entails the danger of over-commercialising the city, socially excluding disadvantaged people and pushing low and middle-class residents out to the suburbs. These problematic elements will be discussed more closely below and linked to the three paradigms of neo-liberalism, neo-conservatism and New Labour.

Danger of gentrification and forgetting the outskirts

Upgraded spaces usually create a new image of an area. This, in turn, means that the prices, rents for shops and apartments go up as well. Low and middle-class residents may be pushed out to the suburbs. Ironically, the people who are often most affected are those who fought for traffic calming and helped to create better living conditions and to revive street life.

---

\textsuperscript{29} ‘Link’ and ‘place’ as concepts are not really new. They have been applied in planning for cars since the beginning. ‘Link’ usually meant a road and ‘place’ meant a parking space (place).

\textsuperscript{30} It is worth noting, that ‘link’ and ‘place’ are important each by themselves. They can’t fully replace one another although depending on the space one function may be the primary one. It is still important to have direct connections, linear flows and good connections at crossings, but there also needs to be opportunities for sojourning and spending time along the street and generally in the public realm.

\textsuperscript{31} Jane Jacobs wrote her influential book “The death and life of great American cities” already in 1961; Jan Gehl’s first important publication “Life between buildings” dates to 1980 and so does William H. Whyte’s work “The social life of small urban spaces”.
B.3. The future of walking

If, in this gentrification process, the downtown becomes an expensive place to live, with luxury boutiques, high-rent lofts and commercially-oriented offers for visitors and tourists, the core city will lose the very heart it is so well liked for. This process can already be seen all over Europe, where many inner cities have become monotonous and indistinguishable, one from the other. Unique stores are closing and the core city resembles increasingly the shopping malls on the outskirts it wants to replace.

While this dynamic process poses a danger for the city centre, it has little impact on the outskirts. There, another problem can be seen: that nothing is being done to improve the public realm. The situation remains – that of pedestrians being exposed to ever increasing traffic and its perils.

Danger of privatisation and (over-)commercialisation of spaces
Public space is being increasingly privatised and commercialised. In some cases whole outdoor plazas between buildings become privately owned and in other cases private businesses enlarge their selling areas onto public ground or large sponsored events take place in public areas. While some of these privatisations may be more accepted by the public than others, they usually lead to the exclusion of some people since the public realm is no longer accessible to everyone. One may need a ticket to get in or lose the freedom to drink or eat what one wants (e.g. because only certain brands of beer or other drinks are allowed), or the premises are policed privately and/or formal entrance controls mean that people can be selected and excluded according to private criteria. People are welcome, but only as consumers.

Danger of social exclusion and of apparent “anti-social behaviour”
Gentrification, privatisation and commercialisation carry the danger of social conflicts within them. One of these conflicts is already described above, when people want to use the space without the intention of consuming. Increasingly, anyone supposedly not fitting into the commercial interests of the space is banned. This includes disadvantaged, begging or homeless persons, people sitting on the ground, et cetera. Although they do not breach any law, their mere presence is considered enough to warrant an eviction.

Social conflicts also arise out of a combination of intense use of popular spaces and peoples attitudes of ‘having fun without limits’. An accumulation of huge amounts of waste, noise problems, vandalism and the fast wear and tear on the infrastructure are some of the results. Personal conflicts, tensions, brawls and violence may be part of it as well. In general, these kinds of patterns are referred to as “anti-social behaviour”. The counter-measures, particularly inspired by the ‘New Labour’ and neo-conservative ideologies, are usually quickly at hand: Billboards appealing to decency, tolerance and adequate behaviour. Users are educated about the proper behaviour and reminded of the rules of etiquette. The surveillance of public space increases with the use of video cameras, private security firms or vigilante groups. New regulations are created and enforced by the police to ‘restore’ law and order. The ‘zero tolerance’ approach has been – not surprisingly – introduced in this era (see Wacquant 2000). Sometimes the built environment is changed in order to emphasize that certain people are not wanted. Davis (1990) calls the result ‘sadistic environments’.

This all starts a dynamic turning into a vicious circle which leads to social divide and conflict creating feelings of insecurity in urban spaces. These feelings are exploited politically and combated with even more police and surveillance measures leading to more social exclusion without solving the underlying problems.

---

32 These events can take on many different forms and purposes. Among them we find outdoor cinemas, sports events, public viewings, performances, company celebrations, party events etc.
If we look critically at the term and meaning of “anti-social behaviour”, we recognise in it the mainstream ideology of neo-liberalism. But since this kind of outcome is not desired, in fact it threatens profit-margins; it is counteracted with a myriad of measures. Deregulating the economy and disciplining the losers of this deregulation are, thus, two sides of the same coin. It may be said that the more neo-liberal a society is, the more it builds its public space policies on interventions based on a) New Labour-type education, appeals and ‘support’ and b) neo-conservative coercion, disciplining of people and strict enforcement of rules. The three ideologies thus, supplement each other functionally.

8.5 Shared Space – deregulation reaches the streets

In the neo-liberal point of view safety is primarily a free market issue. Legal regulations are replaced by market incentives, individual product choices (by the producer and consumer) and negotiations between the state and interest groups (road users, industry, investors etc.) as well as between road users. Safety improvements are often left to these stake holders. Self-centred views replace considerations of solidarity. As a result, individuals start, for example, to buy large and powerful cars (SUV’s) since they supposedly protect the best in case of an accident. The industry promotes safety features for car users (as they have always done) ignoring the needs and the effects car designs have on pedestrians.

The neo-liberal approach is also creating the conditions for the break-through of the Shared Space idea. The pioneering work by Hans Monderman is finally getting a chance to unfold and getting the recognition it deserves. The idea behind Shared Space is that the responsibility of the individual road users needs to be strengthened. To achieve this, elements such as traffic lights, pedestrian barriers, stop signs and other road markings that have traditionally been assumed to be essential for safe interactions in traffic have to be removed. By doing so, the suggestion is that people will negotiate with each other how they will use the street. Monderman’s idea is to give people back public space, humanize traffic and make it safer. Local people are integrated at an early stage in a more democratic planning process.

One can quickly see what makes the scheme attractive from a neo-liberal point of view: It is “deregulation” put into practice on the street. Competition, self-responsibility and fair ‘negotiations’ are the ingredients.

Unfortunately, the reality does not always work as well as Monderman envisioned it. While the design may improve the space, it often does not fully calm motorized traffic. This requires the re-introduction of some protective measures for pedestrians and cyclists. Since the speed limit in Shared Spaces stays at the officially allowed 50 km/hr and legal priority is given to the vehicles, it means that pedestrians are dependent on the good will of the drivers to slow down and give them a chance to cross the road. It is the benevolence of the ‘stronger’ that decides if it works or not. Individual responsibility is, in fact, mostly shifted to the ‘weaker’ participants and ‘negotiations’ are not always possible.

---

33 Although some of the elements prepared in the previous period, such as neighbourhood-wide speed-limits of 30km/hr, are still implemented, there are hardly any new legal regulations in terms of speed reduction. One of the few exceptions is the Swiss Encounter Zone (see below). But otherwise, the high speeds, on main streets in particular, remain an unsolved road danger for pedestrians.

34 For more information on the idea, please visit the website: www.shared-space.org

35 It is usually the pedestrian who is watching more carefully and holding back when wanting to cross the street. The ‘negotiations’ which are based on the assumption of eye-contact are often structurally impossible since the cars and windshields are constructed in a way that one can not see the eyes of the driver. Children’s drawings show this very clearly when they paint the car windows black. The assumption of eye-contact also excludes the population with sight-problems. This group of people will increase with the aging of society.
Observations show that, indeed, in many cases cars keep on driving through – some even at relatively high speeds – and pedestrians wait until the street is free to cross it. As in the economic field, the practice favours the ‘strong’ and ‘powerful’ while the ‘weaker’ and ‘structurally disadvantaged’ members profit less. The well-meant New-Labour inspired measures such as appeals for tolerance and respect on billboards and flyers usually don’t change this situation.

It is interesting to see the difference between the Shared Space idea and the similarly pioneering work done twenty five years earlier – towards the end of the previous era – that started in places like Chambéry in France. These shared-space schemes avant la lettre had structural safeguards and/or rules built in which gave pedestrians some protection, e.g. low speed limits, by giving pedestrian priority and by creating built-in niches on the roads. This kind of approach has since been implemented in Switzerland and other European countries by introducing the so called Encounter or Strolling Zones36. These zones allow cars to pass through, but limit their speed to 20 km/hr and give pedestrians priority over vehicular traffic. The schemes are often implemented in town centres, at train stations and in front of schools on streets with up to 10,000 vehicles a day. Observations show that they work very well. When pedestrians have some structural protection and support they are strengthened in the interaction. They enter the ‘negotiations’ on equal footage with the driver.

8.6 Ecological standstill because the environment is considered a public and not private interest

Despite the (supposed) free market approach, no such measures have been implemented with regards to the environment. There is some accordance with the neo-liberal and New Labour agenda in the fact that individual responsibility is preached to people and companies to live and produce environmentally friendly. Information and education is supposed to help them to make the right choices.

In terms of policies we can identify four major arguments and steps during this period (between late 1980’s and the end of the first decade in the new millennium):

- **No more regulations.** Legal requirements such as those in the previous period to limit pollution are now termed costly, ineffective, inefficient and bureaucratic, i.e. no longer adequate. Instead, the market system should take care of it.

- **Market-conform instruments.** Instead of regulations, instruments which conform to the market economy are demanded, such as tax-neutral incentives schemes. Among these are, for example, a charge on carbon emissions with the revenue being redistributed to consumers and businesses. Very few such instruments have been introduced37.

- **Self-controlled voluntary measures.** In the third step, companies claim to administer environmental measures themselves. The state signs agreements with them to lower, e.g. carbon emissions. Industry and trading companies, thus, ‘regulate’ themselves, taking over state powers with no fear of severe sanctions38.

36 Switzerland officially introduces the new type of Encounter Zone in 2002. Belgium and France follow a few years later. While traffic safety plays some role, it is mainly inspired by economic considerations (see below): Businesses in smaller towns want to make their shopping streets more attractive without introducing a restrictive pedestrian zone. The Encounter Zone seems to provide the best solution in this regard. For more information see: [www.begegnungszonen.ch](http://www.begegnungszonen.ch)

37 Exceptions to this are the congestion charging in London, some road pricing schemes Scandinavian cities (Oslo, Bergen, Trondheim, Stockholm) and also the Swiss performance-related heavy vehicle fee (HVF) which is a federal tax levied on heavy trucks to pay for their external costs.

38 In Switzerland, for example, it was agreed with the car importers that they would to reduce CO₂-emissions on a voluntary basis over several years. On reaching the agreed targets they would avoid any sanctions. However, when they did not reach the targets, no sanctions were incurred.
**State-subsidies.** Towards the end of the era, the car industry and other parts of the private transport sector start to demand state subsidies. These are either given as loans, as tax reduction schemes, paid as research funds to develop new technologies or as scrap bonuses to car consumers and thus, indirectly to the companies.

As can be seen, the promotion of walking is not an issue in any of these approaches. Despite the many arguments that speak for walking as a non-polluting mode – which easily lets itself relate to individual environmental responsibility – no serious political steps are taken to support or promote walking. Not even the reports and studies written in the 1990’s about the severe health effects of pollution and related costs are changing anything politically. In fact, the advantages of walking to be non-polluting, of not consuming any resources or needing any technology, are turning into a disadvantage during this period. Most sustainability programs focus on reducing the negative effects of motorized traffic, preferably by technical means. While these programs are well meant, they exclude walking by their very nature. Why, for example, are there no CO₂-compensation certificates available for investments in promotion of walking? The most sustainable form of transport is punished for its exclusive advantage of not polluting and not needing any technical devices.

While the neo-liberal agenda calls for the application of ‘pure’ market economy principles, in reality, the ideology is mainly applied to stop environmental legislation and progress and to get new subsidies for the car industry. Market economy principles seem to be okay when a profit can be made, but not when the benefits are for the common good. The same is true on the individual basis. Why should I change my behaviour, drive less and walk more, to save the climate while my neighbour keeps driving anyway? This classical free-rider dilemma combined with the erosion of solidarity and the narrowing in on the individual consumers’ and producers’ perspectives are fundamentally different from the previous era, when the interest of the common-good for better air, less noise and environmental protection was at least fixed in laws and regulations.

The environmental standstill or, better, regression lash during this era is explained not only by the absence of any environmental measures but also by the wide spread economic deregulation and freed market forces that has led to cheap fuel, to low cost cars (‘Nano’ from Tata), to new motorways and high-speed rails, and to new low cost airlines. While the investments into these long-distance travel modes are enormous, investments into the environmental friendly mode of walking are minimal or non-existent.

Although environmental problems are increasing today⁴⁹, the progress made in this regard in the previous era has come to a standstill. The environmental policy of the neo-liberal era can be characterised by double speak: demand market principles but when suggested, turning them down. There is lots of talk about the need but little action. This is illustrated by the international efforts and agreements, such as the Rio climate conference (1992), the Kyōto protocol (1997) and the United Nations conferences on climate change (e.g. Bali 2007, Copenhagen 2009). Not even the so called Stern report (Stern 2007) which warns of the global economic impact of climate change has had any considerable effects.

### 8.7 Re-urbanisation and continued sub- and peri-urbanisation

The neo-liberal era is characterised by the trend of re-urbanisation. Large former industrial areas (so called brown-sites) no longer in use and are now developed into residential,

---

⁴⁹ Among the many environmental problems related to transport that need to be addressed are: toxic tire-abrasions, heavy metals and particulate matter from the exhaust, nitrogen oxides (NOₓ) which transform into ozone under the influence of sunlight (UV-light), CO₂ emissions which contribute to global warming and climate change. While some of these effects are only locally felt (e.g. near the road) others extend regionally (e.g. ozone) or even globally (CO₂, climate change).
B.3. The future of walking

shopping and entertainment districts. Often these sites are centrally located or at attractive sites along the shores of rivers or the sea. Besides these re-developments there are also renovations and upgrades of existing neighbourhoods, often triggered by deregulation (e.g. of building requirements) which attract new investments. At the same time, middle and upper class people move back into the inner cities. In some areas this leads to gentrification effects with rents starting to rise and poorer people being pushed out to the suburbs, replaced by more well-to-do professionals. Often public spaces are improved concurrently, making these areas and the city as a whole attractive for pedestrians (locals and tourists), but also for companies and their employees. The basis for this development is the international competition between companies and cities as part of globalisation (see also public space above).

Re-urbanisation is coupled with the continued sub-urbanisation, reaching even further out into green areas, thus the label peri-urbanisation. This car-centred development is driven by large-scale hidden subsidies, particularly in the form of costly land-development being paid by the taxpayer and not the developer, by tax deductions for commuting and lower taxes in the rich peri-urban towns.

While these low density peri-urban type of settlements consisting mostly of single family dwellings attract middle and upper class persons with a high-rate of car-ownership, the poorer suburban areas, which are usually of higher density with large apartment buildings for the lower class population (including migrants and disadvantaged people) have a lower car-ownership. The walkability in both areas is usually bad, the space designed for cars (see also Kimmo Lapintie’s analysis in PQN report B2)

8.8 Active lifestyles: a new notion to cut health costs

In the previous eras, health was seen in relation to the effects of pollution (dust, noise, NO\textsubscript{X}, ozone, particulate matter from exhaust etc.). Under the neo-liberal paradigm this is no rarely an issue (see below and environment above). Health receives a new and additional meaning in transport with the notion of active lifestyles. Walking and cycling as physically active transport modes become a focal point in this era. The reason is obvious: While the ‘68-generation’ was to some degree sensitive to the well-being of all, the neo-liberal era focuses on individual gain and personal well-being. Unlike the environment issue where the contribution of an individual can be offset by his/her neighbour’s behaviour (‘I sacrifice something and the others profit’), physical activity, like walking and cycling, benefits only oneself.

There is also an economic element involved and that is the rapidly rising health costs. These, in turn, are increasingly a result of people being overweight and obese, as result of malnutrition (as advertised and promoted by the large multinational food corporations) and lack of physical activity\textsuperscript{40}. Experts and politicians have started to identify changes in individual lifestyles as an important contribution towards lowering the health costs. In accordance with the neo-liberal and New Labour ideologies, the main target in the pursuit of better health is individual behavioural change based on education, information and peer pressure. Empowerment and individual responsibility are keywords in the promotional campaigns to walk more for health. Health-sparked structural changes within the food industry or the transport infrastructure, i.e. improved walking provisions, are very rare\textsuperscript{41}.

\textsuperscript{40} Just a couple of figures: In the United Kingdom almost two thirds of the population are overweight (near 40% with a Body Mass Index [BMI] between 25 and 30 and about 23% with a BMI above 30 which is considered to be obese). In Switzerland 37% are overweight (29% with a BMI of 25-30 and 8% with a higher BMI = obese) (Sources: WHO 2007, National Heart Forum 2007, HealthEcon 2009).

\textsuperscript{41} It seems that a similar approach to that in the environmental sector is planned. The newly elected U.K. government in 2010 plans to hand-over the advertising campaign for healthy foods and lifestyles (Change4Life) to the fast food industry and in turn would relinquish plans for anti-junk food legislation.
Is it just pure coincidence or a sign of the times that the ‘obesity crisis’ is concurrent with the age of deregulation which fosters limitless consumption? Many elements point in the direction of a close link: Liberalising the standards for the food industry and nutritional requirements in schools spreading of fast food outlets and media campaigns targeting children. In addition are the ever-present propaganda to buy and use cars and the lack of promotion of walking and cycling.

The intensity of the campaigns for active lifestyles varies greatly among countries. In Anglo-Saxon countries, where obesity rates are relatively high and the implementation of neo-liberal policies at the forefront, these campaigns are prominent. In other countries, the promotion of walking for health benefits is more ‘subdued’. In all countries, however, the focus is on fitness and physical health rather than stress-reduction and mental health.

In comparison to the promotion of active lifestyles as a means to reduce health costs, the effects of pollution on health – causing equally huge costs to society – are not a topic, despite the many studies that prove the connection.

8.9 Neo-liberal effects on overall mobility patterns; selective implementation of market economy

The economy in a self-declared capitalist system is, of course, a driving force for changes during all periods. It can also be said that the car has been the ultimate reference for economic growth since the early 20th century. In the neo-liberal era, the economic approach becomes the ultimate focal point.

Deregulation and privatisation in transportation create new travel patterns, particularly for long-distance trips. Deregulation, liberalisation and privatisation affect all modes of traffic – directly or indirectly – and changes significantly the way we travel. Privatisation of public transport services often has a negative impact on combined walking and public transport trips. The deregulation of air traffic leads to the creation of low-cost carriers, with people flying more often. Tourism, particularly in the form of city trips, is growing exponentially. This leads to new demands in city planning, in particular in larger cities such as Barcelona, Paris, London, New York et cetera. On the positive side this trend in tourism helps to provide more space for pedestrians and on the negative side it leads to problems for the local residents (see also Ramos in this book).

As already mentioned in several sub-chapters, the economic approach is implemented very selectively. Applying market principles should mean, for example, that cost transparency and a true cost approach is applied, meaning that not only all relevant costs are made transparent but also that the “polluter pays principle” is applied. The market price would, thus, reflect the true price of infrastructure and mobility. Almost all such initiatives have been, however, turned down in this era. Even in privatised schemes the true costs aren’t properly disclosed. Many costs and subsidies remain, thus, hidden and unaccounted for. This distorts

(see The Guardian, Wednesday 7 July 2010: “No anti-junk food laws, health secretary promises. Food and alcohol companies will fund government’s healthy lifestyle ad campaign in exchange for a ‘non-regulatory approach’”)

42 According to a letter to the editor by Neil Ferguson from London in The Guardian of 6 July 2010: “it was Margaret Thatcher who abolished the minimal nutritional guidelines for state school children in 1981, opening up the privatisation of school meals and the decline in our children’s health. (…)”.

43 Not just travel but also the shipping of goods is changing: The ‘just-in-time’ production and delivery means that the roads become part of a large moving storage space. This has an impact, among other things, on congestion, land use and the safety of pedestrians.

44 Ryanair is established 1985, EasyJet in 1995

45 Among the few initiatives implemented are ‘congestion charging’ in London, some ‘road pricing’ schemes in Scandinavian cities and the Swiss performance-related heavy vehicle fee (HVF).
the transport ‘market’ fundamentally and sets completely wrong incentives⁴⁶. One of the results is that profits are privatised and losses socialised. This attitude is also responsible for walking not being taken into account even though it is one of the most cost-effective forms of transportation. It simply does not enter the equation when cost-effectiveness concerns the common good.

9. Outlook to the future

This chapter deals with future prospects. Are there already indications of the ideology that will prevail in the future? What political debates may be expected and how will they influence walking and public space?

In keeping with the witty remark that “it’s tough to make predictions, especially about the future”⁴⁷, this chapter will give just a few thoughts based on the analysis of the past and on current trends.

The first question is if the current neo-liberal paradigm is over and if a new one is emerging. Some people contend that the financial crisis starting in 2008 and turning into the most serious worldwide economic downturn since 1929 is the beginning of the end of this era⁴⁸. In this view, the deregulated free-market economy proves that it can become dysfunctional and is not able to guarantee long-lasting stability and, thus, can no longer serve as the leading theory. When the state, long frowned upon, has to save the financial institutions and the economy at large with huge amounts of taxpayers’ money, the myth of self-regulation and de-regulation is destroyed.

There are other indications of change. In the late stages of every era there have been increasing numbers of reports – either based on individual initiatives or commissioned by government – looking at the future. This was the case in the 1960’s with both the Buchanan and the Club of Rome report. It can also be seen in the late 1970’s in Switzerland, for example, with many studies about the economic and societal future (see Meyer Schweizer 1996, pp. 247) and it can be seen again now with the Stern report or other studies about the future of transport, this COST report being one of them.

While these elements point towards some changes, there seems to be no clear ideology appearing on the horizon as there was in the neo-liberal agenda in the late 1970’s. The times consist more of a patch-work of ideas. Nevertheless, some indicators based on current trends can be described. The changes in economy, society and technology regarding the future of walking and public space will be specified according to the author’s speculation and assessments.

⁴⁶ At the same time the neo-liberal, neo-conservative and New Labour representatives fiercely fight against the supposedly wrong incentives in welfare (see Wyss 2007).
⁴⁷ The remark is attributed in slightly varying versions to different authors, among them to Mark Twain and Niels Bohr.
⁴⁸ Some researchers such as Jeremy Rifkin argue that the high oil price was at the onset of the crises peaking with $147 a barrel in July 2008. This led to a surge in food prices particularly in poorer countries. The financial crisis 60 days later was, in this view, ‘only’ an after-shock. (Rifkin 2010)
9.1 Economy: Speculations about the economic future and its implications for walking and public space

For some years to come, the neo-liberal paradigm with its prevailing economic logics will continue. The ideology will be moderated by more state interventions, some re-regulations and a slow down in privatisation attempts, since these have often led to deteriorating services and higher prices. Nevertheless, the capitalist demands of increased efficiency and economising will prevail. This will be reached by the introduction of a variety of incentive schemes on all levels, from the individual to the international level (e.g. re climate change).

The incentive models will continue the micro-economic thinking, i.e. the orientation along profit for the individual person or business. Caring for the wealth of the society as a whole will not be a goal. Benefits that are beyond economic value will be ignored completely.

On the whole social inequalities will persist or even increase while at the same time calls for social justice will increase. A return to a Keynesian type of welfare state is highly unlikely; instead, education and workfare approaches will probably be forced upon people, continuing the New Labour and neo-liberal agendas.

In terms of political discussions and their impact on walking and public space it can be speculated that the following developments related to the economic ideology may take place in future:

- Incentives and directed subsidies will be an increasingly employed policy tool, particularly with regards to sustainability and the promotion of new technologies. The production and sales of less polluting vehicles – electric and hybrid cars, bicycles and similar devices – will be increased this way. The subsidies will likely go to car manufacturers, energy producers (electricity is already heavily subsidised today) and to individuals. The subsidies and incentives will be increased as the oil price rises. This should aid the technological transition and avoid protests, or even social unrest, by car-dependent individuals and industries (see also the paper by Muhlrad in this book).

- At the same time, individual behaviour will be guided by incentives, for example by the introduction of more congestion charging, scattered road or mobility pricing schemes. For pedestrians, rewards may be more often paid out, for example by health organisations, for people walking to work. This is already done in some places (e.g. OhioHealth or the U.K.) and will likely spread. For car drivers pay-as-you-drive-insurance and similar behaviour-adapting elements will be introduced. Using certain facilities at certain times for certain purposes will become expensive. Putting prices on infrastructure may also affect walking. It is conceivable that the use of some very attractive walking routes or areas will be charged.

- True costs and per-use-charges will be, in part, implemented. In order to pay for the incentives and subsidies, unwanted behaviour has to be more heavily taxed and new revenue has to be created. This requires some kind of pay-per-usage based models which in turn require the measuring and implementation of true costs. It is unlikely that this approach goes so far as to push parking off the streets, because it is economically not feasible, but it could be that higher parking prices result. This might help to reduce car traffic.

- In the city centres the economic pressure to create good public spaces that attract tourists, shoppers and investors will continue to increase. And so will the dangers of gentrification and social exclusion. Incentives are needed here as well although they are difficult to implement.

From the point of view of walking, these approaches are double-edged. While some elements like the true cost approach may curb car-traffic, other measures such as the incentive models for selling more electric vehicles may be counter-productive because it
promotes vehicular traffic at the expense of walking. One positive outcome is that the economic approach will emphasise the need for assessments since the economic benefits need to be proven. This is also an opportunity for walking. If we succeed in showing the economic benefits in terms of efficiency, individual transport cost savings, cost-benefit ratios and return on investment, we may be able to divert more funds in the direction of walking and public space. To achieve this, good data and solid economic assessments are required based on a comprehensive model that includes all aspects of walking. Such an Assessment Model has been developed within the Pedestrian Quality Needs project (see the contribution by Sauter & Tight in report B5, Measuring Walking). While it is important to develop economic arguments, it is crucial to point out that not everything related to walking can be meaningfully measured in economic terms. Other values, such as social inclusion, quality of life, physical and mental well-being, community spirit and happiness are significant beyond their economic feasibility. In fact, focusing only on the economic aspects can be counter-productive in the long-run since walking has a strong human-rights aspect. This means that measures have to be taken even if they are not economically feasible.

9.2 Society: Speculations about the societal future and what it could potentially mean for walking and public space

The atmosphere in society has changed considerably during the neo-liberal era. Solidarity as a value was denounced and the narrow focus on profit-orientation resulted in dog-eat-dog mentality. A society, however, cannot function in the long run without a minimal contingent of mutual respect, consideration and trust. These can not be functionally replaced by competition, profit-only-orientation and personal gain, as assumed in the neo-liberal ideology. In fact, the latter approach causes dysfunctions and pathological effects (Habermas 1981), some of which can be seen in today’s society.

To restore social cohesion two scenarios are conceivable. The first is a rebirth of community-orientation from the “bottom up” as seen in neighbourhood groups and cultural manifestations. This trend is inspired to some extent by people’s wish for self-determination and authenticity. From small pockets in society it could spread further into the mainstream, provided neo-liberal exaggerations are successfully pushed back at the same time.

The second scenario consists of “gluing” society together by creating a ‘we-they’-feeling. This is usually achieved by a split in society into a majority and minority, mostly based on nationalism. Achieving the desired “we”-feeling for the majority requires the social exclusion of the “they”. This second scenario seems to be the predominant trend at present, possibly exacerbated by the economic crisis. Experience and history show that this may work in the short-term but, of course, for the majority only. In the long-term and for the whole of society this route is disastrous. Current indicators of this trend are: a rise in nationalist and xenophobic tendencies, selectively applied human rights, discredited minorities, increased social and economic pressure on fringe groups, and the state’s use of increasingly coercive, paternalistic and authoritarian measures for some parts of the population. This trend is mostly represented and fostered by movements, parties and governments on the right.

49 Several such instruments are currently developed. See for example the Health Economic Assessment Tool, HEAT, that is being created by the World Health Organisation (WHO) and due to be released in 2011. It will also be important to point out the benefits in relation to other means of transport. In particular the maintenance and renewal of the existing infrastructure for cars and railways will be extremely costly in the future. Walking can serve as a fundamental alternative focusing more on local traffic with the benefits of supporting local businesses.

50 Jürgen Habermas pointed out in his comprehensive sociological and philosophical Theory of Communicative Action that the conversion of the functioning patterns of the social lifeworld (Lebenswelt) can not be transformed into a system-logic (pure instrumental reason) without causing dysfunctions and pathological effects (Habermas 1981).
How would these two scenarios affect the fields of walking and public space? The following speculations about future developments can be made:

**Scenario 1: Rebirth of community orientation in space appropriation**

- The wealth of neighbourhood, community and cultural groups already active now in reconquering public space as living space will increase. Unconventional and creative interventions will take place in rising numbers such as “Permanent Breakfasts”, „Reclaim the Streets“, „Space Hijackers“, „Flash Mobs“, “Improv Everywhere” (Todd & Scordelis 2009), „Mobile Clubbing“, “Mis-guide” or „Critical Mass“51. There are many more local initiatives whose creative power could change many cities in the future for the better.

- The idea that public space is the living room of cities finds ever more followers. It is adopted by many and used as well in terms of traffic safety. Hans Monderman’s ‘Shared Space’, the Project for Public Spaces ‘Placemaking’ or David Engwicht’s concept of ‘Intrigue and Uncertainty’ are part of this social and cultural approach towards a new understanding of streets and road safety (Engwicht 2005)52. These social approaches offer huge opportunities for pedestrians. Some schemes, such as Shared Space, however, need some safeguards to equalise the power disparities between vehicles and pedestrians.

- Also culturally inspired is the renaissance of long distance walking and the routes offered. The walks take on many different forms and motivations e.g. as circumventions of islands, crossing unknown territories (as one example see Büscher 2003), as religious or secular pilgrimages e.g. on the St. Jacob’s trails to Santiago de Compostela or as art interventions (see e.g. Foster 2008). Long-distance hiking is often linked to cultural and natural attractions and offers regional specialities along the way53. Similar initiatives to discover new territories are taken in cities, for example, with Urban Trekking that guides people off the beaten track to unknown places and food specialities.

- All these efforts have a great potential to change the perceptions and self-concepts of walking and public spaces, to foster thinking beyond traditional assumptions and to develop new perspectives of streets as social places. It can be assumed that parts of this scenario will be realised in the future despite the rivalling authoritarian scenario.

---


52 For further information see: www.creative-communities.com (David Engwicht), www.pps.org (Project for Public Spaces), www.shared-space.org (website with the ideas of the late Hans Monderman).

53 One example is the Cultural Routes of Switzerland by Via Storia offering a number of trails and services across the country (see: www.kulturwege-schweiz.ch/en.html) based on the extensive Swiss hiking trail network of more than 60.000 kilometres.
B.3. The future of walking

Scenario 2: Coercive, paternalistic and authoritarian regulation of behaviour and space

- The tendency will be towards more behaviour regulation in public spaces, as can already be seen in the neo-liberal era. If this trend in society continues – the creation of a “we”-feeling for the majority at the expense of minorities – it can be expected that social exclusion and social conflicts will be further aggravated. A fast increase in oil prices, more economic pressure on the middle class and the exploitation of this situation by right-wing populist politicians will lead to further scape-goating of minorities, in particular foreigners, groups of young people, the urban poor, homeless and other disadvantaged groups. This will lead to more curfews for young people, more displacements of ‘undesired’ persons, more prohibitions, paternalistic behaviour regulations, surveillance and police raids. Poorer people dependent on walking may be affected most, especially in the suburbs. At the same time public spaces will be improved for ‘regular’ consumers and customers.\(^5^4\).

- Health, fitness and the cult around the body will presumably become more important in the future. It is a fine line between the promotion of health through walking and the pressure exerted on people to do so to save money for the health system. Due to the special constellation in health that individual benefits are also benefits for society – mainly in financial terms –, the temptation for coercion is always there.\(^5^5\) But not all people can lead active lifestyles for structural reasons. Furthermore, putting the responsibility on the individual to walk for health in the existing unhealthy environmental conditions is simply cynical. Health is a wonderful argument to promote walking but care is needed in the way this is communicated and the programmes implemented.

9.3 Technology: Speculations about future technological developments and their impact on walking and public space

Peak oil and climate change will increase the belief in technological solutions. This is a combined result of political pressure, perceived market opportunities and technological advancements. The avoidance of (re-)regulation or of increased taxation will be a major force for this development. This can also be interpreted in the long-term perspective, for example in terms of ecology and traffic safety: in the ‘Limits to Growth’ paradigm, a legal approach was adopted; in the neo-liberal paradigm, the approach shifted to deregulation and market-economy; and in the paradigm of the future, the focus will be more on technology coupled with selected economic incentives. Two main overall technological developments can be identified, building a background for specific applications:

Changes in energy production, storage, distribution and usage

In the future there will be an increase in renewable energy, such as solar, wind, geothermal energy, ocean tidal power, hydro et cetera.\(^5^6\) In terms of usage there will be the slow

---

54 An illustrative example of this kind of attitude is the establishment of “Paris Plage”. A section of road along the Seine is closed for traffic over the summer and a beach with sand installed for people to enjoy. At the same time, Parisian authorities want to remove the tramps and homeless people that camp on the opposite bank of the river.

55 Juli Zeh describes this constellation very vividly in her novel “Corpus Delicti” in which a future totalitarian state only wants the best for people’s health. A few quotes from the book (Zeh 2009): “Health is the principle of state legitimacy” (p.87); “the citizens of a well functioning state are accustomed that public and personal well-being are made to coincide, even and especially in the darkest corners of human existence.” (p.34); “what should reasonably speak against seeing health as a synonym for normality? The trouble-free, the flawless, the functioning: Nothing else is suited as the ideal.” (p. 181), all translations by DS.

56 The production will be centralised (e.g. wind parks) and, to some extent, also decentralised i.e. locally produced and stored (Rifkin 2010). The integration between the different elements will be managed through so called smart grids. They are able to retrieve and process information in real time.
transformation from cars running on fossil fuels to electric and hybrid cars (see below). The major external impetus for these changes will be the foreseeable peak oil, the ensuing rise in fuel prices as well as climate change requiring lower carbon emissions. The technologies will lead to increased efficiency and to a new image for green growth. They’ll also be very profitable, not least because they are heavily subsidised. The transition will take place gradually and will not be completed in the next 20 years.

Digitalisation and real-time communication, on streets and in public spaces
Digitalisation has penetrated all parts of everyday life and society. The new mobile and miniaturised technologies, such as mobile phones, portable computers, satellite-based information and guiding systems, web applications (Youtube, Facebook, Google Earth) with their ubiquity and possibility for instant interactions and real-time information lead to a change in communication and influence mobility, traffic safety as well as the design and use of public spaces (see Bazik in this book). For young people, many of these devices and applications have already become more important than owning and driving a car.

How will these technological changes impact walking and public space? The following speculations about possible future applications of these technologies can be made:

- **Electric cars and other e-vehicles.** The number of electric and hybrid cars will gradually increase, resulting in lower carbon emissions – provided the electricity is produced with renewable energy. This will lead to better air quality and less noise in cities, but the quieter cars may also pose an added danger to pedestrians. Since electric cars are more expensive to buy but cheaper to run, car travel may increase, especially within the built-up area with adverse effects on walking. The vehicles will still occupy large areas of public space. If electric cars are promoted with financial incentives and a better image of the car, the impacts for pedestrians will probably be negative. Thus, safeguards will be needed. Similarly to cars, electric bicycles and new devices, such as segways and scooters, will circulate with higher speeds creating safety problems for pedestrians and infringements on their space.

- **Opportunities for improved pedestrian safety.** Systems installed in cars, such as the Intelligent Speed Adaptation (ISA) which restricts the speed to the legal limit; or pedestrian detection devices and black boxes can reduce road danger for people on foot. ISA would also allow neighbourhood-oriented street designs with pedestrians and sojourners in mind instead of traffic-calming features that are targeted at cars. Although the technology is already available, ISA is not introduced because of political resistance, especially by the car-lobby. Infrastructure-related features, such as the detection of slow pedestrians at traffic lights, will probably be introduced more often in the future, but their overall benefits for pedestrians will be limited, since they are ultimately installed to optimise car flows. The implementation of technology should be combined with traffic safety policies and concepts such as ‘Vision Zero’, ‘Sustainable Road Safety’ or ‘Forgiving Roads’ that are based on more realistic assumptions of human behaviour than the previous policies. The implementation of the new policies, however, still has to free itself from traditional thinking, which often gives preference to cars and advocates separation between modes.

about state and flow of energy between individual network elements, such as generators, consumers (households or industrial plants) and transformer stations. This capability is highly problematic from a data protection point of view since it records the life patterns of people. It registers, for example, when the coffee machine is turned on in the morning.
<table>
<thead>
<tr>
<th>Traditional approach</th>
<th>Vision Zero approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on accidents</td>
<td>Focus on fatalities and serious injuries</td>
</tr>
<tr>
<td>Perfect human behaviour</td>
<td>Integrate the failing human in design</td>
</tr>
<tr>
<td>Individual responsibility</td>
<td>Shared responsibility between system and design</td>
</tr>
<tr>
<td>Industry must be forced</td>
<td>Industry can be stimulated</td>
</tr>
<tr>
<td>Saving lives is inexpensive</td>
<td>Saving lives is cheap</td>
</tr>
</tbody>
</table>

Figure 4 Traditional approaches to road safety and the Vision Zero approach
(source: Vision Zero Initiative 2010)

- **Increased technical potential for surveillance of public spaces.** New technologies are also used in the surveillance of public spaces. Miniaturisation of devices, such as video-cameras and movement detectors lead to their wider use. Hard- and software that tracks people, recognises their faces and detects, for example, if their walking pace is slower or faster than the average or if they wear certain kinds of clothes, opens new gateways for behaviour control. The installation of such equipment is often justified with supposed terrorist or criminal threats. It is, however, highly controversial if these technological devises actually increase security. Some people take an elevated number of cameras as a sign of more insecurity. Other devices are used to drive away people only. The so-called ‘mosquito’, for example, is constructed to displace young persons by emitting a high-pitched noise that only they can hear. It can be expected that the application of all surveillance devices will increase in the future, particularly if the authoritarian tendencies prevail (see above).

- **Technologies for pedestrians.** Some of the technological advances also improve pedestrians’ agility and mobility. Simple applications such as trolleys (suitcases, shopping carts and school bags on wheels) have become a common sight, making the lives of pedestrians more comfortable when having to transport something and potentially also replacing some car trips. GPS-devices and location-based-services will increase the comfort in the future for pedestrians as well but probably won’t influence the number of walking trips. The tools are helpful for people with disabilities and in emergency situations. Care has to be taken, however, when gadgets are introduced to compensate for hostile environments. Technologies well known for decades, such as moving-walkways and elevators may be used on specific sites in the future but widespread introduction of such equipment is not likely.

In conclusion, technology is double-edged for pedestrians. For walking as a non-technical mode it is of limited use. Any added techno-dependency takes away from the walking experience. Some devices, however, have the potential to make life for pedestrians better by improving their safety or their comfort. Technology will provide most opportunities when it helps to tame car traffic. But those applications with the biggest impact, such as Intelligent Speed Adaptation, are unlikely to be introduced soon.

Walking as the most environmental-friendly mode of transport and the only one that poses no danger to others does not need any technology to avoid externalities. The focus on such technical solutions by politicians, the media and the public often leads to a cynical disregard of walking. If we want to create opportunities, we have to change this attitude. Thus, in the future, large efforts will be necessary to get walking recognised and supported based on its genuine advantages and strengths. Only then targeted use of technologies can be beneficial for pedestrians.
10. Conclusion

Ideologies and the spirit of the times have a substantial influence on walking policy. Over the past 100 years five distinct ideological paradigms can be identified. During this time eight themes have woven through the political debates, appearing in new forms depending on the ideology, among them land-use, public space, safety, environment and health.

Between 1910 and 1930 the Futurists represented the unleashing of the speed of cars and the conquering of space, resulting in a sharp increase in pedestrian casualties. This era is followed by the World Economic crisis and the rise of nationalist and totalitarian regimes which demand the subordination of people under the regime and pedestrians under the new rules of car traffic. After the Second World War, mass motorisation sets in coupled with the construction of motorways and the car-invasion of cities, pushing aside people on foot. In the mid-1960’s signs of Limits to Growth appear and first measures are taken to improve the situation for pedestrians, such as, reduced speed limits and the creation of pedestrian precincts. The neo-liberal era starting in the early 1980’s, builds on market-forces, deregulation and privatisation. This leads concurrently to re-urbanisation in the city centre and to continued urban sprawl, to the discovery of the pedestrian as consumer and the promotion of walking for health to fight the increasing health costs. Figure 5 provides an overview of the sequence of the ideologies, the political debates and their impact on walking and public space.

The long-term view into the past provides some insight into the timing and the methods with which certain issues relevant for walking were dealt. This understanding may be useful in identifying opportunities and threats for the future. Three main areas of expected basic change affecting walking and public space have been identified:

- It is assumed that economic efficiency will remain an important factor. True cost and pay-per-use schemes may be implemented combined with incentives. If they reward walking, there is hope, if they reward users of electric cars and other supposedly sustainable vehicles, it will likely be counter-productive for pedestrians. The excellent cost-benefit ratio of walking investments should be a powerful argument for the future. However, not everything related to walking can be expressed meaningfully in economic terms and we should not forget these human-rights oriented aspects when we argue for a better deal.

- In terms of society, two different scenarios are conceivable: one with a rebirth of community orientation where people re-conquer their neighbourhood public spaces in a creative and socially inclusive way. This scenario builds on the power of cultural and social innovation. The opposite scenario is one of coercive, paternalistic and authoritarian regulation of walking and behaviour in public spaces. It builds on the notion of social exclusion of minorities to create a feeling of belonging for the majority. Surveillance, displacements, prohibition and paternalistic regulation will prevail in such a scenario.

- Peak oil and climate change will push the belief in technology, visible in the increased use of electric cars. This will lead to less noise and pollution but a possible increase in road danger for pedestrians. New technologies, such as speed limiters, have great potential to improve pedestrian safety, but they will be only reluctantly implemented. Satellite guidance systems may improve comfort but not change the amount of walking. Technology will provide most opportunities when it helps to tame car traffic. For walking as a non-technical mode it is of limited use.

This paper analyses the interaction between the major ideological paradigms of the 20th century and the impact they have had on walking policies and their implementation. It is hoped the analysis provides a path to a better understanding of the past and the future.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land-use and city planning</td>
<td>Compact, walkable cities; low quality of walking infrastructure (not all streets paved or with lights etc.)</td>
<td>Concurrent sub- and peri-urbanisation as well as re-urbanisation: “brown-sites” in central city locations</td>
</tr>
<tr>
<td>Public space, street space</td>
<td>Car starts to conquer road space; speed, danger; pedestrians fight for their space and rights</td>
<td>Re-conquering of central city spaces; commercial use of pedestrian areas</td>
</tr>
<tr>
<td>Environment</td>
<td>Pollution: dust, mud, noise increase; first measures taken against immediate effects</td>
<td>Market mechanisms as supposed solution; walking (still) no topic despite climate change, now on the agenda</td>
</tr>
<tr>
<td>Road danger (safety and security)</td>
<td>Development from speed limit of 10 km/h in early stages to no limit at all; steep increase in pedestrian casualties</td>
<td>Continued spreading of area-wide speed limits in cities; Shared Space solutions, first timid measures on main through streets</td>
</tr>
<tr>
<td>Health and active lifestyles</td>
<td>Health issues mainly related to pollution (see above); efforts for more hygiene in private and public spaces</td>
<td>Promotion of walking for health (fitness) and as active lifestyle; trigger: obesity crisis and related health costs</td>
</tr>
<tr>
<td>Economic relevance</td>
<td>Streets are also production and market space; increasing importance of transport economy (trucks)</td>
<td>Discovering the pedestrian as consumer; quality of life as marketing tool for global competition among cities</td>
</tr>
<tr>
<td>Social and cultural relevance</td>
<td>Walking is normal but as slow mode also increasingly considered the antithesis of progress</td>
<td>Culture and commerce mix in public spaces: events; walking/city tourism increases</td>
</tr>
<tr>
<td>Institutional aspects</td>
<td>Advocates in parliament fighting for pedestrians’ rights; first pedestrian organisations founded; cities start to plan for faster means of transport</td>
<td>First pedestrian experts in administrations; slow shift from linear to area-wide planning; money for flag-ship pedestrian projects</td>
</tr>
</tbody>
</table>
Acknowledgements

I'm very thankful to all my colleagues in the Working Group for the many inspiring discussions, their critical thoughts and new insights; Kurt Wyss and Mário J. Alves for the many hours of enlightening and motivating debates – on walking and far beyond; Rob Methorst, founder and chair of PQN, for his great vision and invitation to participate; Jim Walker, vice-chair, for his outstanding ability to create good meeting atmospheres; Susan Fillmore for her tireless support in this project and the countless wonderful walking hours; the many hosts for organising such memorable meetings in Brussels, Vienna, Wuppertal, Valencia, Rotterdam/Leiden, London, Lisbon, Leuven, Belgrade, Helsinki, Brno, Chamonix, Tel Aviv, Rome and The Hague; and the Swiss Federal Roads Office and Swiss State Secretariat for Education and Research for their financial support which enabled me to work on this project.

References


B.3. The future of walking


The “doom scenario” (... or can we avoid it?)

Nicole Muhlrad
INRETS, UMRESTTE, Lyon, France
nicole.muhlrad@inrets.fr

‘Wright’s Law:
A doctor can bury his mistakes…
…but an architect can only advise his client to plant vines.’
In: Arthur Bloch (1982): Murphy’s Law

Summary

We live in uncertain times and present trends seem to lead to a gloomy future. The promotion of walking as a transport mode is described here as an essential element of policies aimed at avoiding increased social inequalities, poorer life quality, economic slump, deteriorating health and rising violence, which could all be the consequences of higher petrol prices in anticipation of a final oil shortage. What we now know of global warming similarly leads to considering that walking and, more generally, non-motorised transport modes will have to grow. The optimistic vision is that reducing the dependency on oil of the transport system by developing new forms of mobility through combining non-motorised and collective modes can be made desirable through adequate policies. The pessimistic vision or “doom scenario” is what will happen if such policies do not develop. The policy-areas involved include urban planning and design, transport planning and operations, work organisation, access to services. Such policies will involve public and private stakeholders. They will have a cost for the tax payer, but doing nothing may cost even more. A most important point is that working on such policies should start now as the time-schedule for the unwanted changes promised by the current trends are to be expected in the short-term.

1. Introduction

The end of petrol (and natural gas) is not in itself a scenario, it is going to happen at some stage as oil and gas reserves are not unlimited. The question is: how soon and how brutally is this going to happen?

Ten years ago, the world oil reserves were estimated to last for another fifty years. Since then, exploration has continued and new reserves have been found or are expected to be found. However, the rate of development of emerging countries such as India and China was severely underestimated in the earlier rough forecast. Moreover, the cost of extracting petrol is going to increase due to the growing technical difficulties of reaching and exploiting the remaining resources, and the increase will be further compounded by speculation; we have already seen an example of this in 2008 when the price of motorized mobility increased in proportions unknown before.

In our present western societies, mobility depends essentially on petrol, even if the use of walking and cycling as transport modes is developing in specific areas and for shorter trips. For cost reasons and because of the geopolitics involved in accessing petrol reserves, availability of petrol at the individual level will not last as long for everyone so that both economic and social problems can be expected long before reserves dry up. One can
reasonably doubt that current technical research on alternative energies will produce efficient large-scale replacement solutions in time to avoid the problems for the populations most likely be deprived of petrol at an early stage. Thus one can legitimately wonder what kind of "doom scenario" will develop if no voluntary policy is implemented to counter the present trends and the differential effects it will have on mobility for the most vulnerable population groups.

There are reasons, however, to hope that policies aimed at reducing non-renewable energy consumption are indeed going to evolve in the short-term, not so much because citizens and politicians have come to envisage the end of petrol in a near future but because extensive use of petrol for transport and heating is now recognized as a key factor in global warming, with frightening expected medium- and long-term effects. If such policies eventually produce results, this may give our societies a little more time to adapt to the new conditions resulting from oil shortage. Moreover, the economic worldwide slump started in 2008 may also have slowing down effects on global petrol consumption, although it is now difficult to gauge how long this new trend will last.

Thinking ahead, we anticipate a "doom scenario" based on the future unavoidable oil shortage if public policies remain on the level of "business as usual". Being optimistic, we can explore what could be the components of policies to slow down and accompany changes, and thus open the way for a new less petrol-dependent quality of life. As transport and mobility are key issues for the oil demand as well as for people's lifestyles, they will have to be at the core of the new policies. The implication is that the development of walking (as of other non-motorized transport modes) as a mobility tool available to all citizens is unavoidable if we wish to reduce dependence on fossil energies and contribute to reducing the global warming effect; it is also desirable as it will reduce environmental nuisances affecting health (pollution, noise), improve personal health and well-being, and help provide all groups of the population with equal mobility choices. Promoting walking is therefore at the core of the "optimistic scenario", which requires re-thinking our social organisation as well as our mobility environment.

2. The "doom scenario" or what will happen if the present trends go on

There is no doubt that the costs of exploring for oil and extracting it are going to increase as the easy-to-get-to resources have been exploited first: objectively, cheap petrol is coming to an end. To further compound this natural trend, oil is sold on the market and the growing scarcity of the resource will trigger speculation as countries and large businesses start hoarding it on a large scale. The aggravating factor is that, although in a globalized market a barrel of crude oil will have the same value world-wide, at the end of the chain citizens will not have equal access to petrol and their basic needs will not be equally satisfied.

Hence the "doom scenario", which can be anticipated in the absence of strong policies to face the trends and accompany changes. The scenario is described below in definite terms as it is realistic enough, a trend rather than a vision: becoming aware of what can be awaiting us is, hopefully, the best advocacy to promote the policies leading to a more optimistic situation.

2.1. The geopolitical dimension

Oil resources are concentrated in some regions of the world. The fight for laying hands on the oil reserves has been a key motor of foreign policies since the 20th century and has already generated wars. In this global fight, some countries fare better than others because
they display more power and/or have little scruples in winning by all means. In this picture Europe, whose local oil resources are thinning, may not be well placed in the run, as being a warmonger goes against the grain, is indeed contrary to the very principles underlying the creation of the European Union. Within Europe itself, it can be hoped that a policy of equal access to whatever petrol there is will be organised at some stage. However, some European countries with little geophysical resources are more dependent on oil than others (as an extreme example, Malta depends on oil even for its drinking water which is produced by desalinization plants). So, ensuring equal access will require strong European policies involving both solidarity and optimization of the distribution of oil. It is indeed possible that oil shortage will generate significant population shifts inside Europe, either spontaneous or induced by policies aimed at rationalizing the use of energy.

More generally, if the needs for oil remain what they are now, the decrease in oil reserves worldwide will generate unrest or worse. Some oil-producing countries suffering from poor governance may face some local violent reactions from the people who will see their main source of revenue dwindling without any hope of their living standards being significantly improved in the remaining time (this has already happened, for example in Nigeria). Other countries will, on the contrary, search to obtain control of the resources which were previously in the hands of multinational private companies (this has started to happen in South America). Broad changes can thus be expected in the world economic and political order, involving a decrease of the influence of the Western world, including Europe, too dependent upon petrol. Resistance to such changes as well as grabbing for petrol wherever it can still be found may lead to more armed conflicts; these may in turn be fuelled, on one hand by multinational businesses with an interest in oil or in weaponry (see, for example, the case of Angola in the 20th century), and on the other hand by extremist terrorist organisations. Unrest and degrading living conditions in some of the poorer countries are bound to result in an increase of immigration flows towards Europe, in spite of the economic difficulties of this continent, thus adding to the more destitute groups of population.

Meanwhile, a renewed interest for the use of nuclear energy will probably appear in reaction to the situation. Nuclear power has been opposed by Green political organisations and civil society groups since the second half of the 20th Century, and has been consequently abandoned by some countries such as Germany. The industrial lobby may gather strength by offering a (temporary) alternative to petrol, obtaining new markets, intensifying the extraction of nuclear fuel, and overall pretending that oil is not necessary and a change of our leading source of energy is a way to perpetuate our present way of living: the risk of technology taking over policy is real. However, uranium is also a non-renewable resource, which means that nuclear energy is not the final solution to the oil problem. Moreover, access to world reserves is likely to generate the same kind of competition and social unrest as access to oil. While the development of nuclear-based energy in unstable and hardly democratic countries is already a security concern (see the present world attitude to Iran increasing its capabilities of obtaining nuclear fuel), the concentration of management powers into a small number of hands and the secrecy around technical processes to ensure safety conditions of nuclear plants may become a threat to democracy even in Western countries.

2.2. The social and mobility dimensions

Within (European) countries, access to whatever petrol has been secured at the international level will be determined by its retail price and the abilities of households to pay for it. While the more wealthy groups of the population will be able to cope, the less well-to-do or poorer groups will either have to abandon the use of private cars (or even motorcycles) or to allocate to it such a high proportion of their budget that spending for other activities will become severely restricted (possibly including health expenditures). Unfortunately, the poorer populations often live in urban peripheral suburbs or rural places where the cost of
B.3. The future of walking

land and habitat is lower but where public transport happens to be poor; their mobility choices will thus be reduced to an alternative between spending more time and energy on inadequate public transport for "mandatory" trips, or keeping to individual modes of mobility while suffering from a general decrease of quality of life in all other respects. Walking trips will increase and lengthen in the peripheral areas, not by choice but because of inability to pay for private transport modes combined with long distances to public transport nodes. Bicycling will offer an alternative, but only for the physically able citizens and provided bicycles are accepted on public transport vehicles (or adequate parking facilities are offered in the vicinity of the major transport exchanges). In any case, "non-indispensable" trips for culture, leisure or tourism which mean a lot for social interaction and quality of life will drastically decrease.

Meanwhile, the population groups still able to afford petrol will enjoy increased space for travelling as a growing proportion of others will have given up using their cars; thus, they will save time and will be able to increase their activities or enjoy a rest. Speeds will tend to increase, especially on the formerly congested urban thoroughfares, with the expected adverse effects on road safety, particularly on the safety of unprotected road users. Policies to enforce speed limits will thus need to be strengthened.

During a transitory period, one may observe a switch from medium-sized cars to smaller ones and to small motorcycles which are cheaper to acquire and to run. The movement, which should enable more citizens to keep to private transport longer while petrol prices go up, has indeed already started in cities where policies to reduce car traffic and increase public transport offer and use have not anticipated this potential side-effect (see, for example, the city of Paris, France). Unfortunately, a sharp increase in motorcycle ownership and use will create additional problems for road safety and traffic management in urban areas and may also be damageable to the environment (pollution, noise). New policies intended to make bike riding safer will have to allocate more road space to motorized two-wheelers, which is likely to be achieved through a reduction of the space dedicated to the more vulnerable but less efficient transport means, especially walking. Moreover, unless motorcycle and moped speeds are better controlled, pedestrian accidents are bound to increase.

In spite of its unwanted side-effects, the development of motorized two-wheeler use may at first appear globally desirable in terms of mobility and accessibility for all. However, not everybody can afford or can ride motorcycles or scooters, and even these means of transport will become too onerous for a growing number of households once petrol prices reach levels unacceptable for them. Policies to enforce speed limits will thus need to be strengthened.

Social inequalities will become more conspicuous as the population will gradually divide into two separate categories of citizens, those who can afford to run private means of transport and those who can't. The two categories will differ in time management, amount of mobility, the amount and variety of activities available to them, and of course comfort of everyday life. The concept of the "popular car" available to every household, which underlay economic, land-use and urban planning policies through the second half of the 20th century, is indeed coming to an end.

The decrease in quality of life resulting from growing petrol prices, and the growing prices of other goods derived from oil, will of course generate dissatisfaction and low morale, which in turn will further aggravate the economic situation by decreasing consumption and, as a result, increasing unemployment. Thus, the groups of the population expected to suffer the most from expensive oil will expand. At the macro-level, this development compounded with mobility adaptation should lower the demand on petrol at least temporarily and thus slow
down the price increase; however, it cannot be expected to reverse the trend in the longer term as there are uncompressible needs.

Thus, social and economic inequalities are bound to rise inside most countries that depend on oil from external sources. Due to degrading economic conditions, the number of homeless people in cities will keep increasing with obvious health consequences. It is also to be feared that highly visible inequalities in the society may lead to more delinquency, inter-personal violence and extremism, particularly within the less socially advantaged population groups (see WHO Violence Prevention Programme). The more well-to-do citizens may be encouraged to take measures for self-protection such as closing up residential areas (a phenomenon which is already happening in some European cities), which will in turn create greater spatial segregation between the rich and the poor, make inequalities more tangible and thus contribute to perpetuating them... and resulting in violence.

The run on non-renewable energies, and the terrorist movements it may induce, may well endanger democracy as the privacy of citizens is restricted and surveillance increased. Indeed, such a trend appeared in the beginning of the 21st century in some American and European countries which had always been proud of the freedom they used to afford their citizens. At the micro level, this should in time lead to restricting the rights or opportunities of people to demonstrate or simply meet on urban streets or other public areas. Walking would become less desirable and sojourning near to impossible.

2.3. The Pedestrian in the "doom scenario"

In summary, what will be the typical Pedestrian and his/her environment in the "doom scenario"? Walking may remain a choice of means of transport for anybody on short distance trips. Leisure walking should decrease as the greatest part of the population will have less free time and sojourning in urban space may become uncomfortable. On the contrary, long distance walking should sharply rise, not through choice but through obligation, and this mostly for the poorer citizens and those living far away from public transport nodes, and who are unable or unwilling to cycle. In a society with growing inequalities, the Pedestrian will thus symbolize the less advantaged groups of population in terms of economic status and physical abilities. Furthermore, increasing spatial segregation in urban areas will concentrate long distance walking in the less well-to-do neighbourhoods where amenities are in general poor.

The long-distance Pedestrian will also be a tired person as increased travel time combined with work and other indispensable activities will make for long days without much time for rest. Senior citizens or persons with mobility impairment will of course suffer most and may have to reduce their amount of travelling much sooner than expected. However, walking being a positive factor for health, the average long-distance Pedestrian may eventually be in a better physical shape than the more well-off citizens able to use their cars longer.

The current road environment is seldom designed to facilitate long-distance walking and make it safe, if only because long distance walking is not supposed to happen. When long walking trips become more common, meeting pedestrian quality needs will become crucial. Moreover, car and motorcycle speeds will have to be firmly controlled in order to prevent a deterioration of safety and to decrease pollution and noise in the walking environment. However, the Pedestrian representing essentially the less powerful groups in society, there is a good chance that improving the walking environment will have a low priority in the mind of decision-makers who will also be reluctant to impose any restrictive policies on private vehicles (as is now the case for motorcycles). In the medium term, the positive effects on health of walking should thus be tempered by the negative effects of pollution and accidents.
2.4. The time-scale
The "doom scenario" sketched above is not linked to the complete disappearance of petrol which is likely to occur within this century, whether in fifty or ninety years. It describes, as much as we can forecast them now, the trends and problems which our European societies are going to experience in the much shorter-term in anticipation of the future oil shortage. There is no time to lose if we want to devise policies to slow down and change a process leading to poor individual prospects of a full and happy life, to inequities and social unrest, to international armed conflicts, to growing inter-personal violence and to democracies under attack.

Another "doom scenario" which is related to global warming, shows the unwanted climatic changes to be occurring much faster than earlier expected, so that they may occur on the same time scale, which means in our lifetime. Policies to limit the damage expected in both scenarios should obviously be linked, although we will focus here on the first set.

3. Avoiding doom: the "optimistic scenario"

3.1. The necessary processes
We clearly do not want this "doom scenario" to come true, although we are already at its onset. It is therefore urgent to devise policies aimed at changing it into a desirable one. What is desirable is sustainable progress for citizens, which means evolving a way of life based on lower consumption of natural resources, ensuring health and maintaining life expectancy equally for all, and satisfying the basic needs without which life would not be worth living: peace, habitat, food, safety, justice, equal rights, democracy, social intercourse, culture (the "people's right to happiness"). We will show that the promotion of walking in an environment meeting the pedestrians' quality needs should play a major role in policies aimed at reaching a fully satisfying way of life.

Turning the "doom scenario" into a desirable one involves two processes:

1. Slowing down the move towards the end of petrol and, more importantly, towards unacceptably expensive petrol, so that:
   - more time is available for technical research (on alternative energies, new transport modes, new principles for urban planning, etc.),
   - the adaptation of society and way of life to the new expected conditions may be achieved progressively, with the strong hope of avoiding or at least compensating for the unwanted effects described in the "doom scenario".
   This process is in line with what is required to slow down and cope with global warming.

2. Using the unavoidable changes to promote better quality of life for all through appropriate supporting policies. This goal is not only essential for people to adhere to the necessary changes, it is also in the end the essence of the difference between the "optimistic" and the "doom" scenarios. In the transport sector, it involves promoting the modes which pollute the less and consume no fossil energies (walking, cycling) while planning for these modes to become pleasant, safe, easy, and therefore desirable for all population groups, whether rich or poor.

At the macro level, both processes should involve deep changes in economics and policies as well as improved and strengthened governance at all levels (cities, regions, states, the European Union, the United Nations and other international organisations). In what follows,
we will only examine the implications of the processes on mobility and transport and their induced effects for citizens, in particular on health and quality of life.

3.2. Slowing down the move

The first process involves decreasing petrol consumption in transport. Reducing mobility would be an obvious solution, so obvious that it comes naturally in the "doom scenario", at least for a growing part of the population who will have to cut down on non-mandatory trips. However, this is one of the effects we should seek to avoid: individual mobility has been an acquired benefit of mankind in the past century, is essential for economic growth, should be a corollary to open markets in a globalized world, and is for most people necessary for personal achievement. There is no doubt that mandatory trips could be shortened or their frequency reduced, for example through changes in work organisation and in the location of commercial and other major services, but "constructive" mobility should remain a right for all and avenues have to be explored to reduce oil dependency without reducing the opportunities offered by the transport system.

Technical progress in the design of vehicle engines, aimed at making them less greedy in motor-fuel, should reduce petrol consumption and emissions, at least in cities. This contribution should not be ignored, but progress has not been as fast as could have been hoped (for lack of anticipation of the "doom scenario" by car manufacturers, perhaps). Moreover, research on less fuel-greedy solutions should extend to motorcycles whose numbers are rapidly increasing. Considering that the technology is not yet there and that it takes up to ten years to renew a vehicle fleet, the "doom scenario" may be well under way when this solution becomes fully operational. At the European level, co-ordinated public policies may hasten the process.

The search for new fuels to use in vehicles is even less promising in the short and medium terms:

- "green petrol" produced from plants is competing for agricultural space with food crops; recuperation of unused or rejected vegetal matter may be a better proposition, but converting this matter to fuel is still too energy-consuming;
- natural gas has the advantage of having virtually no adverse effect on climate but natural gas is a limited resource just as petrol and its price is evolving in the same way; producing gas from other resources is energy consuming;
- the development of a vehicle engine using hydrogen cannot be useful without the development of an economically viable process to produce hydrogen on a large scale, using alternative energy to petrol; this is at the moment a long-term process;
- production of electricity based on alternative energies may be a pre-requisite to the generalisation of the electric car, even in countries endowed with nuclear power plants; electric cars also require a wholly new infrastructure to enable city dwellers to recharge batteries at frequent intervals, unless real technical progress is made in this field; remarkably, research on electrical vehicles is only now getting a priority in the European Union while the issue was raised decades ago;
- hybrid cars may offer a promising intermediate solution, but are bound to be more expensive (two engines are needed on each vehicle) and therefore inaccessible to many; there has been no real assessment of the global gains in energy consumption to be expected from a broadening of the market for hybrid cars.

Without ignoring the possibility that some progress can be made through such technical solutions (neglecting possible compensation effects of consumers’ behaviour), more has to be done in the short term to slow down depletion of the World's oil reserves and this involves reducing the amount of trips made by individual transport modes consuming petrol. Policies
to reduce car and motorcycle travel without restraining essential ("constructive") mobility imply a change of balance between transport modes to increase the parts of the most efficient ones in terms of persons transported per unit of energy (public transport) and of the non-motorized modes (walking and cycling). This requires a comprehensive re-design of our cities' transport systems with the aim of organising networks integrating motorized and non-transport modes so they complement each other. Such a process has already been under way for a while in European countries but needs to be hastened. Particular attention has to be given to suburban areas where dependency on individual motorized transport means is the highest and the ability to pay for expensive petrol will be the lowest.

In order to promote and plan for walking (and cycling) in a global oil-saving transport system, three key issues are to be taken on board:

1. The subjective limits as to how much people accept walking (or cycling) have to be reconsidered: if we are to avoid the "doom scenario", we need to make the hypothesis that most citizens may walk (or cycle) more than the short distances presently acknowledged in mobility surveys, given the right conditions. For those who can't or won't, technical aids can be designed just as they have been for car driving: the research focus should now switch from the driver to the pedestrian. Some devices, such as "pedestrian accelerators", which were explored in the 70s but have since been considered viable only for subway stations or airports, should be re-examined and other solutions involving low energy consumption may be invented. Individual aids targeting the less mobile pedestrians should also be developed, for example to compensate for balance problems or any other kind of impairment.

   In all cases, walking more will involve changes in people's time-budgets which may partly be organised at the individual level but may also require framework policies such as reduction of weekly working-time and improving the proximity to work or living places of the most essential services.

2. Car ownership has to decrease at least in dense city areas: at the macro-level, this is necessary to make more public space available for other means of transport and collective activities (especially by reducing the amount of parking space required); at the individual level, this should decrease the primary reflex of taking the car to go anywhere. Of course, lower car ownership requires different ways of access to cars are available when absolutely needed for trips which cannot be reasonably performed through the combination of other means offered by the transport system. This may be achieved through individual practices such as shared ownership of vehicles (between neighbours, colleagues, etc.) or car-pooling, new commercial offers facilitating renting a car at fixed periods or for sudden errands, etc. Some local authorities have already evolved policies to encourage shared use of cars and, if such policies expand, their effects can be expected in the short term.

   For the medium term, decreasing car ownership also calls for different urban planning principles aimed at providing the necessary services within reasonably short distances from home, so that they can be reached by walking. The services useful in everyday life include local administrations, medical and health centres, and essential shops in sufficient number to ensure that goods prices remain competitive. Habitat has to be restructured to make optimal use of the urban space while affording the residents comfortable living conditions. Some local authorities have already experimented along these lines by promoting "Dense (or car-free) Neighbourhoods", but this timid effort needs to be encouraged and much further developed.
3. There is a need to design new transport modes in order to provide a more acceptable alternative to cars than the motorcycles currently in use: less fuel-consuming, less noisy, more protective of their users, providing less incentive to speeding, less aggressive to pedestrians, better designed for the performance of daily chores and more compatible with the use of public transport.

The usefulness and safety of modes more akin to walking such as rollers, foot-scooters, gravity-propelled two-wheelers or others should also be examined and decisions taken as to whether they should be included in transport plans and which type of space they should occupy.

Re-designing the transport system involves redistributing the available public space to ensure smooth flows and safety for all modes, including of course walking, and to facilitate changes of modes during trips. It can be seen that in our “optimistic scenario”, the diversity of modes and activities occupying the public space should be much greater than now, which calls for new models of space-allocation and traffic planning and for creativity in order to move towards the new organisation of urban transport. This organisation, which has to take into account both short-term transport conditions and future developments, will be determined by the distribution of existing and expected trips using various combinations of modes; this implies that stronger links are established between urban planning, which shapes mobility needs, and transport planning. The switch in emphasis from the use of private cars (or motorcycles) to the use of non-motorized and new intermediate modes also involves significant changes in the balance of power of the various decision-makers and stakeholders at city and state level as well as in European institutions.

Thus, changing mobility patterns and structure and the offer of transport leads to rethinking the city, bearing in mind particularly that a key objective is reducing social inequalities. In order to maintain mobility and accessibility for all through a multi-modal transport system involving new technologies and essentially based on public transport, low-energy intermediate modes, walking and cycling, a “creative city” would have to evolve in order to satisfy new requirements; in the medium and longer terms, this involves in particular:

- optimizing the use and cost of public transport by increasing the population density in peripheral areas, which may require the relocation of part of the population around transport nodes; this should involve a fiscal policy or financial incentives to avoid or compensate for the higher cost of housing usually to be found in places within easy access to the transport networks;
- decreasing unnecessary and unwanted trips or reducing the distances when such trips prove unavoidable: for example, “captive mobility” related to work could be reduced by creating multiple shared business centres and using telecommunication technology to link employers and employees (this would imply a deep change in working relationships within administrations and businesses); new plans to relocate schools and all other essential services could be devised in order to optimize the amount of time spent on trips;
- organising for the special needs arising from reduced car usage: for example, delivery of everyday life goods, assistance for pedestrians who have to carry heavy weights or bulky “luggage” or push baby-prams, facilities for pedestrians with impaired or weakening physical capabilities;
- compensating for the loss of freedom which may be perceived from having to abandon car usage for most trips by increasing environmental amenities for residents and public transport users, both through improved architectural design and landscaping of the public space and the allocation of some of it to the development of easily accessible green and leisure areas.

The evolution of urban transport systems can be significant in the short and medium terms, especially as some welcome changes are already under way. A creative city cannot evolve
so fast, but rethinking the city should become an ongoing process, involving public and private stakeholders, at least to provide a direction for present day urban policies and develop perspectives with and for the citizens which will show that there can indeed be an optimistic alternative to the "doom scenario".

3.3. Promoting better quality of life

Obviously, promoting a better quality of life cannot be achieved only through transport, but mobility is such an important part of everyday life that making the conditions in which it is performed safer, more comfortable, pleasant and likable for the citizens is a great step towards the goal. Moreover, the changes we seek to obtain in the transport system have a bearing on other fields of policy-making (and vice-versa). We will take here the point of view of the transport user.

At the macro level, new transport policies involving a greater share of non-motorised modes should lead to less pollution and less noise, which in itself is a significant improvement of life quality and is particularly important for the citizens who will walk more and longer distances. Moreover, re-allocation of urban public space can be performed to enhance freedom of movement of the most vulnerable road users and greater communication between the citizens and should make room for activities contributing to harmonious urban life (sojourning under all its forms: meeting, strolling, window-shopping, exhibiting art or curios, selling goods, etc.). The design of public space and the organisation of traffic, including in particular global speed control, should ensure greater safety of all modes and of changes from one mode to another. Health of the urban population should improve as a consequence of reduced pollution, noise and road accidents, and also through the positive effects which can be expected from the daily performance of an adequate amount of physical effort (walking, cycling) in a healthier environment.

At the individual level, the perceived quality of life of the citizens required to switch from private motorized modes to public transport, intermediate modes, walking and/or cycling should increase if two conditions are met: these modes are made desirable and the former advantages of driving a car have been greatly reduced. From the pedestrian viewpoint, walking should be desirable if:

- at the tactical level, the time budget allows for walking longer, and walking is an efficient way to go where one wants to go, either for whole trips or combined with other modes (public transport);
- at the operational level, the quantity of walking to be performed is compatible with the personal abilities of the pedestrian (possibly enhanced by newly developed technical aids) and the time needed for walking is compatible with practicing other needed or desired activities during the day;
- at all levels, the pedestrians’ quality needs in terms of comfort, safety, aesthetics, pleasure (as identified and analysed in other sections of this work) are fully met by their environment;
- from a social point of view, walking becomes highly valued, whatever the reasons (it makes you look young and keep fit longer, it gives an image of dynamism, it shows a social concern for the future of mankind on Earth, etc.); there may also be additional bonuses in walking such as, for example, justifying a more informal dress code to go to work, choosing walking partners for regular trips to shorten the perceived duration of the trip and make it more interesting, etc.
- at the end of the day, some satisfaction has been drawn from walking (health and well-being, aesthetic pleasure, combination with other activities, etc.), so that it feels that tiredness from the effort has been worth it.
B.3.3. The “doom scenario” (... or can we avoid it?)

Similar criteria can apply to making the use of bicycles or other acceptable intermediate individual modes attractive. As to public transport modes, a lot of research and experimentation has already gone into making them more useful and pleasant to use, although cost considerations often prevent transport operators to act on this knowledge. However, if the "doom scenario" is to be avoided, providing quality is indispensable; this means that priorities at national or local government levels should evolve so that more public money goes into public transport on a sustainable basis.

3.4. The Pedestrian in the “optimistic scenario”

In summary, what will be the typical Pedestrian and his/her environment in the "optimistic scenario"? Ultimately, walking will become a desirable way of moving around in cities, on its own or in connection with improved public transport modes. Walking time will be well integrated into everyday life activities, thanks to social reorganisation of working conditions and individual changes in time planning (indeed, the whole pace of life should slow down and stress should decrease!). There will still be “captive” long distance pedestrians, although in the medium term less than in the doom scenario; however, they will be joined in walking by more affluent people who are likely to abandon individual motorized transport means because driving will be discouraged by current local and framework policies and/or because they find better quality of life in choosing to walk. Thus the Pedestrian should represent a large and growing part of the general population. As a consequence, the Pedestrian will gradually become a major stakeholder, which should facilitate further planning and design policies taking into account pedestrian quality needs.

From a broader social point of view, inequalities will not grow as fast and as much as in the “doom scenario” and, at least, will not be emphasized in the performance of everyday trips and in the design of the public space. While good management of time at the individual level and in work and school organisation will hopefully govern the amount of activities each citizen can perform, walking coupled with sojourning in comfortable urban spaces will become in itself a valued activity. The Pedestrian will still be tired, but positive health effects from exercising in a healthier environment will be felt sooner and satisfaction from the time spent on the streets will increase.

In the medium term, the less able pedestrians, or those with a taste for new technologies or devices, will also have a choice of walking aids and of intermediate non motorised modes (still to be further researched and designed). Hopefully, such devices will be affordable for the citizens actually needing them and will be safe for use in an environment where space allocation to all non-motorized means of transport is equitable and well planned. Indeed, the planned cohabitation of new intermediate non-motorized modes should enhance the image of the less able road users and encourage them to be more mobile.

The “optimistic scenario” will develop in the short and medium terms at a speed depending upon the growing awareness of decision-makers and citizens. Before the ultimate stage is reached, we can anticipate successive phases in the Pedestrian’s experience which can tentatively be sketched as follows, based on policy indicators which are already conspicuous in a number of European countries:

1. At first, adjustments will be made within the existing physical and work environment. Policies aimed at curbing car traffic, containing the growth and use of motorcycles, increasing the offer in public transport, encouraging shared car practices and improving the existing pedestrian facilities should have short term effects on pollution and noise in city centres and dense city areas and improve health and environmental amenities. A significant proportion of residents of such areas will be tempted to use walking, possibly cycling, and public transport instead of their own car (if they still own one) as it will be easier than driving, although the more well-off segment of the population will cling to car-
2. The first large-scale investments to be made bear on the extension of the public transport services to the outer parts of urban areas: this is in fact already happening in many European cities. Line extensions or new lines of tram, subway, train, buses will first be linked to existing poles of work or residences in order to bring relief to a significant portion of the population and to maximize returns from investments (if not to make them financially profitable). As a consequence, more people living in the suburbs will switch from individual motorized modes to public transport, and longer-distance walking to reach the new transport terminals or nodes will start happening. The need to improve the quality of the walking environment on the main pedestrian routes will be felt, which should trigger action to avoid a deterioration of road safety conditions as well as dissatisfaction of the citizens who are changing their way of living by becoming long distance pedestrians. Allocation of space to cyclists is also likely to become an issue, but as pedestrians are gaining political strength, they should be able to obtain equitable treatment in the improvement of street design. At this stage, people living in less dense areas, either because they have a lot of money or, on the contrary, because they had to choose a cheaper low-amenity area as their residence, will not fully benefit from the new transport offer. The poorer groups will keep on facing the same dilemma as in the first phase. Some aging or disabled people will suffer from a loss of mobility.

3. New intermediate transport modes should begin to appear and street design will have to be adapted to their use which should grow very fast once they are available. This should offer new opportunities for the less able pedestrians and for the citizens living far away from transport nodes. The whole urban road network will be re-classified and new forms of space allocation (and time allocation at signalized junctions) devised to take care of the new modal mix. The physical environment of pedestrians should start to significantly improve across urban areas, which should make long-distance walking less of a chore and more of a positive activity. Places for sojourning will be provided and improved to meet the demand of the less fit pedestrians who will need to break their longer trips as well as to increase the attraction of walking. Pedestrians will represent a larger mix of the population, including physically impaired and ageing people.

4. Longer term policies will start bringing in benefits. Incentives for the poorer people to move into areas better served by the public transport system will reduce the proportion of citizens suffering from decreased quality of life while optimizing the use of existing public transport lines and reducing the need for new ones. Conversely, planning and building new public transport lines to link the peripheral areas around cities may appear as an alternative solution to concentrate the population in newly designed neighbourhoods, thus introducing a completely different conception of urban areas based on smaller interconnected urban units. However, the only way this solution could bring benefits to the poorer population groups and help fight inequalities is by controlling land and property prices around the new transport nodes. At this stage, the need for long-distance walking should come down to more reasonable levels than in the previous phases, which will be felt as a gain of time and opportunities by the citizens who will have been able to move to better locations. New neighbourhoods and re-designed ones after “densification” will afford a better and healthier environment for the pedestrians and, more generally, the residents as they will have been planned on the basis of low car ownership and therefore will have more space to allocate to sojourning and other public activities.
This summary description of the evolution of the pedestrian situation is based on the assumption that sound and strong policies are implemented to counter the anticipated “doom effect”, and the corresponding public investments are made. Considering what the alternative would be, this is not a utopia and we have to assume that suitable communication will increase the acceptability of some of the more radical solutions, especially as a majority of citizens should profit from the changes. However, as public policies have to be compatible with our globalized market economy, it is rather difficult to predict what the time-scale will be for the four phases described. Our guess is that the useful technological development will be fully applicable in five to ten years, which should mark the beginning of phase 3. Of course, the policies to bring about each phase should be thought out beforehand.

4. Conclusions: overall implications for the future of walking

Avoiding the looming “doom scenario” is a priority for responsible decision-makers who look ahead and this priority is soon to become obvious to most citizens. In order to switch to an “optimistic scenario”, sound transport policies, in particular in urban areas, are needed. Promoting longer distance walking (and cycling) in conditions meeting pedestrian quality needs is a key to such policies.

The "optimistic scenario" implies that walking will be performed on a daily basis, as a self-standing transport mode or combined with public transport, by a larger share of the population, for longer trips and a longer time than now, with ample possibilities of stopping on the way and sojourning in the public space. To bring this situation about, walking has to be perceived by the citizens as desirable. To make the situation sustainable, walking has to be felt useful, practical, safe, comfortable, interesting, and compatible with other activities and daily chores.

To reach these goals, new policies need to evolve, not only in urban and transport planning, but also in the organisation of work and access to essential services. Such policies should involve institutional actors as well as private stakeholders and the citizens themselves need to play a part in designing the changes. New technologies can be harnessed for the purpose, both as organisational tools and to provide aids for the temporarily or permanently less able citizens. The citizens will acquire greater political visibility and power as stakeholders, which means that once under way the new policies should become increasingly easy to develop and implement.

The "optimistic scenario" will have direct costs to be supported by the tax-payer for re-planning parts of urban areas, providing more efficient public transport, re-designing the urban environment for all transport modes, providing the logistics for special needs and developing technical research focused on non-motorized and intermediate modes, although the citizens will continue paying individually for part of the cost of their own mobility. The collective cost of the "optimistic scenario" has to be compared with the increasing costs to be expected in the "doom scenario", and has to be balanced against the global expected benefits, such as to keep providing affordable petrol for a longer time, to avoid increased inequalities and violence in the society, and to improve quality of life, well-being of citizens and public health. The development of walking (and cycling) and the policies needed to bring it forth should also contribute to slowing down global warming, and these benefits are invaluable for mankind.

The switch to the “optimistic scenario" has to occur soon. But in regards to the key issue of promoting walking, the research done on pedestrian quality needs should make us well prepared!
Acknowledgements

Part of the ideas developed above were based on the reflections of the working group on Transport of the ECRIN Foresight Club in Paris (2002-2004) [Bernadet & Côme, 2004]. The author would also like to thank the members of the Working Group 3 of the PQN project for their constructive discussions which helped her getting deeper into some issues, in particular: Mario Alves (Portugal), Dragana Bazik (Serbia), Lucia Martincigh (Italy), Hans Orru (Estonia), Daniel Sauter (Switzerland), Therese Steenberghen (Belgium), Alf Stöle (Norway), Jim Walker (U.K.), David Zaidel (Israel).

References (relevant publications)


Crozet, Y. (2003). Mobilité urbaine: cinq scenarios pour un débat. LET-Université Lyon 2, ECRIN, Club Prospective, Paris, France


Massot, M.H. and Orfeuil, J.P. (2005). La réduction du trafic automobile peut elle passer par le rapprochement des bassins d’emploi et d’habitat? Fiches INRETS, n°6, France


Plouchart, G. (2003). L’impact environnemental de l’exploitation des ressources non conventionnelles. IFP, ECRIN, Club Prospective, Paris, France

The end of walking?
The future of transport systems and its impact on pedestrians

Mário J. Alves
Associação de Cidadãos Automobilizados, Lisbon, Portugal
mariojalves@gmail.com

‘The future is here, it's just not evenly distributed yet.’
William Gibson

Summary

In 1909 E. M. Forster wrote a daunting and disturbing short story about a dystopian world: “The Machine Stops”. Technology seemed to be the answer to the human desire for information and other basic needs. There is not much walking or movement until the machine stops.

However, “The Machine Stops” is also a cautionary tale about a technocratic society where well intentioned people like us had their way: the maximization of accessibility and the minimization of mobility had reached the final consequences. And it isn't pretty. Once again, too much of a good thing leads us invariably to undesired places. Once again, art and a good story help us to understand the flaws of our own narratives.

In the context of the COST Action 358 Pedestrians’ Quality Needs this paper analyses possible future scenarios concerning transport systems and their impact on walking. Fully acknowledging the risk and difficulty of predicting what may happen in the future in a fast changing world, the paper argues that these thought exercises can be useful tools for exploring future narratives to construct powerful policy visions.

The mid-term scenarios will be crucial to prepare the ground for a post-car future. Two possible scenarios concerning the price of private individual mobility are explored: a "business-as-usual" scenario where only city centres will pursue sustainable mobility policies, increasing the price of individual transport, while outside urban areas the price of individual transport will continue to be cheap and considered an integral part of individual freedom of choice. A second scenario will be a sharp increase in the price of mobility caused by a sudden and rather fast resource depletion - namely oil - and/or pricing policies that try to match the price of mobility with the true economic cost of each mode.

After exploring these mid-term scenarios (2020-2030), the paper describes the impact on walking of three post-car long-term future scenarios: Local Sustainability, Digital Networks of Control and Regional Warlordism.

The article also argues that trying to postpone difficult mid-term political decisions concerning mobility will lead us to dystopian communities and that only a true change of paradigm with the help of art, philosophy and good stories, will give us a glimpse of what David Harvey calls “Spaces of Hope”.
1. Introduction: acknowledging the fog of future

1.1. It is getting faster and jumpy

Predicting the future is always risky. Globalization, its intricacies and the accelerating pace of change, make attempts to predict the future even more complex. Globalization increases exponentially the number of geographic and human interactions. In the digital age technological and social changes accelerate and are more prone to discontinuities. From a world of reasonably linear trends, where the past helped to understand the future, we are entering what Taleb called “extremistan” (Taleb, 2007). The normal distribution curve that in the Twentieth Century helped social scientists to describe objects and people, no longer applies. The entrance of new players with global impacts has increased the standard deviation of most phenomena. Extreme events and discontinuities might be the drivers of the future. And these are, by their very nature, unpredictable.

Let us consider the energy crises for a moment - we will return to it later. Specialists from the petrol industry do not agree when peak oil will occur and what it might look like when it occurs. It is a good example of a highly complex system with global players. Nobody knows exactly how many reserves exist in the world in general and in Saudi Arabia in particular (Simmons, 2005). Consumption of oil depends on prices, which float with, and in turn influence, the world economy. At the same time the world economy has an impact on the price of energy. High energy prices can cause the global economy to slow down which will make energy prices go down. Technology (electric cars, nuclear energy, solar) will influence not only petrol consumption but also its production (tar-sands, new oil fields hitherto too expensive to explore will be explored above a certain price). The state of the world economy will influence consumption but also the investment in technologies that might be available or not for oil extraction and refinement.

The price of oil will determine the future of transport systems (Muhrad, 2010). High prices will accelerate the conversion to smaller conventional, hybrids and full-electric cars or in the long term maybe hydrogen cars. Very high petrol prices might induce new world financial crises, reducing oil consumption and its price – with the double effect of slowing down the investment on alternative transport technologies but also of spiking the interest in them. Some authors claim that as peak-oil approaches we will sink in an oscillating world economy – lower consumption from a world in recession will reduce prices that will help economic recovery that will lead to higher energy prices and a new recession. These high prices, or oscillating trends towards high prices, might also lead to a shift to public transport, bicycle and walking - from past experiences we know that unreliability of certain forms of mobility and experimenting with new transport modes might help to change behaviours (for example the public transport strikes in Paris). If it lasts long enough it can have an impact on urban sprawl and where people choose to live – high and unreliable prices might help people to choose to live in more dense areas.

1.2. Awareness of limits

One thing might be easy to predict – the Twenty-first Century will be about the attempt to manage limits (environmental, spatial, economic…). In the Twentieth Century the paradigm for planning and managing transport systems followed a pattern of “predict and provide” – after studying the past and extrapolating demand (land use, behaviours and transport supply), models were applied in order to predict stresses on the transport infrastructures of cities or even whole countries. Invented in Chicago in the 1960’s these transport models gave technicians and politicians the illusion that they could control the future. Over time
these “four-step” models became self-fulfilling prophecies – trying to anticipate the supply necessary to meet the predicted demand it led to road construction that “manufactured” the “predicted” demand. The idea of limits was absent in the first traffic models and only later, when entire populations started to fight against road-building, the political notion of the limits of road supply became apparent. More recently environmental carrying capacity and limits to car access to environmentally more sensitive areas started to be one of the major concerns for city management. In the last few decades these “four-step” modelling tools of “predict and provide” have become a motive for controversy and discredit. However, alternative ways of planning and managing transport systems are still a motive of discussion among professionals. Nevertheless, until very recently, walking was absent and invisible from most modelling efforts. Even now the majority of the transport models do not include walking in their algorithms.

This awareness of limits (environmental, resources, physical space) and the willingness to tackle them or not, will be fundamental to how we will plan and manage the future of transport systems. In terms of resources, the price of energy will also be crucial to theoretical planning and political approaches. In a few transport models environmental indicators started to be included only very recently. Politicians are, and will be, tempted to delay the internalization of the real costs of transport and reduce the increase in price to the consumer (for example by reducing taxation of fuel in case of dramatic scarcity). Thus the temptation to postpone dealing with the problems will exist from electoral to electoral term.

Therefore it is not unconceivable that the price of resources will be kept unreasonably low until the situation becomes unsustainable and structural changes are inevitable. However, believing the rhetoric and the European Commission policy papers, it is reasonable to expect that the price of fossil fuels will sharply increase due to carbon taxation in the near future until other carbon-free sources of energy gradually step in to move transport systems. If this were the case, we will certainly assist a massive change in the priority of investments from road to rail networks. Concerning walking it will be crucial to understand that a considerable share of the investment for alternative transport systems will have to be applied to public space.

Approaching limits can be done through catastrophe or through management - most probably it will be a mixture of the two. For example, an increase in the price of mobility because of space constraints and environmental impacts in urban areas is easier for the public to understand than policies to reduce mobility and carbon emissions in general. It is therefore more probable to expect transport demand management in city centres rather than demand constraint policies at a national level. This kind of approach might increase urban sprawl if prices of private motorised mobility continue to be unreasonably low and access to city centres by private car increases its price considerably.

1.3. It will not be about A or B, but A and B

Another difficulty with predictions in this world of accelerating complexity levels will be the proliferation of paradigms – which is coherent with the increase of the standard deviation of the descriptive variables. Some people will have access to more resources while the majority of people will have less. The future was never very “clean” and it will be less so - the coexistence of conflicting and contradictory trends will be the rule.

It is certain that the population of Europe will be older in the near future. There will be very frail but also very fit elderly people. Africa on the other hand will have a very young urban population – even if this paper only tries to tackle the future of walking in western societies, it is clear that around the world some will be able to walk and some will not. At the same time

1 Traffic Generation, Trip Distribution, Model Split and Network Assignment.
2 For a review on this crises in the Twentieth Century see Pas (1990).
for most, walking will continue to be the only available mode. There will be a trend of people returning to the city centres and families leaving the city looking for “exurban” homes – the latter will be dependent on some form of individual motorized mode of transportation, while others in more compact areas will be able to walk and use public transport. In the same territory densities might increase and in other areas of the same territory the urban sprawl will continue. In the same cities some people will be able to use Public Transport and walk while others - living in lower densities - will not. Some experts claim that the world will be “flat” (Friedman 2005) and others that it will “spiky” (Florida, 2005) – probably the world will be both at the same time. In a “spiky” world where cities with reasonably high densities will thrive, walking will play a more important role. On the other hand, in a “flat” world the average distance to cover will be greater and thus walking will continue to decline.

In these coexisting paradigms it is reasonable to assume that the complexity of the offer and demand of transport systems will also increase. In terms of transportation the wider desires on the demand side (life-styles will vary more from each other than in the Twentieth Century) will induce the needs for more and varied modes of transport increasing the need for a more efficient intermodality (Peters, 2006). This fact alone might increase the amount of “invisible” walking (walking between stages for less than 3 minutes). Walking will be more indoors, inside transport interfaces but also short stages in public space – raising the importance of walking as the glue of the transport system in a city. On the other hand one can feel that technology will reduce the need of very hierarchical transport systems that increase the need for interchanging modes – tram-trains for example. In this scenario one can imagine the proliferation of small individual devices that can take the user door-to-door or are used between stages on public transport.

1.4. Transport planning will be more political

The need to manage complexity and limits will make planning and managing of transport systems more participatory and therefore more political. In the last decade it became more and more acceptable to use supply to influence demand. The aforementioned “4 steps models” treated demand as a fatality. It is now more accepted among transport professionals and politicians that supply does influence demand patterns. One of the most discussed phenomena in the second half of the Twentieth Century was “induced demand”. More recently the opposite has also been observed: “traffic evaporation”. The first hypothesis applied to car traffic entails that the more one supplies road infra-structure capacity the more car use will be induced by offering it. This was the subject of many studies and reports last century and was settled with a report by the United Kingdom government - the well known SACTRA report3. “Evaporation” on the other hand is still controversial but abundantly observed by many professionals (Cairns et al., 2002) – when there is a sharp reduction of supply in the road network (due to an earthquake for example) car use also reduces. This is perfectly explained by what is called the Jevons Paradox4. These obvious observations can and probably will radically change the planning and management of transport systems. Contrary to the “predict-and-provide” paradigm where the objective was to optimize the performance of every mode, a more policy oriented planning and management can be envisaged. The two phenomena of traffic induction and “evaporation” are also empirically observed for other transport modes namely walking – during car oriented city planning and management, pedestrian infrastructure was drastically reduced and one could observe pedestrian “evaporation” throughout the Twentieth Century. When more space (capacity) is granted to pedestrians in new street reclaiming schemes (like Broadway in NYC or Trafalgar

---

3 SACTRA (Standing Advisory Committee on Trunk Road Assessment) a study for the United Kingdom government in 1994.
4 In economics, the Jevons paradox (sometimes called the Jevons effect) is the proposition that technological progress that increases the efficiency with which a resource is used, tends to increase (rather than decrease) the rate of consumption of that resource.
B.3.4. The end of walking? The future of transport systems and its impact on pedestrians

Square in London) an increased presence of pedestrians is easily observed. If “predict and provide” - taking car traffic as a fatality - was the absence of policies and therefore of politics, in the last few years it has become more acceptable to use “induction” and “evaporation” to attain policy objectives.

To find equilibrium and pursue policy objectives, other paradigms have been proposed as alternatives to “predict-and-provide” such as: “debate-and-decide”, “aim-and-manage”, “cap-and-share”, for example. Probably all of these will be necessary. But if “predict-and-provide” was the absence of policy and the realm of \textit{laissez-faire} technocracy, using these new paradigms will increase the acceptable influence on demand through price and efficiency – charging more or making less efficient what we don’t want and the opposite to what we want.

However, the path to real-price economics applied to transport systems will be difficult and therefore slow. Excluding urban road pricing, real-price economics will be controlled by central governments. Hence for local governments and city political managers it will become more acceptable to increase the efficiency of demand for modes that the policy vision wants and reduce the efficiency of the supply that induces the demand that the policy vision does not want. For policy making to attain these long-term objectives, to establish a shared vision of the future will be increasingly important - hence, the increasing importance of politics in transport and mobility planning and management. It will become clearer that the phenomena of induced demand do not only affect car usage and it can also work in favour of modes the policy maker wants to encourage. The same way pedestrians “evaporated” throughout the Twentieth Century by the reduction of their space, favouring safety and comfort of public space will be increasingly understood as a possibility to reverse this trend and induce pedestrian demand.

If reverting urban sprawl will take decades, preparing dense areas for more sustainable forms of transport is now part and parcel of transport policy in many urban areas. It is therefore predictable that sustainable policies in urban areas will continue. It is more uncertain whether or not policies to reduce the overall mobility will be implemented as they depend on the increase of the price of mobility in general. If implementation of the former is easier to understand by the public, the latter will need a sharp rise in petrol prices without a viable technological alternative and/or the political will to increase the price of mobility through general road pricing that will approach the real price of externalities.

2. 2020-30: Mid-term Contrasting Scenarios

As it was discussed in the introduction chapter, the most likely trend will be the increasing price of fossil fuels due to scarcity of resources, internalization of externalities and policy oriented objectives to reduce motorised trips. These trends will increase the price of traditional motorized traffic and are very likely to happen in the short term. However, radical technological breakthroughs and lack of political courage may postpone this trend.

In this chapter two contrasting scenarios for the next two decades will be assessed:

\textbf{Scenario 1: Business-as-usual} (cheap private motorised mobility, lack of political courage to implement real-price economics, reliance on techno-efficiency, ...)
- Continuing trend of increased urban-sprawl
- Continuing increase of motorised trips (fossil fuels or alternative energy vehicles)
- Decrease in walking
**Scenario 2:** Sharp increase of the price of motorized transportation  
(peak-oil, carbon taxes, sharp increase of carbon in emission trading prices, generalised road pricing, ...)

- Gradual trend to more compact cities
- Decreased growth of individual motorised trips
- More walking

**Figure 1** Medium Term Scenarios: price of individual motorised mobility

<table>
<thead>
<tr>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>City Centers</td>
<td>City Centers</td>
</tr>
<tr>
<td>+</td>
<td>++</td>
</tr>
</tbody>
</table>

Real price of individual motorised mobility compared with today’s prices:

- = reduction or remaining approximately the same
- + increase
- ++ sharp increase

amount of walking

2.1. **Scenario 1 – business-as-usual – cheap private motorised transportation**

**Price of energy**

Despite the price of petrol reaching record values in 2008, the economic crisis that succeeded (if the origins of the crisis are related indirectly to the surge in the prices of petrol is uncertain but plausible) made its price plunge to lower values. The uncertainties related to peak-oil are still considerable. Nobody knows exactly when the global oil supplies will start to decline (Monbiot, 2009). One thing is certain, global discoveries of oil fields peaked in the 1960s. The International Energy Agency's new report claims that oil production will hold steady when the global resource has fallen "to around one half by 2030" (IEA, 2009). However, its chief economist warned recently that unless wise investments were made the OPEC peak will happen around 2020⁵. With a world economic crisis, less capital is available for investment in refineries. The UK Energy Research Centre's review confirms "a significant risk of a peak in conventional oil production before 2020" (Steve Sorrell et al, 2009).

---

⁵ Interview of Fatih Birol to the Guardian in 15 December 2008.
means that in the decade that has just started, there will be gradual but sure temptations to speculate with oil prices, making the oil price soar. However, even this is difficult to predict because above a certain oil price it is more than likely that the world economy will crash again, or will not even have the cheap resources to climb up from the latest recession. This push and pull between the state of the world economy and the price of energy can end up postponing the need for drastic changes in the transport system and corresponding demand. Also the introduction of technological changes might take some pressure off fossil fuel demand, helping to contain its price. Some analysts claim that OPEC will decrease the price of oil if necessary to maintain its consumption levels.

**Political commitment**

Cynics contend that politics is the will to shift problems from one generation to the next. Despite the decade long debate about the serious impact of climate change on the planet and the impact of car usage on air quality, noise and liveability in general, one can hardly detect major changes in transport policies and even less so in the demand/consumption patterns of the western world. Concerning climate change, what can be observed in opinion polls is a reduction of the percentage of the population in Western countries that believe in the seriousness of its implications. This can delay governments from taking less popular measures concerning the internalization of transport costs. On the other hand, since the Iranian revolution in 1979 until the end of last century there was an almost continued reduction of the price of petrol (with a brief exception during the Gulf War). During these two decades one could observe a gradual exchange of square meters of residence or office space for more distances driven – urban sprawl. This was also felt more recently in countries of the former Eastern Bloc when a large percentage of the population acquired their first cars. These two decades of changes in land use have created an inertia that will be difficult and slow to reverse. Politically there is now a considerable amount of car-dependent people and voters. Many city centres became emptier – with less people and less political power. These and other trends explain the decline of walking and the increase of car usage. But more importantly low energy prices created an important political force that will not easily accept measures to reduce CO\(_2\) emissions or any other measures that will reduce their perceived individual freedom. Land use will take decades to change and eventually react to prices inducing more compact uses. Moreover, people have their suburban life styles and their social networks. They are used to off-peak speeds and many of them dread the idea of living in more compact environments. Therefore it is hard to predict major increases in the price of mobility based on policy objectives. Even a price increase derived from an increase of oil prices will put a lot of pressure on governments to decrease petrol taxes (or most likely to not increase them). In 2008, at the peak of diesel’s price, the vulnerability of long term objectives were obviously under pressure - truck drivers protested by blocking roads and freezing the supply chains.

**Techno-efficiency**

Even if the price of fossil fuels goes up eventually, one cannot dismiss the technological capacity for more efficient motor vehicles. As such the car is one of the less efficient devices ever invented by man after the industrial revolution - it is the brainchild of a civilisation with abundant and cheap energy. Therefore it has considerable scope for efficiency. In the past the market rejected very low consumption cars mainly for their lack of performance\(^6\). If prices of individual motorised mobility increase due to petrol scarcity or political will, many consumers will be able to easily reduce their fuel consumption in half by buying less powerful cars and thus postponing their willingness to transfer to other transport modes like walking. Although uncertain, all major car manufacturers have announced the production of electric cars in the next 2 years. Accepting that the consumer, or a considerable part of the

---

\(^6\) For example the WV Lupo 3L - made with the intention of being the world's first car in a serial production consuming as little as 3 litres of fuel per 100 kilometres and with still unrivalled low CO\(_2\) emissions (81g/km) - was a failure.
consumers, is willing to accept the reduction on performance of their car, the electrical car can provide urban mobility at the equivalent current price of less than one litre of petrol per 100 kilometres - approximately 6 times less expensive than the average consumption of current cars. To sum up: the inefficiency of the cars of today and the willingness of the consumer to compromise performances they hardly use (the range of the electric cars will cover most of the car trips), can postpone for a decade or two hard changes and car usage might continue to grow for a decade of two.

**Impact on walking**

The possibility of any of these three trends can be enough to postpone hard changes. Then we might be on the path to what has been called the “clean congestion”. It is however easier to predict more private car constraints in more and more urban areas. These policies might have a balance effect on the total amount of walking (for example in Germany walking has been growing slightly for the first time during the last decade, possibly because of these urban policies).

This business-as-usual might also lead to change through catastrophe as change might be forced upon us in a more sudden and less managed fashion. However, techno-optimists will claim that by then a “Hydrogen Society” and abundant renewable alternative energies will be ready to step-in - around 2030 (Rifkin, 2002).

In this scenario there will be a greater usage of individual transport modes and a continual decline of walking will be predictable. The individual transport modes can be more efficient fossil fuel cars (albeit less performing), hybrids and also a myriad of electric vehicles – small, cheap and ubiquitous. For the smaller personal electric vehicles, there will be tremendous legislative pressure to allow their use in all forms of public space - on roads, pavements, indoors (transport interfaces, university campus, hospitals, airports, and so on). There will also be pressure for legislative changes for their usage by younger ages. There will be a technological continuum in size and performance between very small devices, which will be sold to support walking, up to the two tonne cars that are used today. The ubiquity of the former will probably mean an acute decline in walking. The competition of these devices for space with the pedestrian, their short range and low speeds will be more attractive to pedestrians than to car drivers, especially if we are in a context of increasing urban sprawl.

In this scenario it is reasonable to assume highly developed **Intelligent Transportation Systems** (ITS) (Tiffin et al., 2007). Highly individualised motorisation will probably help efforts to add information and communications technology to transport infrastructure and vehicles in order to manage factors that typically are at odds with each other, such as vehicles, loads, and routes to improve safety and reduce vehicle wear, transportation times, and fuel consumption. This level of sophistication will open the gap between the “haves” and “have-nots” even more. ITS will transform pedestrians into passive and technology(less) elements in public space. Most in-vehicle safety devices will have their emphasis on passenger and driver safety leading to increased motorized speeds and endangering more whoever is outside the vehicle. On the other hand recently one can observe the rising concerns from car manufacturers for the safety of pedestrians and cyclists. Some devices are currently being tested – airbags in the front of the car, scanning sensors, and so on. ITS front scanning sensors can create more compact traffic densities, making it more difficult and ultimately more dangerous for pedestrians to cross a road. The lack of noise produced by hybrid or full electric cars (“silent cars”) will increase the likelihood of injuries of pedestrians. This will be more so for small devices that might conquer their space on the pavement. All in all the pedestrian will stand to lose more in this technological environment - the same way the pedestrian became a passive and invisible element in public space throughout the Twentieth Century with the use of traffic lights technology.
2.2. Scenario 2: Sharp price increase of private motorized transportation

Price of energy
The staggering demand for energy by emergent countries like Brazil, Russia, India and China\(^7\) can hardly slow down unless one expects extensive social unrest in those countries or a staggering change in the economic trends. However, economic projections of growth are based on the assumption that resources are limitless and endlessly available when needed. Intense pressure on global fossil fuel resources is therefore to be expected. Recently, a paper published by researchers at Uppsala University in the Journal Energy Policy (Kjell et al., 2009) anticipates that maximum global production of all kinds of oil in 2030 will be 76m barrels per day. The paper finds that to meet the International Energy Agency's forecasts for demand (105m in 2030), the world's new and undiscovered oilfields would have to be developed at a rate "never before seen in history". As many of the potential fields are in politically or physically difficult places and availability of capital during economic crisis is limited, this looks very unlikely. Assessing existing fields, the likely rate of discovery and the use of new techniques for extraction, the authors find that "the peak of world oil production is probably occurring now".

At the same time attempts to find a global agreement concerning CO\(_2\) emissions is very likely to continue and the management of limits will probably lead to cap-and-trade or carbon-tax measures that consequently might cause an overall price increase of fossil fuels. This fact indicates that soon there will be international commitments with fines for the countries which do not comply – this also leads to believe that at least some kind of measures will be taken. The question will be how much and how fast - and that depends on political commitment.

Political commitment
There is a higher environmental awareness therefore it is reasonable to believe that indirect forms of traffic restriction will continue to take place in city centres – parking fees have become almost universal in urban areas and are very likely to increase in the future, road pricing schemes might start to take on the reasonably successful examples of London and Stockholm. It will be increasingly obvious that the only way to tackle environmental impacts and congestion in urban areas will be through investment in public transport and non-motorised modes – one of the obvious places to raise revenue for these investments will be through charging more for car usage. These kinds of policies are not without their problems – if charging policies are not universal and only affect city centres, they might be an incentive for urban sprawl and an increase in mobility outside the charging zones. This problem will happen less if there is a general increase in the price of energy and a clear political commitment to increase the supply of public transport in cities and heavy investments in public space.

However, the change from fossil fuel to electric sourced vehicles will imply a drastic change to the transport tax system – probably from fuel taxes to a satellite based pricing. This might be the incentive to raise the price of mobility to levels that gradually will approach the calculated values of each mode externalities.

Techno-efficiency
The promised bailout by the electric car might not happen as easily as predicted. Battery autonomy and reliability can delay consumer preferences. Sudden pressure on raw materials for batteries might increase their price coupled with the awareness of their environmental impact and consequent (higher) price for battery recycling. The surge in petrol price might overcome the battery price barrier and consumers’ reticence, but the general cost of

\(^7\) BRIC (typically rendered as "the BRICs" or "the BRIC countries") is an acronym that refers to the fast-growing developing economies.
individual mobility is still very likely to increase as the price of electricity increases and new business models will make it easier to charge mobility in ways that are more directly felt by the consumer (micro-payments that include energy, insurance, parking paid-as-you-drive, for example).

**Impact on walking**

Under scenario 2 there will be a push towards a gradual trend to more compact cities. This will help the shift to public transport, walking and cycling and a decrease in motorised trips. Intermodality will help to increase the amount of walking between stages and this might lead to an increased investment in public space which will lead to more walking creating a “vicious circle”. However this shift to more compact cities will be slow and painful. Prices of property in city centres and around public transport are likely to sharply increase and therefore become affordable only for some. At the same time with very high energy prices it is to be expected that the use of small electric devices will increase – electric bicycles or motorcycles or even segway-type devices. The sharp price increase of transport will lead to a more local production of food and other consumer goods – more a mixed functionality city with edible gardens and more distributed jobs that will be integrated in diverse neighbourhoods – all this will cause an increase in walking and cycling.

3. Supply of transport infrastructures

Public space is the realm in which people meet and interact as pedestrians but it is also the infrastructure within which we walk. Until last century politicians and decision makers were part of the same time-and-space dome (Adams, 1999) as anybody else – their only transport infrastructure was the same public space shared by everybody. Therefore their perception of needs concerning mobility was similar to the majority of the population – it is remarkable how much public investment was made in public space during, for example, the 19th Century (wide sidewalks and promenades, gardens, squares, and so on) and within short distances public transport (lifts, trams, railways). With the popularisation of the car the differential of speeds among people increased. People from different social backgrounds, gender or age had a substantially different access to speed. In general politicians and decision makers started to live in a different world than the vast majority of people. This might partly explain the gradual lack of interest by decision makers and politicians in the amenities of public space and short distance travelling until very recently. In spite of the recent interest in walking and cycling as alternative transport modes to the car, academic and institutional inertia make real changes very slow. Albeit recently efforts have been made to include public participation in public space projects, but the political process is still very biased towards the vision, or lack of it, of the ruling classes (Sauter, 2010).

Public space and walking are the glue of a good transport system. The increasing specialisation of disciplines and professions that intervened in the city during the 20th Century was also a highly detrimental factor for public space design and consequently pedestrian quality needs (Methorst, 2010). Academic separation of disciplines like engineering and architecture enabled the creation of a substantial body of knowledge that ultimately did not relate to each other. Cities started to be designed with cars and buildings in mind. The buildings were designed by architects and the road space designed by traffic engineers. Environment carrying capacity, the social aspects of the street as meeting spaces and the quality of the public realm for walkers were issues usually ignored - life, people and spaces were left behind. Recently some effort has been made to integrate disciplines and the contribution by the social sciences has become more common. However, most projects are still subject to political timings and interdisciplinary and public participation are still perceived to be factors that slow down decision making.
3.1. Scenario 1: business-as-usual (BAU)

Road Transport:

Network: Even under this scenario which assumes a lack of political courage to charge for the real price of car usage externalities, it is very likely that technology (satellite and ITS) will help the necessary revolution in taxation. From taxes levied on the purchase of a vehicle and fixed taxes per year independent of usage we might see an attempt to move to some form of real-time road pricing that depends on how many miles are driven and where. Like in the Netherlands, politicians under this scenario might try to “sell” this new tax system under the argument of tax neutrality - that is, the revenue of the state will remain approximately the same by lowering or even abolishing the current purchase and annual vehicle taxes. This might have an impact on car usage but its effects are contradictory. For example, it might help to reduce usage because it is well-researched that people feel more the immediate out-of-pocket costs in comparison with costs incurred once a year - on the other hand electronic forms of payment might reduce this psychological effect.

Under this scenario the mobility paradigm will prevail over accessibility. Therefore ITS will focus on maximising safe speeds. The car and the road network will communicate better with each other increasing in-vehicle safety. Unfortunately, pedestrians will tend to continue to be the “invisible” element in the system. Cars will communicate better among themselves, which will imply shorter safer distances between them. Sensors will allow safe but very short distances between cars that currently are considered humanly impossible to attain. To tackle congestion by compacting more cars in the same road space will happen and is, to some extent, already happening (the recent proposals of carpool lanes in the United Kingdom are to use spare shoulder-space). If on interurban segregated roadways this will not affect pedestrians directly, it could have a disastrous effect on urban networks. Gaps between cars are still the opportunities used by pedestrians to jaywalk in midblock situations.

Private car: under this scenario car usage will remain the growing gorilla (Adams, 1996). Distances travelled by car will continue to increase. Motorised mobility prices will be kept low either by cheap energy sources or by increased efficiency of vehicles – coupled to the lack of political will to charge for externalities. Cheap energy can be achieved either by a smooth but rather fast transition from fossil fuel cars to hybrid or full-electric cars. More efficient vehicles can be achieved by reducing the performance of traditional fossil fuelled cars in tandem with technological changes of the car itself. But it is very likely that in the next few years hybrid cars will be ready to make the bridge to fully electrified vehicles. This is also the transition in Europe from a highly taxed energy source (petrol) to a subsidised energy (electricity). This will imply a total reformulation of the taxation on individual transport mobility. Most likely the income raised by the state from fuel taxes will have to be charged elsewhere. National road price schemes like the ones proposed in the Netherlands come to mind – but will face strong political and social opposition. Also the price of batteries and consequently the high price of vehicles compared with the relatively low price of running it will change the business model of the car industry. It is possible that the electric car will be marketed in a substantially different way than the traditional car was throughout the Twentieth Century. There is a trend towards changing the short lived relationship of buying and selling to prolonged business relationships that imply services and regular renewal of contracts. Based on the model of mobile phones, it is possible that electric cars will be almost offered for free while the business model will rely on battery management and other mobility services. From an industry based on selling cars we might shift to mobility services that include, among many others, leasing a car. Due to the short range of the electric cars these services may have two contradictory effects on walking: on one hand they might stimulate intermodality and consequently walking due to combined mode services (for example car-sharing on both ends of a long
train journey), on the other hand it will open a new market for the second family car and even include a third member of the family in the package (the first car traditional or hybrid car will remain in the family to respond to longer journeys). This effect of intelligent intermodal mobility services (like car-share, taxi on demand and so on) coupled with cheap and small electric devices like bicycles, motorcycles and other intermediate devices will put pressure on non-active family members to walk less. Ultimately, small electric devices (ranging from Electric Personal Vehicles Segway-type to very fast and powerful electric sports cars) can become the largest ubiquitous family appliance – like the television in the second half of last century (each family member ends up having one in his or her room) or the mobile phone at the end of the Twentieth Century.

Public Transport: After a long period of experiments with deregulation in several European countries (like in the UK for example), with falling quality of supply and consequently the fall in demand, bus usage might stabilise. A positive aspect of privatisation has been the diversity of services – smaller and more frequent buses in urban areas while the abandonment of lower profit routes has been a negative one. This trend might extend to other European countries. As the population gets older more on-demand services and small bus systems in historic city centres might compete with walking. Currently there is a tendency to implement a strong hierarchy on bus networks, that is, to implement different kinds of services for different kinds of demand. From fast MetroBuses with fewer stops, exclusive corridors and priority on crossings (BRT systems like the Millennium in Bogota or Curitiba to just fast red-buses in Stockholm), to small minibuses that might not even have stops (can be hailed anywhere along the route) or have flexible on-demand routes. If the hierarchisation of the transport systems implies more transfers between public transport vehicles and therefore more short walks and more investment in public space, or if on the other hand these systems become very effective and subsidised, they might compete with walking.

Bicycles: recently a transport mode in free fall has been showing strong signs of revival. This sudden rediscovery can be partially explained by green and health concerns, but also in the last few years, to increased fossil fuel prices. Also, and very recently, massive and very successful bike-share schemes have been implemented in several cities (the most famous examples currently in service are in Paris, Barcelona and Toronto). The impact of these shared-bike schemes on walking is still too early to assess – some experts argue that these schemes mainly compete with walking and public transport and do not move drivers away from their cars. This might be related to two aspects: a) the way the bicycle is integrated in the transport system and public space and b) the marketing and mobility management measures that either do or do not follow the implementation of the bike share system. If the emphasis of a city’s decision is on a segregated bicycle network, and even worse using the pavements, bicycles might have a predator effect on pedestrians and consequently on public transport. Segregated bicycle networks also have the disadvantage of leaving the roadway for cars without major changes. If bicycles are preferentially integrated in the roadway and coupled to strong measures reducing the number of cars and their speed this might tip the balance in favour of all the alternative modes. If a campaign targeted at car drivers is coupled to strong traffic calming measures, a positive effect can be expected for alternative modes in general and walking in particular.

Rail: Even in a BAU scenario, it is to be predicted that the decline of rail might have already stopped and even might be slowly increasing in demand. Gone are the times in the middle of the Twentieth Century when many kilometres of rail networks were dismantled with the excuse that they were not profitable anymore. Recently, the United Kingdom registered a new record of passengers transported by rail since the earlier decades of the Twentieth Century. In France, Spain and recently in the United States there is a growing
investment in fast trains. This competes directly with aviation while carrying people from city centre to city centre overland. The fact might help to revive public space, increase the usage of public transport both at origin and destination, walking and shared bicycles. Likewise with the bus systems (BRTs) the appearance of rail mix systems can be observed – the tram-trains. These systems will be able to use the spare capacity on traditional rail lines and will adapt the service more easily to the densities of demand. Both developments seem to indicate a richer intermodal offer and therefore will help to increase walking at transfer points.

3.2. Scenario 2: Sharp increase of prices of motorized transportation

Road Transport:

Private Car: In this scenario there will be sharp and sudden increases of petrol prices while technology will fail to deliver cheap motorised mobility or land courageous public policies will increase the price of mobility using both road pricing and parking pricing. Depending on the speed that this scenario will set in motion the crisis of private mobility might have serious social, economic and land use impacts. In 2008 the world felt what it meant when petrol prices reached 150 dollars a barrel. Whether the price of the barrel above 100 dollars for a few months was partially responsible for the acute financial crises that followed is still debated among economists. However, another climb in petrol prices in the next few years to similar levels is not unthinkable. This might accelerate the adoption of smaller and more efficient cars. But, because petrol is a raw material for many economic sectors, it is only natural that global economic recovery will suffer, keeping petrol prices in check in the wake of successive world economic recessions and recoveries. However, if economic agents and petrol marketers feel that oil production will sharply reduce its production any time soon, this will surely trigger once more price speculation that might keep petrol prices at much higher levels than today. Under this scenario large chunks of the population may have to reduce their car usage drastically. Short trips (many of them could be easily done on foot) will start to rise and there will be a quick shift to public transport and the bicycle.

Public Transport: With the sharp rise in prices for private mobility and the consequent collapse of its demand for most part of the long distance trips coming from the urban sprawl to the city centre, there will tend to be a shift to public transport with stages on foot or bicycle at origin and destination respectively. The sudden pressure on demand for public transport systems might trigger emergency investments on new routes and innovative systems (namely on-demand). The responsibility to respond with more public investment in public transport systems will be more so if the increase in prices of private transportation comes from decisions made by public policy to charge the approximate prices of external costs of each mode.

Bicycle: In this case of collapse of private car demand, a very fast rise in demand of small personal electric devices is to be expected, namely the electric bicycle for intermediate distances that cannot be done on foot or that the public transport system does not cover properly. If the increase in the price of private motorised mobility occurs from the responsibility of public policy and is coupled with measures to restrict use and speed of private cars then the increase of bicycle use will have a double boost.

Rail:

What was said above about road public transport will also apply to rail transport. The crucial difference will be that investments in rail infrastructure will be slower and costlier to implement than bus routes. However, it is easy to predict a sharp increase in the patronage of the existing systems and consequently an increase of walking through intermodality.
4. Major Cultural/Planning contrasting trends

4.1. Mobility versus accessibility

After pursuing more and more mobility (quantity of movement) in the Twentieth Century, sustainable communities are now embracing a new paradigm, putting accessibility (quality and possibility of access) as the main policy and planning objective. Mobility (quantity of movement), being easier to measure, used to be taken as a sign of vitality and economic prosperity. However, it is the quality and ease of access between people, between people and goods and between goods that has become the key indicator of the quality of life.

Considering the need of people to participate in activities, the indicators of accessibility should include all age groups, gender and social classes and thus measure the level of accessibility by different kinds of modes of transport.

Everybody needs to walk. Sustainable cities need as many walkers as possible. Planning with mobility in mind will reduce the possibility for walkers to reach certain destinations. In such environments, public transport has difficulties to seduce clients – unless most of the population does not own a car and is forced to use it.

Even when one considers the dramatic growth of car ownership around the world, every year there are more people without cars – population growth is faster than the number of cars owned privately. It is therefore essential to plan cities for a growing number of people without cars (Monheim, 2010). That means planning for accessibility and not for mobility. Unfortunately it is all too common to find examples of public space in various levels of degradation and decay in cities. Narrow and damaged pavements, excessive motorized vehicle speeds, obstacles, and badly kept pedestrian crossings are sometimes the rule and not the exception. While millions of Euros are still spent on long distance infra-structures like airports, motorways, and high-speed trains, public space as the primary infrastructure where most human mobility takes place is still not seen as a transport infrastructure nor as the stage for the essential sociability that keeps communities together.

Likewise, walking is the vital glue that keeps public transport working efficiently. It is an inherent characteristic of walking to have high accessibility to the realm where it occurs. Walkers also need comfortable stopping points to rest or to wait for public transport. It follows that walking has to be considered the foundation of accessibility planning. Any obstacle in the way of the pedestrian reduces accessibility. For example cars on the pavement, apart from showing a failure of the democratic institutions, hinder accessibility. Safety is a key feature of high quality public space and needs strong and courageous policies to substantially reduce the quantity and speed of cars in urban areas.

4.2. Segregation versus Integration

In the 1980s, after a period of highly patronizing road safety measures (excessive signage, attempts to segregate different modes and speeds) a Dutch traffic engineer started to experiment with reducing indications to motorists based on the theory that through some level of ambiguity it would be possible to increase the level of safety. During the first years of the Twenty-first Century these schemes started to gain progressive popularity. Based on the theoretical background established in the works of John Adams during the 1970s and the Canadian Gerald Wilde on Risk Compensation the shared-space philosophy of Monderman started to spread across Europe. Nowadays it is very popular and has acquired local characteristics depending on local aspects of the law and adaptations to cultural contexts. However, even Monderman accepted that public space should be strictly divided between people’s space and traffic space (where segregation is the norm). “Vision Zero” from Sweden is also particularly strong on segregating traffic flows above a certain speed. On the other
4.3. Route planning versus area-wide planning

Route planning might be just a paradigm that is borrowed from car-centred planning. For large distances it makes sense to think in networks where the role of the planner is to maximise their capacity by reducing conflicts and designing them for an average speed that approximates the optimum in the speed versus capacity function (in the case of a free flow single lane capacity is maximised around 50 km/h). Most of the time these constraints and objectives mean a sacrifice in accessibility to the network – for example by forbidding left turns, reducing parking along the links and so on. But it also means to protect the network from pedestrians and cyclists. Nets and fencing or segregated bike paths are a common feature in road networks that were planned to go fast and efficiently from A to B. It is planning for mobility (quantity of movement) instead of accessibility (quality and possibility of access).

As referred to before, in recent years accessibility planning has become the centre of attention for transport planners. The focus on accessibility and short distance travel also changes the focus from “route planning” to “area-wide planning”. Pedestrians usually have more erratic and short distance stages making use of their higher accessibility to urban functions. They stop more, use more shops and participate in more activities – their journeys have more stages, which, in general, is not acknowledged in traditional travel surveys (Alves 1995).

With the recognition of neighbourhoods as sources of social cohesion and the growing implementation of 30 km/h zones as the cheapest and fastest way to improve road safety in cities, network planning is shifting gradually to include area-wide planning as well. This trend is undoubtedly more favourable to short distance pedestrian mobility.

5. 2050: Three post-car Scenarios

Whatever path is to be adopted in the next two decades will determine the post-car scenarios of the longer term future. Using and adapting John Urry and Kingsley Dennis post-car futures (Dennis et al, 2009)\(^8\), towards 2050 three distinct scenarios could evolve: Local Sustainability, Regional Warlordism and Digital Networks of Control. These three future scenarios are substantially different but nevertheless consequence of the car culture and the path chosen in the next few years.

---

\(^8\) They adapt these three scenarios from a report for the Department of Trade and Industry of the United Kingdom dated from 2006: *Intelligent Infrastructure Futures: the Scenarios - Towards 2055.*
5.1. Local Sustainability
The Local Sustainability scenario, which Urry and Dennis consider “possible” but not “probable”, would require a total reconfiguration of the economy and society around the idea of “local sustainability”. This could emerge from a gradual but strong consensus around ecological economic ideas. It could also be the result of a major breakdown of classical economic ideas of growth. This would mean the choice for smaller and more compact communities, the producing and eating of local food, and the increase of short walking or cycling trips while longer trips will be rare. This scenario would be more likely in a situation of a response to very expensive energy sources. Describing a similar scenario David Harvey, sees the future “spaces of hope” as much slower and quieter – transportation systems would become free but slow (Harvey, 2000).

5.2. Regional Warlordism
“Regional Warlordism” would be what some call the “barbarization” of civilisation as it came to be accepted this century. Climate Change and depletion of resources would implode and weaken most forms of institutional governance. This would lead to a sharp decline in most transport systems and infrastructures. Regions would be in the hands of warlords who would control mobility and weaponry. In the Western World one could envisage a softer version of this scenario by the ubiquity of closed condominiums and strong regional powers lead by organised crime. Under this scenario walking would be the mode of transport for most but also due to public space danger some would avoid going out of gated and highly protected communities. Long distance travel would be difficult and as in the Middle Ages - it would be
necessary to organise protected convoys to avoid robbery by dispersed groups, mostly done occasionally by the very rich or dispossessed climate migrants.

5.3. Digital Networks of Control
This scenario combines digitalised and ubiquitous information systems within mobility systems. Most devices of movement will communicate with each other and with the infrastructure. Pedestrians who are not using any device will be excluded and will be mostly detected as passive elements to avoid. This will be immensely expensive to achieve but the reform of the tax system might force some degree of this scenario to happen in order for governments to keep the mobility revenues to flowing in. The traditional fuel tax will not be with us very much longer and other systems will have to be devised to charge individual mobility. This will also allow the pricing of movement (mobility) and regulate access and speeds according to geographical area, time of the day, week or season. Some travel will be substituted by virtual access to activities. This ubiquity and ease of access can and will increase mobility consumption – manufactured demand would be controlled by private companies and it might be part of their business model to stimulate it. Most likely these possibilities of micro-payments will allow the transference from a proprietary system of private mobility to more extensive use of paid access and shared based mobility.

5.4. The impact of these scenarios on mobility
These three scenarios, if they happen, will probably coexist around the world. Their degree will depend on how fast and acute Climate Change and resource depletion will be. Climate Change will have different impacts in different geographic locations. Depending on geopolitics, energy resources will be available in different degrees to different countries. Also within the same country or city Climate Change will have a different impact according to different social classes.

If political choice and the availability of resources or technology will allow individual mobility to continue to be cheap overall, urban sprawl will continue as will consumption of individual mobility. This might lead to a sudden and unprepared collapse of energy resources and/or a high rise in temperature with tipping points that will be difficult to predict. This might lead to the collapse of society as we know it, social turmoil and the weakening of traditional government institutions – the incapacity to levy taxes and regulate mobility. At the same time “tinkered” technological networks might protect some areas of access from local and migrant hordes. It is also possible that some will become part of the “grid” and will reap more benefits from it than a more democratic access – less congestion for the ones in the know, avoidance of dangerous zones, and so on (Rifkin, 2000). Pedestrians will be clearly the losers, having to face an undemocratic society with aggressive use of public space by some – either by other pedestrians or by armoured and relatively low-tech and fast cars. However, this scenario of sudden collapse of energy resources and rapid climate changes does not exclude enclaves of isolated sustainable communities.

The scenario that seems more likely to happen with different degrees of sophistication and ubiquity - whatever the path of the next decades - is that of the Digital Networks of Control. In the last decade internet and in the near future mesh networks will increase communication to unprecedented levels. This scenario could at the same time allow extreme scenarios to develop in different areas of the world or even within the same city. Pedestrians will lose ground because they will be the have-nots in society. Even if some kind of technology is in the hands of pedestrians such as mobile phones or compulsory wearing of electronic vests, these elements will try to include them in the mesh but could be instruments of control and comparatively low-tech compared with vehicles. However, the very nature of the limits of human reaction will make them passive elements unless society moves towards more
sustainable scenarios that will strongly enforce electronic protocols for interaction that will clearly favour the non-motorised modes. Maybe few people will be non-motorised in the scenario that might reach a stage of abundant energy – a cornucopia of ubiquitous renewable energy harvesting methods, mainly solar and cheap storage of hydrogen (Rifkin, 2002). In this case very small devices will start to be used and other diets will have to be adopted to avoid obesity. This scenario can be more or less authoritarian depending how much energy will be available - a dystopian society that will approach the end of walking.

In the Local Sustainability future energy will be expensive and extensive revision of planning and management of transport systems will be required. Distances will be shorter, the number of trips might increase but speeds will decrease considerably. Compact cities will not allow speeds above a certain threshold that can potentially endanger pedestrians and cyclists – this will automatically give a relative advantage to slower modes. Outside cities this scenario will have painful consequences – the price increase of motorised mobility will make parts of society temporarily out of economic reach with their activities (jobs, schools or leisure). This might lead to a massive transference of populations to city centres that will have to increase their densities around transport interfaces. Walking will increase considerably in this scenario.

What is crucial to understand is that the long term future will depend to a large extent on what path we choose to follow now. From the downward flow of events (figure 2) one might conclude that following a business-as-usual scenario in the next few years will lead us to the less pleasant of the post-car scenarios – early and unprepared exhaustion of resources, collapse of formal governance or very authoritarian technocratic regimes. In either of these cases we might have quite high amounts of forced walking resulting from scarcity and less than perfect equity resource distribution. If, on the other hand, we start strong public policies that gradually but swiftly internalize the social and environmental costs of private mobility (scenario 2), then we are more likely to achieve Local Sustainability zones and more benign forms of technological control - achieving higher amounts of sustainable healthy walking.

6. Concluding remarks

The future is increasingly uncertain. Most likely the future will include many competitive and contradicting trends, beliefs and paradigms. The life-styles and travel patterns between social groups will be very different, even if our geographic context is confined to the western world. The sociological average that was used to characterise societies with as few numbers as possible is no longer an acceptable indicator. There will be “long tail” phenomena9 – meaning many rare events and types of people and patterns (Anderson, 2006). It will be more and more a world of niches. In this context the question “The end of walking?” might be inappropriate and nonsensical. It might be just a provocation that becomes a tool to think with. It is our tendency to look for the number that explains it all.

Likewise, contrasting scenarios might be only caricatures of extreme situations. It is most probable that if the scenarios happen, they will coexist. However, the price of private individual mobility is a very measurable and factual indicator – one might describe it as the number of hours someone needs to work to move one kilometre in a motorised device. But even then it will depend very much on social differences and salary levels. What might be prohibitive for some might be a blessing for others – higher income people might have more road space the more people are priced out of their cars.

---

9 The Long Tail or long tail refers to the statistical property that a larger share of population rests within the tail of a probability distribution than observed under a ‘normal’ or Gaussian distribution.
B.3.4. The end of walking? The future of transport systems and its impact on pedestrians

Whatever the mobility scenario other sociological and anthropological trends and values will have an important part. For example, health concerns might trigger higher levels of walking – most of it in the context of leisure but it is to be expected that some of these trends will make more people choose walking also as a transport mode. Culture is always a determinant to change behaviours and sometimes it is difficult to distinguish if culture anticipates or follows prices – it is common and socially more accepted for something to become fashionable and thus to allow someone to give up something else that became prohibitively expensive. Apart from health, other cultural triggers can induce more walking – in a complex world where machines are ubiquitous one can already feel some people yearn for simplicity and slowness. But all these cultural trends might not be strong enough to work against cheaper and cheaper energy prices. Even the ease of transmission of cultural memes\textsuperscript{10} will depend on energy prices - low costs of mobility will increase average speeds and will exacerbate urban sprawl. This in turn seems to have an impact on reducing social capital (Putnam, 2000) and might weaken the transmission of memes and massive social changes – if some crave city life and slow walks in historic neighbourhoods, others might feel content with fast speeds and be a soccer-mum or a soccer-dad for at least a period of their lives.

There is a good measure for everything. Even planning paradigms that put to the fore accessibility instead of mobility have their caveats. As E. M. Foster showed in his cautionary tale of 1909 “The Machine Stops” even a world of full accessibility and very low mobility can turn out to be a dystopian nightmare. To find this good measure implies that the future of transport planning and management will be more and more political. It will need a variety of shared visions and to ponder their consequences. Visioning might become the most vital step in the policy process (Meadows, 1996). This will be more so with complex policy issues like mobility. Because it is increasingly difficult to predict the future, these scenarios will enable us to explore future narratives. Change based on different paradigms can only be achieved by constructing powerful policy visions. From policy based on modelling, we need to be able to share, ponder and discuss the consequences of our daily acts. Instead of modelling-and-decide we need more of debating-and-decide. David Harvey concluded his book \textit{Spaces of Hope} with the description of a utopian world where he got to the bottom of his intimacy and values (Harvey, 2000). The philosopher Jean-Pierre Dupuy defends the opposite: “\textit{Enlightened Catastrophism}” – where we build and ponder carefully the dire consequences of our current life-styles (Dupuy, 2004). Imagining and evaluating the extreme left hand side of figure 2 (Dupuy) or its extreme right hand side (Harvey) can be the base of very potent narratives to avoid or hope for. Departing from these extreme visions it is also important to ponder the subtleties of the impact of technology on our lives and transport systems. Whatever the method, if our goal is to build a more sustainable future, the decision process cannot be entirely rational. We will need to embrace paradoxical values and ethical conflicts. If values are important then art, philosophy and a good story will help us to understand the flaws and consequences of our own narratives and to achieve our goals.

\textsuperscript{10} “a unit of cultural transmission, or a unit of imitation”, term coined by Richard Dawkins in his book \textit{The Selfish Gene} (1976). He used the concept for discussion of evolutionary principles in explaining the spread of ideas and cultural phenomena.
Acknowledgements

I would like to acknowledge the Associação de Cidadãos Auto-Mobilizados for allowing me the necessary conditions to actively participate in the works of COST Action 358 – Pedestrian Quality Needs. This paper is also the result of many hours of fruitful discussions with other colleagues of the Work Package 3 of PQN. I would like to thank specially Daniel Sauter, Nicole Muhlrad and Manuel João Ramos for the insights and always useful points of view while discussing some of the ideas on this paper.

References


B.3.4. The end of walking? The future of transport systems and its impact on pedestrians


Trampling over paradoxical trends and visions of European walkability

Manuel João Ramos
ISCTE – Lisbon University Institute, Portugal
manuel.ramos@iscte.pt

‘Pepper is butter in someone else’s arse’
Portuguese proverb

Summary

Envisioning better walkability in the context of European urbanism risks leaning on the acceptance of a general framework of ideas seeking to address apocalyptical concepts of the future. It is conceived as a set of palliative measures to tackle the unsustainability of contemporary urban mobility models, which leads to uncomfortable collusions with local administrations that ultimately tends to limit its potential benefits. Although it must be recognised that adhering to bold visions in order to shape current and future trends for managing urban mobility, the present text warns of the shortcomings of uncritically pushing forth the “walker” agenda in contexts where gentrification and tourism become options for resurrecting urban centres at the expense of a more general drive towards reassessing pedestrian quality needs in the overall conurbations.

1. Introduction

The present text is primarily concerned with the background onto which envisioning better walkability for European cities takes place. The notion of walkability refers to an essentially qualitative level of mental and physical infrastructures present in every human surrounding allowing the efficient use of a blood-powered mobility mode that dispenses with external biological or mechanical aids. As it is a qualitative category, reasoning about its character, purpose and meaning involves the acceptance of a degree of “inexactitude” in the analysis and the adoption of a sufficiently broad heuristic and epistemological confinement. Its understanding clearly requires an interdisciplinary approach, which is or should be equivalent to a humble posture from each specific disciplinary viewpoint.

As an anthropologist, I tend to deal with visions that are simultaneously more intermittent and more spatially based than is the case with other social scientists. Because the anthropologist is inherently and by faith a cultural comparativist, and because his/her object matter is to a great extent the collective mental representations of different societies and communities, he/she is locked in a transitional topological field at the intersection of divergent cultural representations, which he/she feels compelled to interpret and rationalize. For the better and for the worst, this situation results in some categorical relativism coupled with a self-preserving tendency to rely on a cynical stance towards every cultural framework, including his/her own.

Having for the past eleven years carried out much of my fieldwork research in the highly rural and pastoral and lightly urbanized settings of northern Ethiopia, my visions concerning what “walkability” is naturally means repeated shuttling between very divergent physical and mental realities. So, just as my urban and “European” background is a persistent reminder of my externality in Ethiopia, my “Ethiopian” perceptions, memories and visions offer a sort of
cultural vanishing point to my daily experience as a dweller, activist and researcher based in Lisbon, Portugal.\footnote{Lisbon, Portugal’s capital is a city that in spite of, or thanks to, its dysfunctional administration, the chronic shortage of rationality of its urbanism, and its unsolvable traffic discrepancies, has in 2010 paradoxically earned the prize of best “European Destiny” in a poll promoted by the \textit{European Consumers Choice}, a Brussel’s based non-governmental agency that analyses the innovative trends of the European industry, including tourism. See: http://www.europeancustomerschoice.org/winners-2010/best-destination-lisboa/ (accessed in 25 March 2010).}

Ethiopians walk a lot, in long distances and for long periods. They routinely travel with heavy burdens through mountain tracks to reach far-off village markets, or to fetch water and wood for their hamlets. They rarely are obese or suffer heart diseases, their staple diet being based on leguminous vegetables, non-fat meat and a particularly rich endogenous grain called \textit{t’ef} (lat. \textit{Eragrostis abyssinica}). Ethiopian roads and tracks bustle with people in continuous social interaction, many opting to walk together and keep each other company. Even though cheap plastic shoes are growingly available, it’s a common feature of the countryside to see men, women and children wrapped in their \textit{gabi} (cotton blankets) or \textit{netela} (light gauze shawls) walking barefoot on rocky trails.

They are not doing \textit{randonnées}, they are not escaping the tensions and pollution of city life, and most surely their cholesterol levels do not worry them. They are merely practicing a widely available, and frequently the sole, mobility mode sanctioned by their traditional rural setting. Given the opportunity, one would tend to think that they would relinquish their high level of walkability and adopt other modes to circulate in a vast and rugged landscape. I’m pressed to walk a lot in Ethiopia, just as I’m urged to sit incessantly (writing this text, for instance) in my country. In Portugal, I long for Ethiopian walks, and when there I crave the moment when I can sit at the computer to write down what I saw, heard and made up from that intermittent experience. And I know, deep down in my consciousness and in spite of my militant requirements for better mobility in urban Europe, that I cannot afford to take sides, to choose here what I have there and vice-versa.

In the present context, I’m summoned to reflect upon visions for the future of walking in Europe. Since my professional and existential background directs me to doubt the necessary conviction to advocate anything based on the extra-contextual meaning of any vision, and since I’m required to pinpoint and analyse divergent cultural trends – which involves accepting that they often collide with each other, and that at least some societies don’t actually cherish any definite visions of the future – I will presently muster a number of arguments that may, or again may not, help confer functionality to the analytical and political use of “visions” for future European walkability.

\section*{2. Walking is good}

In a controversial and myth-bashing book on models of urban renovation, Catalan anthropologist Manuel Delgado passionately reminds his readers of the overwhelming paradox that underlies the practice of commoditisation of Barcelona’s central territory carried out by Catalan authorities in close conjunction with willing local urbanists and greedy multinational contractors (Delgado, 2008). His contention is that Catalonia’s capital city has become a recognized international model for gentrification of urban space to be replicated by local authorities in Europe and beyond, and that the notion of “model” should be understood not only in epistemological terms but in the meaning given to it by the fashion industry – likening it to a beautiful young person trailing seductive garments on the catwalk (Delgado, 2007: 13). In his view, the Barcelona trademark has become a success in international fairs.
dedicated to urban development and in the juggernaut of the tourism industry’s unending and feverish land grab. The enthusiasm with which the international petite bourgeoisie (Agamben, 1993: 62-63) has welcomed the consequent transformation of the city centre into a cultural funfair flooded by eager foreign consumers of high culture and low sidewalks that has turned it into a flat caricature of what its historical urban structure once was, is in Delgado’s study deeply contrasted by the violence done against the organic morphology of the city centre and by the sad faith of its traditional dwellers, forced to move to uncharacteristic peripheries, where they become either heavy car users or spatially marginalized pedestrians.

Herein lies the paradox: the architectural and commercial renovation of the centre’s built structures and of its public spaces has been actively destroying the historical buildings and streets of Barcelona, emptying it of its traditional low class and poor migrant population, voiding it of its history in the very act of advertising and selling the centre as “historical”. And this is where the city’s famed walkability becomes subject to a surprising scrutiny. The promotion of walking and walkers’ quality needs, a featured commodity in the tourist and housing prospects that promote a highly lucrative industry, to which the international lobby of civil society militants and experts candidly adhere, has become entangled in a murky partnership that further expands the unsustainable absurdity of a regional, and indeed national economic programme based on public and private building works.

The international financial scare of the end of 2008 has helped solidifying the consistency of the argument Manuel Delgado put forward in his book published some months before. Spain, whose unbalanced economy has been rushed “upwards” by a housing boom unparalleled in Europe has since received the unglorifying award of “the sick man of Europe” by the likes of the much respected editors of the Economist magazine. But even the alarming deterioration of the region’s economy and its rampant level of unemployment haven’t hampered Barcelona’s downtown street walking, which remains to this day as ebullient as before, even if a little bit more violent and conflictual, or alleviated the conurbation’s problems in coping with heavy urban car traffic.

A not so well advertised attribute of the Barcelonese conurbation is that it is very much like any other. The facilities that induce the city’s population to walk beyond the closeted “historical centre” simply aren’t there, and the depressing mix of poor quality unattractive housing blocks, congested traffic on multiple lane expressways, and heavily polluted environment of insufficiently planned suburban spread, form the actuality of Barcelonese collective life.

To try to guess what the trends and visions of walking in Europe in the next twenty/thirty years will be, and notwithstanding the need for a serious look into the energy and environmental concerns that will surely shape the political discourses, social practices and cultural imaginations in the years ahead, one shouldn’t shun the need to address the paradox that Manuel Delgado brings to light in Barcelona. It is also helpful to bear in mind the view advanced by architect Rem Koolhaas in his essay The Generic City (Koolhaas, 1995), on the limitations of the ideologies of urbanism in an era of globalization and the evidence of the sorry conceptual state of the world’s present urban sprawls. His “generic” little essay is a complementary companion to Manuel Delgado’s localized analysis of the notional irrelevancy and categorical vacuity of the “historical city centre” concept today. Cities, even the ones of the “historical kind”, are not what they seem, nor what they say and think they are. They are predominantly plasmatic, without character, unordered, and unlikely to produce “culture” in any sense that’s acceptable by the standards of the 19th-20th centuries European bourgeoisie. Apart from specific food tastes, divergent phonetic accents and the presence/absence of inbuilt car airbags, there is little that differentiates the way of life of urban dwellers in Thailand, Brasil, Nigeria or the United Kingdom.
Contrary to Koolhaas’ dark picture of present day conurbations, the imagery underpinning many a fervent discourse of the urbanists, public health doctors, mobility managers and social scientists that defend and promote urban walkability tends to favour brighter colours and to rely on the notion that “culture” emanates from the “centre”. Undoubtedly, the promotion of walking is a well-intentioned therapy in a time of internationally increasing obesity and social autism. We walker-makers (i.e., those of us who lobby for giving the “walker” a political and categorical status) generally stress not only the positive environmental, economic and health effects of this “humble” urban mobility mode, but also the potency of its social integrative effect. In fact, this latter effect is the crux of the view that “walking is good”, as an alternative vision to that of the classical traffic engineer entrapped in the doings of the “more-of-the-same” hegemonic car-flow system answer to urban mobility needs everywhere. Unfortunately, to make his view politically more palatable, the walker maker tends to collude with local administrations intent on creating gentrified, walker-friendly showrooms within the limits of historical cities, in the hope that a new cultural paradigm may flow from the centre to the periphery by virtue of example, ultimately forgetful of the cultural and social vacuity of today’s “centres”.

The danger of such collusion is that the walker-maker views are conditioned by a politically narrow concept of what the social is, and of what is implied in social interaction. Again, Manuel Delgado and his team in Barcelona have been vigorously researching the basics of walking in urban public spaces. In a series of studies in both Spain and Portugal, and more recently in Africa, they have been directing their attention to the grounding traits of what we could name anthropology of urban walking, not only as an integrative social force but also as a source of human conflict and dissonance. From their standpoint, a view that doesn't tackle the categorical richness and ambiguity of what walking is and what walking is thought to be is as much lacking in coherence as that of the demonizing of the relevance of car usage for the purposes of urban mobility. Implicit in this theoretical proposal lies a damaging critique of the walker-maker’s reductionist discourse on walking that is discomfortingly coincidental with that of the politician and the urbanist (because it is progressively absorbed by them): i.e., institutional views of urban walking should be about an “integrative” social practice – at best unknowingly legitimating big brotherish panoptical desires to exert control over collective minds and bodies in urban atmospheres, born of a structural panic of sudden irruptions of communal violence and rebellion.

3. Can’t you see?

In the walker-maker’s growingly institutional view, the promotion of walking intensifies personal interactions, which lead to better social integration in urban spaces. This notion seems to be the direct consequence of a conception of locality that is deeply contrasted with that of mobility and transitivity. In fact, as it would be absurd to challenge the capacity of motorized traffic to achieve high levels of spatial mobility and reduced temporal constraints for large numbers of urban dwellers, walking is conceived as an alternate form of social activity that values physical activity (and mental tranquillity) within realistic spatial limits – city centres being obvious experimental laboratories for this. Therefore, walking inherently summons identitarian locality, just as driving conveys globalized transitivity. This contrast would need some further clarification, since it relies on a somewhat Manichean worldview.

The notion of non-lieu, a neologism introduced by anthropologist Marc Augé in the early nineties to express the cultural dimensions of what he terms surmodernité (Augé, 1992), has been adopted well beyond the scope of the relatively inbred corpus of anthropological literature and has since been sifting into European mainstream hypermodern pluridisciplinary and pro-hybridist essayism, and occasionally even into some political speech. Although Augé
prefers to restrict the use of non lieu to restricted spaces such as airports and commercial centres, the notion seems an apt complementary category to help qualify the overall morphology of the “generic city” that Rem Koolhaas depicts. Indeed, both authors vie for a characterization of human spaces emptied of local identity and shared memory, lonely, hybrid, monotonous, prone to forgetfulness and transitivity. They both express, in the respective jargon of the nostalgic anthropologist and of the cynical urbanist, the same nihilistic streaks one is confronted with in J. G. Ballard’s novels.

There is, however, one not-so-minor glitch in this unbecoming dystopian picture that, one should note, otherwise vividly portrays the post-postmodern negativist sentiments of today’s Western intellectuality. To make sense of his non-lieu category, Marc Augé necessarily has had to hollow it out of its antonymic mould, that of the lieu, much in the same way Koolhas erases the functionality of the cultural-historical city centre. But what anthropological thought has recurrently conceived as the lieu is something that needs careful attention and even more cautious handling. Lieu, as has already been suggested, is where “culture” and “identity” thrive, and where “tradition”, “integration” and “exclusivism” are given function and meaning. Just as the “centre” in the urbanist’s, and indeed the sociologist’s view, is an idealised metaphor that drives much of their discourse, the belief in the lieu is a tool as essential to the self-endorsement of the heuristics of the anthropologist as is his claims to the usefulness of the comparativist method or the actuality of participant observation. The anthropological lieu, in fact, is a self-referential imaginary construction where the supposed capacity of the model to adhere to “observed” reality relies on endowing it with – let’s not be afraid of the word – magical powers. As Edmund Leach has aptly noted in a now sadly forgotten essay, the researching anthropologist believes that his static models can accurately represent dynamic cultural realities, unaware that the way he/she uses his concepts has a humpty-dumpy, self-righteous quality: in Leach’s own words, “such expressions (…) mean just what the anthropologist says they mean, neither more nor less. Consequently structural systems as described by anthropologists are always static systems” (Leach, 1954: 103) – a paraphrase of Lewis Carroll’s subtle inspection of verbal meaning in Alice behind the Looking Glass, where in chapter six, Humpty Dumpty scornfully retorts to Alice’s objections: “When I use a word (…) it means just what I choose it to mean – neither more nor less”).

What, then, is implied in the notion of lieu? Simply, the rather uncritical acceptance of the core set of creeds that has shaped anthropological thought throughout much of the 20th century, firstly compounded by Émile Durkheim: that, in contrast to “our” organic, dynamic, hierarchical, classificatory, individualist mind, the “other’s” forms of social solidarity and integration are ridden with mechanistic, egalitarian, and collectivistic modes of thought and practice. Thus, culture, tradition and identity, as studied by the anthropologist, are enmeshed in models that cannot but imply resistance to change and incapacity to rationalize differences. Lieu subsumes this heritage and Marc Augé advances it as the safe haven to the negativity of urbanization to condemn the tragedy of today’s unforgiving loss of that nostalgic era where mobility, hybridizing, anonymity and angst were not the main features of human groupings but residual side effects or controllable pests.

To a certain extent at least, Augé’s notion of non-lieu is a convenient metaphor to convey the author’s dislike of the “now”, a Zeitgeist that he perceives as what we could refer to as non-temps, or a time of “loss” – when the yesteryear practices are but nostalgic remembrances, when the fixedness of cultural tradition has melted, when the stability of physical and mental frontiers have been shattered, and also when the art of painting rosy pictures for the future of mankind applies no more. He is, of course, not alone in decrying our non-temps, our “end of history” and our “generic cities”. Augé’s conception of the non-lieu is just one small drop of a massive negativist wave that has been for almost twenty years percolating into the collective Western subconscious through a wide range of intellectual and emotional forms. The Zeitgeist’s sentiments of loss of an ordered past before a discredited present have swept away all faith in the brightness of the future.
We don’t have to accept, as Ulrich Beck seems to do (Beck, 1992), that it was the trauma of the Chernobyl reactor’s meltdown that set off the paradigmatic transformations that shaped the way Western ideologies of the early 21st century wryly refrain from developing any positive visions of the future and seethe in apocalyptic scares of different colours. But it is useful to recognise that such a trend does exist, does expand, and does form an immense variety of cultural expressions, intellectual discussions and economical decisions, at least in Europe and in North America. The panic of the unknown future sells, instability mongering sells, the apocalypse sells. Be it with the risk of climate warming, carbon depleting, sunlight dimming, yellow peril coming, or Islamic terrorism expanding, the West seems to gorge itself in fear only to readily, and also uncritically, accept the palliative remedies propagandists wave at national and international audiences. We produce rubbish in growing quantities but busy ourselves meticulously separating biodegradables from perennials; we exponentially consume all available energy sources but cycle our way to self-forgiveness; we decry the terrorists we terrorize and welcome the self-imposed limitations to the same freedom we force on others. Popular support for renewable energy sources, for rewriting mobility management rules, to impose strict environmental sustainability targets, to limit civil rights in the name of the fight against terrorism, or to conceive protectionist tactics against cheaper foreign produces, has in recent years increased exponentially, from a modicum start a few years ago to a massive ideological trend justified by the hopes that potential new industrial setups gather enough leverage to revive whole economies, and muster the necessary survival means to contested and discredited political elites.

4. As it was

We walker-makers tend to routinely use a set of arguments that gain sense within a more general rhetoric trend of tapping into mass scare as a means to trade in palliative measures. In this, our overall temporal scheme is but a variant of an age-old pattern that we could ultimately recognize as specific to the Western interpretation of the Judeo-Christian theological framework. In the biblical and post-biblical scheme, historical time comes up as apparently linear, but its circuitry is mounted on a circular or mirrored construction: the fall of Man from Eden corresponds to the loss of a time (and space) where differences were inexistent or irrelevant; the resulting sinful degradation is reversed by the paradoxical birth and death of a Man-God in a world of differences and hierarchies of diverse kinds; Judgement Day, in the end of times, will bring the reestablishment of the original condition of Man, relinquishing distinctions and disparities in favour of the return to a state of total equality. The biblical idea that the end restores the commencement as a device to define the differences of the present against two ultimately absurd poles of equality has been, as we know, appropriated and reshaped in a multitude of ways by Western utopian ideologies throughout many centuries, not least in the Marxist dialectic models. This inheritance can be shaped into more of less positive figures, since not all visions of what is to come share the same set of variables: thus, the future can be, and has been, variously painted in bright colours with tinges of social rationality and technological prowess, or in dark dystopic tones with hints of political tyranny or environmental disaster – in which case the subset of a pastoral return to a common cause with nature (or, in James Kunstler’s words, to a “world made by hands”) tends to be activated in a palliative form. Today’s visible stress on this latter view in Western intellectual productions of the high and low qualities (be it in philosophical essayism, novel writing, plastic art, or in blockbuster films, fantasy video gaming and daily news broadcasts) nonetheless signals an unremitting categorical entrapment within the limits of a specific conceptual approach to place mankind in the axe of time.

The mindset behind many a walking promotion discourse dangles in this general visionary assumption: that the future of “our” doomed cities can be salvaged if it reshaped in such a
way as to at least reflect some elements of a social therapy to the present and envisioned future evils, and that the diagnosis will one day, sooner rather than later, gain broad political acceptance. Such prophylactic attitude involves both a degree of metaphoric depiction of the present urban realities – as ever expanding organisms, overridden by acrimonious pollution, prone to anomic anonymity and solitude, entrapped by a dromologic phenomenology (Virilio, 1984) blathering forth special and mental distinctions and contrasts – and a self-induced leap of faith in the efficacy of the prescribed quasi-homeopathic healing process, which includes the said return to hygienic gymnastics, village-like localism, mobile and social equality. It should not be a wonder, then, that in the flowering production of books, reports, leaflets, powerpoint presentations and docudramas through which we walker-makers expose the results of our analysis, we tend to use the motif of the “childhood-days-when-it-was-possible-to-ride-our-bikes-and-play-games-in-the-middle-of-the-road” as a key persuasive tool. Our vision for the future of urban life is carved by an optic game where the present “reality” is conceived as the mirrored negative to past memorabilia; when a filtered image of the past is activated in stark contrast to a “reality” that threatens to pervade times not yet lived, it becomes a soothing alternative to at least some coming negativity. This rhetorical game of socializing our diagnoses and prescriptions frequently implies touching upon a set of emotional chords that festers on nostalgia for days long gone, deplores contemporary and coming depression, and yearns for hopefulness.

5. Conclusion and recommendations: would you follow me?

If the terms of the analysis are accepted, a number of hard questions arise: Is this the best way to convey our “message”? Is it the only way to proceed? Or isn’t de-construction a needless paralysing device? After all, people need visions because people like to “see”, to be convinced not by rational arguments alone (or at all) but by strong, telling images. And isn’t visioning a prime convincing tool of the politician to whom we talk, or against whom we act? Shouldn’t we just accept that this is the name of the game, and that we’re either in it or formidably out? What are we to do?

There is a certain level of schizophrenia that needs to be involved in all this. We needn’t of course advocate that we develop sickening forms of split personality, or that we simply give in and give up our convictions or, more important still, our findings. But a degree of cynicism, of the kind sagely recommended by Diogenes of Laerces, could be well worth considering. Did he stop searching for that one virtuous man and blow out his candle just because it was broad daylight?

Let me finalize this text by offering some informative elements relating to my research and civil rights practices, not in Ethiopia, but in Portugal, where I am daily confronted with the sort of “hard questions” mentioned above. As coordinator of an interdisciplinary post-graduate studies programme in risk and trauma, I lead research on what could be called (and is called by our partner researchers of the team headed by Manuel Delgado at the University of Barcelona) an “anthropology of street walking”. The compared fate of pedestrians in Portuguese, Spanish and some African urban settings, the damages done to their safety and quality needs, and the consideration of their social status and mental perceptions, forms a large part of the I&D studies promoted in the academic environment where I’m imbedded. Concurrently, I take an active part in the politics of walking as a “walker-maker”, as a member of the Associação de Cidadãos Auto-Mobilizados (ACA-M), one of the very few Portuguese NGOs that have been consistently battling for better structural safety for pedestrians and more recognizable public policies towards the improvement of an urban lifestyle that at least doesn’t violate what this association sees as the inherent set of rights attached to walking. This engagement has actually led me in 2007 to become, albeit for a short period, an elected councillor in Lisbon’s local administration, where I directed my action...
B.3. The future of walking – perspectives, trends and visions

towards the approval, by the Council, of a number of norms and practices that would defend and favour pedestrian mobility and dignity. My stint as a city councillor was marked by what I would term a deep cognitive gap with most of my interlocutors at the city’s executive body. Councillors would leave the room in order to avoid having to vote on my proposals, the mayor would alternatively scorn, cherish and whinge at my interventions that were commonly read as irrelevant, obstructing or deleterious. The traffic department would later react stressfully or patronizingly to the decisions that I managed to filter through the hostile city council, and my feeling was that the Lisbon population in general was basically unresponsive to the issues I was shielding. So, after one year of enduring endless meetings in a sit position and quixotically battling the windmills of no-change, I packed my baggage and returned to the Ethiopian highlands and to my academic duties.

At the time of writing this text, ACA-M has become involved in a judicial case to charge the Portuguese General Secretary of Internal Affairs, who crashed his official car in Lisbon’s main avenue (Avenida da Liberdade) against the car of the president of the Portuguese Parliament while allegedly driving at more than 130 km/h in rush hour running a series of red lights, and has acted legally against Lisbon’s mayor, who has decided to shelve an earlier approved council decision to alter the times of green for pedestrians so that they comply with a national law designed to protect persons with reduced mobility, in accordance with European directives. Lisbon’s pedestrian crossings have not been duly painted for more than ten years; to this day hardly anyone touches the feedback buttons at traffic lights to require crossing since a ten year-old boy was electrocuted by one in 1997. Lisbon’s praised limestone sidewalks are locally conceived as an important patrimonial feature but the council recurrently neglects their maintenance, to the extent that they have become major hindering factors for efficient and safe walking in the city’s public space. Police authorities majestically turn their blind eye to the widely accepted practice of parking one’s car everywhere and anywhere, from sidewalks to pedestrian crossings. Killing of pedestrians is still on the rise, against a backdrop of otherwise general reduction of road deaths since 1996, and medium car speed in unobstructed streets floats around 70 to 90 km/h (a little higher during nighttimes and weekends), a situation favoured by the centrally controlled traffic light software system introduced in Lisbon in the early eighties, which concentrates on motorized traffic fluidity, creating long periods of green for cars (which the Council calls “green waves”), and too short periods of green for pedestrians, with no nocturnal or weekend alterations to meet these contextual changes. Conflict levels between pedestrians and car users are frequent; appropriative tensions in the public space are customarily high; road code infraction is rampant and sanctioned by police passivity. The general perception is one of fatalism and resilience, intertwined with an almost affectionate relationship with the unremitting category of “crisis” that encompasses widespread ethical, economical and political negative evaluations of the nation’s life since the democratic regime was established in 1974.

As I learned the hard way in Lisbon’s council, there is little room for “visions” in some conjunctures, especially since they tend to be seen as rich countries’ luxuries. If one is allowed to talk of “hope” in such context, I’d say that only the quitter mentality with which EU directives tend to be incorporated in national practices at many levels can serve as a guide – not so much for promoting shared grand “visions” but to spur “trends” of higher walkability in Portugal.
Acknowledgments

I acknowledge the Associação de Cidadãos Auto-Mobilizados and ISCTE-Lisbon University Institute for allowing me the necessary conditions to actively participate in the works of COST Action 358 – Pedestrian Quality Needs, and to carry out collaborative research with my colleagues at NEANT-ISCTE and at the Anthropology Department of the University of Barcelona, from 2005 to 2010.

References


The future of walking in Europe:
Revisiting expert opinion ten years later

Rodney Tolley
Walk21 and Staffordshire University, United Kingdom
r.s.tolley@btonenworld.com

Les Lumsdon
University of Central Lancashire, United Kingdom
lmlumsdon@uclan.ac.uk

Karen Bickerstaff
King’s College London, United Kingdom
karen.bickerstaff@kcl.ac.uk

‘Walk and be happy, walk and be healthy.
The best way to lengthen out our days is
to walk steadily and with a purpose’
Charles Dickens

Introduction to reprint

This paper was first published in Transport Policy in 2001: we are most grateful to Elsevier for kindly granting permission for it to be reproduced here.

The focus of the present publication is the walking world in 2030. This paper, researched and written in 2000 by staff at CAST – The Centre for Alternative and Sustainable Transport, at Staffordshire University, UK –, focused at the time on developments forecast to take place within the following decade. Reprinting it 10 years later gives us the unique opportunity to revisit the predictions and see what has really changed, as well as giving us the chance of self-reflection on how worthwhile expert forecasts can be.

To a degree, the paper was an exploration of a research methodology and for the present purpose this is perhaps of less interest to many than the substantive results. Accordingly, many will perhaps wish to skim-read Sections 1 and 2 in order to get a feel for the context in which the research was conducted and then move directly to Section 5.

The headline results were that across Europe, by 2010, although walking will be seen as being more important and will be supported by more facilities, infrastructure, information and money, all demographic groups will reduce the proportion of their trips that they undertake on foot and they will spend less time walking. Though the overall picture was complex, it was clear that experts thought there would be more ‘discretionary’ walking for leisure and health, but that this would be more than offset by continuing falls in ‘utilitarian’ walking to services and facilities.

The general outlook for walking and walking policy in 2010, as seen from 2000, was not optimistic. Fundamental policy decisions needed to reverse downward trends were not considered likely within the next ten years. The conclusion that pro-car and pro-walking policies are polar opposites was felt to be one of the most indigestible of messages to future policy makers.
Subsequent (unpublished) analysis of the comments submitted by experts as part of this research threw light on lifestyle issues - contradictory processes shaping travel behaviour - and on the values and attitudes associated with different modes of transport. In particular the all-pervasive ‘car culture’ was seen to overwhelm walking progress and this was aided by a negative perception of utilitarian walking and walkers, linked to issues of social status.

Readers may wish to pursue their own reflections on the relevance of these 2000 forecasts ten years on. A pessimistic view would be that in trying to pursue sustainability yet retain the support of motorists, politicians have been routinely peddling the mixed messages that car ownership should increase but car use should decrease. A consequence of this is that though there are many splendid examples of revitalised, pedestrianised town centres where walking is attractive and popular, these ‘green’ gains are set in a sea of ‘red’ losses elsewhere – particularly in the suburbs, due to land use changes which increase travel distances and make trips less likely to be made on foot.

However, an optimistic view might be that the decline in walking seems to have slowed or stopped in many places. At the local level, walking promotion is more important and there are countless successful projects such as those discussed in this book. A fundamental reason for this success is that the past decade has seen a clear shift towards a more holistic view of the place of walking. Whereas for years the problem has been dealt with as a set of safety and infrastructural issues - thereby missing the wider political and institutional barriers that need to be overcome in order to create walkable communities - the profile of walking has been raised by those dealing with other issues besides transport, such as crime, health, education, air quality and particularly urban regeneration. It is now more appreciated that the creation of safe and attractive pedestrian environments in towns and cities is a necessary condition for economic success and is central to improving them for shoppers, visitors, workers and residents alike.

Underlying this process is a shifting discourse, from one that focussed on the activity of walking to one concerned with the public realm and liveable streets, in other words from a concern with routes and links to a focus on spaces and places. At the start of the decade there were harbingers of this change, ranging from Jan Gehl's 2000 cryptic phrase, 'there is much more to walking than walking', to the UK Pedestrians Association re-branding itself as 'Living Streets' in 2001. This shift in emphasis has been anchored, in the UK for example, by the publication of the government’s hugely influential Manual for Streets in 2007, which replaced the established orthodoxy of focusing on the transport function of streets, by placing equal weight on the ‘place’ and ‘movement’ functions and recognising a new hierarchy of street users with pedestrians at the top.

One could certainly argue that the approach of the research has been vindicated, in that the expert predictions have proven to be right in many ways. In a context of rapidly rising motorisation, we have indeed been doing less walking, but we have, as predicted, also been talking about it more. However, though the experts in the original research noted how the quality of life issue was closely linked to walking, the scale of the re-focusing away from walking per se towards a broader concept of liveability was perhaps unanticipated – and it is this that has started to create a momentum which could well influence future policy and developments.
The future of walking in Europe: A Delphi project to identify expert opinion on future walking scenarios

Summary

There is increasing recognition of the importance of walking to the sustainability of cities, set against a continuing decline in everyday walking. This paper reports on a research project, which predicts trends in walking in Europe by 2010 by seeking opinion of experts who are knowledgeable about non-motorised transport. There is a consensus that there will be more walking for leisure and health, but less everyday walking. This will happen despite walking being seen as more important and there being more facilities, infrastructure, information and funding for walking.

1. Introduction

The research discussed here is a survey of considered judgement of a panel of experts on the likely developments in walking in Europe over the next ten years. The Delphi technique is one often used in marketing for forecasting futures and the idea of this study was to identify a consensus as to what the new Millennium will bring for walking in the way of planning, policy, strategy, image, status, attitudes and behaviour. The outcome is what experts in the European walking world think the future holds for walking. This output will be a vital resource for all of those concerned with the role of walking in future society.

Walking as a form of transport and an integral part of everyday life is an area which is becoming a more important aspect of policy than in previous decades. For example, in the UK there is now Government advice to local authorities on the importance of walking, in an integrated approach to transport. All authorities now are expected to produce a walking strategy as part of their Local Transport Plans. Within this context, a partnership of the UK’s leading walking policy makers, researchers, campaigners and practitioners organised an international conference, Walk21, in London in February 2000 for interested individuals and organisations (Tolley, 2000). Walk21 aimed to:

- confirm the importance of walking issues at political and policy levels;
- provide an international platform for an inclusive discussion of walking issues;
- acknowledge the research, practice and promotion undertaken so far and to highlight best practice;
- identify the need for future research and opportunities for funding future networking.

In order to anchor the focus of the conference and to direct the discussion, the partnership, funded by the Department of the Environment, Transport and the Regions (DETR) and the Countryside Agency (CA), commissioned research in order to provide a judgemental forecast of the future of walking throughout Europe during the first decade of the 21st century. The study included all aspects of walking from policy issues to the provision of infrastructure, in the realms of utility and recreational contexts.
2. The walking background

All over the industrialised world, the growth of motorisation has been paralleled by a decline in walking. As trips lengthen and urban areas sprawl, so has the perception grown that walking is an inferior mode of transport in relation to the car. Walking is no longer being socially constructed as 'transport' and indeed has in many instances come to be 'reconstructed' as a healthy-living leisure activity, with utilitarian walking seen as the province of those who have no car-based alternative (Lumsdon and Mitchell, 1999).

As a method of travel, walking has been declining steadily and this can be partly attributed to rises in car ownership and use; changes in demographics, employment patterns, social structure of society and location of facilities; increased levels of disposable income; and a range of specific deterrents (Banister, 1995). For all age groups, average distance walked in the UK has fallen by 20 per cent since 1975. Journeys of all lengths on foot have decreased from 34 per cent in 1985/86 to 27 per cent in 1996/98 (DETR, 1999). Even some of the shortest journeys are increasingly being made by car: 25 per cent of all car journeys are now less than two miles and 7.5 per cent less than one mile (DETR, 1997, Potter, 1997).

However, there is still much walking being done, with nearly one third of all journeys made on foot. The potential of walking for short trips is also of importance, given that a third of all existing journeys are under one mile in the UK. Indeed, some years after the revival in interest in cycling, there is now growing recognition of the role that walking can play in the liveable, sustainable city. Since the mid-1990s Britain has been actively taking a lead in developing pro-walking policies (Department of Transport, 1996) and the interest in promoting walking is accelerating quickly. Some local authorities have begun to take positive action to promote and encourage walking but they have faced difficulties in developing strategies in circumstances where advice and good practice was scarce (Lumsdon and Tolley, 1999).

However, by the year 2000 there was a framework for preparing local walking strategies as part of the Local Transport Planning process (DETR, 2000a); advice to local authorities on encouraging walking (DETR 2000b); a best practice guide on planning and providing for pedestrians (IHT, 2000); a one-stop shop of good practice guidance case studies and references (London Walking Forum, 2000); an annual conference on walking (CAST, 2000b) and numerous research initiatives, symposia and other publications. Elsewhere in Europe interest in walking is also rising, sparked by the same imperatives of congestion, pollution and unsustainability (Tolley, 1997). Europe-wide initiatives have aided this process, such as the WALKCYING (1998) project which aimed to enhance walking and cycling trips at the expense of short car trips, and ADONIS (1998), which identified good practice in providing for pedestrians. In general, though the amount of interest in walking has increased, there remains a lack of reliable information on which to build policy. The Delphi forecasting project was conceived against this background.

3. The Delphi technique

The Delphi technique was established in the 1960s and has been utilised in a wide range of futures research where there is imperfect or limited knowledge. The technique seeks to achieve a consensus between experts on a number of factors about any given subject, but in particular it concerns the prediction of future events or scenarios (Green et al, 1990; Linstone and Turoff, 1975; Witt and Moutinho, 1995). Therefore, it offers a complementary technique to trend extrapolation, however, experts not only predict on the basis of current or past trends but by using intuitive judgement (Müller, 1998:195, Yong et al, 1989:37).
Past studies have asked experts in a particular field to form a judgement about the likelihood of specific future events occurring and the probability that these events will happen within a given time frame, most commonly within a five or ten year period (Johnston, 1976; Ng, 1984). The underlying assumption is that by adopting an iterative process the range of responses will stabilise and converge towards a mid-range of a distribution, measured in the form of the statistical mean, median or mode.

The determination of the research method in relation to this study technique was the outcome primarily of a comprehensive literature search. Past studies fall into two categories, those applying the technique to a particular forecasting task such as this and secondly, papers presenting an academic critique of the research method (Hill and Fowles, 1975). Despite criticisms in the early literature, the Delphi technique is still considered to be a valid form of judgemental forecasting (Richey et al, 1985).

This walking Delphi study explores two additional aspects which have not been well covered in the literature. Firstly, it seeks to investigate whether consensus can be achieved across nationalities and different disciplines, in this instance at a European Union level. The second aspect relates to the means of communication in the collection of responses. Given the increasing availability of and access to electronic communications within organisations, the researchers wanted to test whether the use of electronic mail as a medium within a Delphi study could yield a similar response to previous exercises but within a relatively short time frame. In practice, the two phases of the research took about one month each.

4. The research method

The method involved five stages:
- initial in depth discussions with experts in the field, design and pre-testing of questionnaire;
- selection of a Delphi panel;
- first issue of the questionnaire;
- second issue of the questionnaire;
- analysis of the results.

4.1. Formulation of the questionnaire: discussion with individual experts

The initial formulation of key areas to be investigated featured a review of the relevant literature and an internal research seminar to discuss these. The core areas of discussion were translated into statements and questions which might be included in a Delphi survey questionnaire.

This was followed by consultation with a small number of experts. The latter involved a series of in-depth discussions with a range of practitioners from across Europe, augmented by telephone interviews. The purpose of this initial scoping exercise was to confirm the key issues, trends and factors which are likely to affect walking as transport in the future. It was decided that the forecast period be 10 years, because:
- the most significant change of thinking on walking issues has been in the last ten years, so this is was felt to be a period with which respondents could identify in terms of magnitude of change;
- it is a sensible planning timeframe
- a shorter period may be dominated by continuance of existing trends: 10 years allows time for trajectories to alter.
The key issues, trends and factors were drawn up as a draft questionnaire. This comprised ten areas, as discussed below.

1. Indicators
Here the research team wished to establish the experts’ forecasts as to likely changes in base-line indicators for walking over the survey period. This included questions relating to distance, time, walking trends amongst various societal groups, and provision of facilities for walking.

2. Journey purpose
This section comprised questions designed to elicit views about walking for different utilitarian and discretionary purposes, such as respectively walking to work or walking for leisure.

3. Infrastructure
In this section, the intention was to find out whether a consensus existed on the degree to which infrastructure for walking in Europe would be better or worse by 2010. It included questions on routes, networks, security features, accessibility, signage and planting.

4. Safety trends
Questions in this section sought to elicit views on the extent to which changes were likely in a variety of traffic and personal safety issues.

5. Transport context
A number of transport trends and contextual issues were put to the experts in order to identify the degree to which they expected them to influence levels of walking in future. The factors included issues such as congestion, pollution and traffic calming.

6. Social and economic context
Broad societal trends - such as health, stress, status, image and economic issues – were presented to the experts in order to predict the likely effect on levels of walking.

7. Decision-makers and opinion formers
Using a somewhat different approach, this set of questions asked the panel whether they thought that walking would become more or less important in the eyes of various decision-makers and opinion formers. These included politicians, walking professionals, the media and the public.

8. Influences on walking policy
Here the experts were asked to judge to what degree pro-walking policy would be affected by various future issues, such as awareness, advocacy, healthy living, pro-car policies, etc.

9. Impacts of walking policy
This set of questions was directed to policy for walking. The panel was asked to indicate whether the application of policies such as safe routes to schools, car restraint, better footways, land use planning etc, were likely to produce increases or decreases in walking.

10. Funding
Finally, the experts were asked how, if at all, they thought that the financial resources for various walking developments - such as networks, strategies, health walks, etc - would change over the study period.

Within each area of discussion a series of statements of opinion were presented and respondents asked to indicate their view on the subject by choosing a point on a Likert-type scale.
scale. An option of indicating “Don’t Know” was also included for respondents who genuinely felt that they had no view on a particular statement. The questionnaire was then piloted with a view to checking the clarity of the questions, and a number of revisions were made to ambiguous questions or where unintentional bias may occur. This was especially important given that many of the respondents would be reading and responding to the questionnaire in a second language.

4.2. Selection of panel

Several previous studies indicated that in areas requiring professional judgement the most critical factor lies with the selection of panel members, because the reliability and quality of the results will reflect the quality of the experts (Martino, 1983; Preble, 1984; Taylor and Judd, 1989). The initial preparation of the list of experts was obtained by reviewing published academic and practitioner papers on walking from journals and conference proceedings as well as from major EU research projects. This enabled a selection on the basis of people who are formally known for their work in urban environment, recreation or transport fields, but not necessarily in walking per se. Furthermore, the researchers were concerned to encourage a comprehensive European approach and experts who considered themselves lacking in knowledge other than of their own country were asked not to participate.

The second source of information was by recommendation of the group of experts that had been selected at the first stage to assist in the formulation of the key areas of discussion and questions. This begs the question of selection bias. There is always a potential problem of bias in bringing together a group of respondents through known contacts. By using the criteria of formal recognition in the field through publication and by referral, it was possible to widen the potential universe of respondents and then to select at random in each country from this list.

The survey team was also aware of the need to balance the composition of the panel and to encourage participation across a wide range of professions and from all countries in the EU. It was hoped that this would also help to reduce the convergence of opinion which might result from gathering together like-minded schools of thought, such as advocates perhaps, or engineers. In this respect, it was also important to achieve a balance between northern and southern Europe, as cultural and climatic conditions could well affect walking and opinions regarding its future.

Thus, experts were prospected from the following professional groupings:

- research;
- practice;
- policy;
- advocacy;
- planning;
- other

This was cross-referenced by asking each potential respondent about their main professional interest in walking:

- everyday/utilitarian/transport;
- leisure/recreation;
- health/exercise;
- tourism;
- other.
4.3. First issue of the questionnaire
Overall, an initial 300 questionnaires were sent out and every effort was made to achieve a high response rate through reminder emails and telephone calls. A total of 112 questionnaires were returned. This is a 37 per cent response rate, which is similar to rates achieved by previous studies (Bardecki, 1984). Therefore, the authors recognise that given this rate there is likely to be some degree of non-response bias. However, one of the core limitations of the Delphi technique and also one of its major strengths is the attrition of the expert group to those who are truly expert and have the capability and time to participate. The research process requires participation by experts who are willing to commit time and valuable expert opinion, albeit on an anonymous basis. Therefore, it is likely that some experts refused to co-operate for lack of time or because they felt that they lacked the expertise.

In this study another key reason for refusing to join the panel was possibly that the survey was conducted in English. Experts were selected because they had either published or presented a paper in English, or communicate in it as part of their working life. Thus, the researchers concluded that the respondents would be sufficiently fluent to understand and respond to the questionnaire. It is possible that this decision was significant in reducing membership of the panel. In order to mitigate this requirement experts were informed that they could, if they wished, use French, German or Spanish to comment on the questionnaire, but the lack of resources and a limited timescale meant that translation of whole questionnaires and of responses in other languages was not feasible. In the event, the great majority of comments received were in English.

4.4. Second issue of questionnaire
The results of the first round questionnaire were collated and feedback circulated to the panel members. The second round questionnaire included the provision of the questionnaire grid with the mode score for each particular statement as an indication of consensus. If the panellist had provided a score which was different to the consensus of opinion as reflected by the modal response, they were asked to consider changing their response accordingly in light of the feedback. The mode was selected as the appropriate indicator for respondents because the most frequently occurring value is an easily understood measure. For the final analysis the researchers also calculated the arithmetic mean, median and standard deviation as measures of consensus.

If the expert wished to maintain a different position from the mode he or she was asked to comment as to why they wanted to retain their opinion. This enabled the researchers to augment the statistical analysis by the inclusion of explained reasoning by the expert and thus to extend the analysis by giving consideration to detailed written comments (Ley and Anderson, 1975; Nelms and Porter, 1985). During both the first and second round, experts were also offered the opportunity to make additional comments regarding any aspect of the survey and this encouraged a considerable comment which supports the overall pattern of decision-making of respondents.

An initial analysis of the data suggested that there had been a considerable degree of convergence of opinion on some of the issues and less so on other subjects. However, the reasoning advanced by many respondents in the comments sections suggested that stability of opinion had been reached and that another iteration would probably lead to either a heavy drop-out of experts or a forced degree of convergence, which is a potential limitation of the Delphi method. Thus, it was decided to stop the process at this stage and analyse the results after two rounds. The total number of replies was 72, a second round response rate of 65 per cent.
4.5. Analysis
The responses were collated on an SPSS file and analysed. It is important to note that consensus is measured statistically in terms of a central reference value for each statement as represented by the mean, median and mode. The variability of responses or degree of dispersion is measured by the standard deviation. This is in accordance with the research methods adopted by previous studies. However, consensus is not an absolute condition and its recognition and categorisation is a matter of judgement on the part of the researchers. There will be degrees of consensus ranging from slight to strong. These groupings should not be thought of in a rigid way, as of course their boundaries are artificially selected arbitrary cut-off points. They are more effectively used to identify broad clusters of views, which show the degree to which the expert panel has achieved consensus.

One of the limitations cited in the early literature is that the Delphi Technique does not allow respondents to articulate new ideas, or constrains them by way of the structured nature of the questionnaire. In this study, respondents were encouraged to comment about all aspects at all stages and this is reflected in the rich detail of the qualitative comments. In all some 16 000 words of comment were received and these have been analysed in order to provide insight into the complexities and subtleties which are hidden in the aggregate results.

Table 1  An example of the tabulated responses: question set 1, indicators

<table>
<thead>
<tr>
<th>Question 1 – Indicators</th>
<th>Mean</th>
<th>Mode</th>
<th>Std deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average distance walked in a week</td>
<td>2.91</td>
<td>4 (42.2%)</td>
<td>1.04</td>
</tr>
<tr>
<td>Total amount of time spent walking in a week</td>
<td>2.95</td>
<td>2 (40.0%)</td>
<td>0.96</td>
</tr>
<tr>
<td>Proportion of trips that are walked</td>
<td>2.84</td>
<td>2 (40.0%)</td>
<td>0.98</td>
</tr>
<tr>
<td>Proportion of trips by women that are walked</td>
<td>3.00</td>
<td>2 (35.6%)</td>
<td>1.09</td>
</tr>
<tr>
<td>Proportion of trips by men that are walked</td>
<td>2.89</td>
<td>2 (42.2%)</td>
<td>1.15</td>
</tr>
<tr>
<td>Proportion of trips by children (12 years and under) that are walked</td>
<td>2.64</td>
<td>2 (40.0%)</td>
<td>1.13</td>
</tr>
<tr>
<td>Proportion of trips by young people (13-18 years) that are walked</td>
<td>2.56</td>
<td>2 (48.9%)</td>
<td>0.94</td>
</tr>
<tr>
<td>Proportion of trips by young adults (19-25 years) that are walked</td>
<td>2.48</td>
<td>2 (44.4%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Proportion of trips by senior citizens (60 years and over) that are walked</td>
<td>3.36</td>
<td>3 (42.2%)</td>
<td>0.86</td>
</tr>
<tr>
<td>Number of long distance walking routes (i.e planned trails)</td>
<td>4.02</td>
<td>4 (68.9%)</td>
<td>0.62</td>
</tr>
<tr>
<td>Number of roadside route networks for everyday walking in urban areas (i.e. planned, continuous, high quality routes)</td>
<td>3.84</td>
<td>4 (73.3%)</td>
<td>0.48</td>
</tr>
<tr>
<td>Sale of walking related products (e.g. outdoor clothing, walking shoes)</td>
<td>4.39</td>
<td>4 (48.9%)</td>
<td>0.75</td>
</tr>
<tr>
<td>Quality of conditions for walking</td>
<td>3.78</td>
<td>4 (62.2%)</td>
<td>0.93</td>
</tr>
<tr>
<td>Amount of data about walking</td>
<td>4.51</td>
<td>5 (57.8%)</td>
<td>0.63</td>
</tr>
</tbody>
</table>
5. Results and discussion

For each of the 100 questions presented to the experts, the mean and standard deviation was calculated, together with the mode and the proportion selecting that mode. For example, in terms of key trends, the panel was asked "How, if at all, will the following indicators of walking change in Europe by 2010?" The panel was then provided with a grid in which to provide a response, ranging from 1 (substantial decrease), through 3 (no change) to 5 (substantial increase). Table 1 illustrates the response. A complete set of results is available in the full report (CAST, 2000a). However, a brief interpretation of the consensus which emerged collectively from the tables is outlined below.

5.1. Consensus on increases in walking

In the following areas of consideration, there was a consensus among the experts that there will be an increase in walking.

- In particular, a positive view was taken towards walking for leisure and health, with expected increases in:
  - walking trips for health/exercise;
  - walking for leisure in urban areas;
  - walking by tourists (while on holiday);
  - walking trips for leisure in rural areas;
  - holidays for the purpose of walking.

- There will be a tendency for walking to increase slightly due to:
  - exercise and health issues;
  - public education programmes;
  - the improving image of walking.

- The experts believe that influence of transport professionals, NGOs/advocacy groups, and healthy living will be especially significant in encouraging an increase in walking.

- There is a great deal of consensus that all pro-walking policy options would have a positive influence on the amount of walking, especially so in the case of safe routes to schools programmes.

- There is a very strong view across the board that greater funding for walking matters will lead to an increase in the amount of walking, and this is especially so in the areas of pedestrian facilities in towns and in the development of walking strategies.

The most significant finding here is that the view of the expert panel on the future of walking for a whole range of discretionary purposes is unambiguously positive. Whether it be in rural or urban areas, whether it be for holidays, for leisure or for health or exercise, more discretionary walking is anticipated. This represents a continuation of existing trends in many countries and reaffirms the reconstruction of walking as a leisure activity rather than something which is done everyday as part of normal life.

Many pro-walking initiatives will have the effect of increasing the amount of walking relative to the situation without such initiatives. This includes the support of key professionals, the operation of pro-walking policies and the provision of more funding. Such activities are thus seen to be valuable initiatives in supporting existing levels of walking, although, as will be seen, the panel believes that they will be countered by stronger forces acting in the opposite direction.
5.2. Consensus on decreases in walking

In the following areas of consideration, there is a consensus among the experts that there would be a decrease in walking.

- There will be a slight decrease in the amount of time spent walking and the proportion of trips that are walked.
- There will be a decrease in the proportion of trips by young people, women, men, children, and young adults that are walked.
- There will be slight decreases in walking to services and facilities (e.g. the shops).
- There will be a tendency for walking to decrease slightly due to fears about personal security.
- Any pro-car policies will yield a strongly negative impact on walking policy.

Here the pessimism of the panel is clear. All demographic groups will reduce the proportion of their trips that they undertake on foot and they will spend less time walking. Critically, walking to services and facilities will decrease, thus continuing existing trends. Even the positive activities and attitudes displayed in other categories will be insufficient to overcome this downward trend, though of course the decline may be sharper without them. The experts are clear that pro-car and pro-walking policies are polar opposites and this is a vital conclusion. Encouraging walking cannot be a bolt-on extra to existing or future pro-car policy, as pro-car policies are seen as part of the cause of the decline in walking. This is going to be one of the most indigestible of messages from this research to future policy makers.

5.3. Consensus on increases in data and infrastructure

In the following scenarios, there is a consensus among the experts that there would be an increase in data and infrastructure for walking.

- A substantial increase is expected in the amount of data about walking.
- There will be an expected improvement in infrastructure across the whole range of locations (from towns to very rural places), purposes (everyday or recreational), types (off road, on road), and equipment (mobility accessible, planting, signs etc).
- There will be a slight increase in facilities for walking including:
  - the number of long-distance walking routes;
  - the number of roadside route networks for everyday walking in urban areas
  - the sale of walking-related products;
  - the quality of conditions for walking.

The experts have no doubt that the infrastructure for walking is going to improve for all walking activities and locations and that this will be supported by more routes and networks. The existing growth in the sale of walking-related products is expected to continue, no doubt a function of the expected increase in leisure walking. The growth in interest in walking, whether utilitarian or discretionary, will produce more data about walking, although a number of respondents suggested that there could hardly be less than there is at present.

5.4. No clear consensus

There is no clear consensus on three key issues:

- Experts generally expected some improvement in pedestrian safety by 2010 but there was a wide range of opinions and very little agreement.
- There is a general feeling, though not strong, that transport context issues (such as action on traffic calming and better integration of modes) will lead to an increase in walking, though the growing traffic danger will have a tendency to reduce it.
- Experts could not agree on the effect on walking of the growing pace of modern life, though most thought it negative.
Some issues produce indifference or indecision amongst the experts, and these probably contain many of the issues where meaning is not clear, where language is a barrier, or where there are marked intra-European variations in expectations. In some ways, these represent flaws in the Delphi method, where short questions may not be able to convey subtleties of meaning essential to get consensus. For example, some experts feel that pedestrians will be ‘safer’ because they will increasingly be kept away from cars, whereas others think that this situation reflects an underlying increase in danger. On the other hand there are some issues that produce bi-polar distributions of responses reflecting genuine differences of opinion.

5.5. Consensus on opinions on walking

The expert panel thinks that all groups in society will see walking as being more important by 2010. It is thought that environmental managers, NGOs/advocacy groups and health practitioners will see walking as being much more important, whereas national and local politicians, academics, planners and recreation/countryside managers/planners will see it as slightly more important. Generally speaking the conclusion is that walking will be seen as more important by professional groups, though less so by the media and the public. The panel was not able to identify a single group who thought that walking would be less important.

The results here are very interesting in that they reflect a recognition across Europe of the growth in interest in walking issues. Of course, as some respondents commented, changes in interest depend on existing base levels, with some perhaps rising only modestly from a low base (such as interest levels of local politicians) and others rising more strongly from existing elevated levels (such as those of health practitioners). Of course there will be differential impacts of rising levels of interest according to the influence of different groups: in this context the modest changes in levels of interest in the media and the public should be noted. Nevertheless, it should be stressed that the only group in society who are not expected to share in the growth of enthusiasm for walking are businesses and employers, with consequent implications for the value of pro-walking proposals in company travel plans.

5.6. Consensus on the distinction between everyday and discretionary walking

In terms of the broad pattern of comments, most participants believe that the overall trend in walking over the first decade of the 21st century will be downward. However, these aggregated patterns of change appear to mask a much more complex picture - with considerable variation depending on a range of factors, such as national distinctions, social and cultural difference, the purposes of walking, the characteristics of the population, etc.

No question was specifically asked about the distinctions between utilitarian walking (everyday walking to shops, work etc) and what we might call discretionary walking, for health and recreation. However, in all of the results, there is a very clear distinction between negative or neutral views of the future for utilitarian walking and positive views of the future of discretionary walking. Health in particular (and often in association with leisure), is seen as a very strong source of motivation (personal and societal) for increased walking in the future. For some this reflects the desire for activity lost in daily routines, and thus a form of exercise substitution. Opinion is overwhelmingly that walking to school will increase and the link between school travel and health (as distinct from walking) is a prominent theme. On the other hand, with the exception of a few optimistic – almost hopeful – comments, the potential for increasing walking to work is seen in a much more pessimistic light. These results are summarised in Table 2.

Table 2 Summary of consensus views
### 1. WHO WILL WALK?

<table>
<thead>
<tr>
<th>More?</th>
<th>Less?</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-one</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Proportion of trips</td>
</tr>
<tr>
<td></td>
<td>Children</td>
</tr>
<tr>
<td></td>
<td>Young people</td>
</tr>
<tr>
<td></td>
<td>Young adults</td>
</tr>
<tr>
<td></td>
<td>Men</td>
</tr>
</tbody>
</table>

### 2. WHAT WILL WE WALK FOR?

<table>
<thead>
<tr>
<th>More for?</th>
<th>Less for?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health/exercise</td>
<td>Services and facilities</td>
</tr>
<tr>
<td>Leisure in town</td>
<td></td>
</tr>
<tr>
<td>By tourists</td>
<td></td>
</tr>
<tr>
<td>Leisure in country</td>
<td></td>
</tr>
<tr>
<td>Walking holidays</td>
<td></td>
</tr>
</tbody>
</table>

### 3. WHAT WILL CAUSE THESE CHANGES?

<table>
<thead>
<tr>
<th>More because?</th>
<th>Less because?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise/health issues</td>
<td>Fear of assault</td>
</tr>
<tr>
<td>Public education programmes</td>
<td>Any pro-car policies</td>
</tr>
<tr>
<td>Improving image</td>
<td></td>
</tr>
<tr>
<td>Influence of professionals</td>
<td></td>
</tr>
<tr>
<td>Pro-walking policy (esp. schools)</td>
<td></td>
</tr>
<tr>
<td>Funding (especially facilities and strategies)</td>
<td></td>
</tr>
</tbody>
</table>

### 4. WHAT PROVISION FOR WALKING WILL THERE BE?

<table>
<thead>
<tr>
<th>More of?</th>
<th>Less of?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>Nothing</td>
</tr>
<tr>
<td>Infrastructure</td>
<td></td>
</tr>
<tr>
<td>Facilities</td>
<td></td>
</tr>
<tr>
<td>Funding</td>
<td></td>
</tr>
</tbody>
</table>

### 5. WHAT WILL PEOPLE THINK OF WALKING?

<table>
<thead>
<tr>
<th>More important?</th>
<th>Less important?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Politicians</td>
<td>No-one</td>
</tr>
<tr>
<td>Professional groups</td>
<td></td>
</tr>
<tr>
<td>Media and public (though less so)</td>
<td></td>
</tr>
</tbody>
</table>

### 6. Conclusion

The research has produced several important implications, both in terms of research method used and substantive results. As far as innovative aspects of the method of conducting the Delphi are concerned, it is clear that both the international approach and the use of email were successful. Care was taken to select experts with an international reputation, evidenced through research material, conference papers or trade and consultancy reports. They were required to answer the questions with respect to Europe as a whole rather than just in relation to their own home country. Those that could not do so declined to participate in the survey at the outset. When respondents felt unable to answer a particular question about Europe as a whole, they chose the ‘don't know’ box. Another useful outcome was the encouragement given to respondents to make comments, which often added more detail about the home country where, understandably, knowledge was more extensive.
The use of new technology was useful in effecting the Delphi process for researchers and respondents alike. Email allowed the researchers to communicate directly with experts in a wide range of organisations, ensuring that the identified panellists were the ones who answered the questions. It allowed fast data entry at the end of round one and a quick transition to the second phase, ensuring the freshness and immediacy which is helpful for accurate and thoughtful responses. Fax was used where experts could not use email, ensuring minimal bias over expert selection on the grounds of media access. To summarise, it is clear that these methodological innovations in no way invalidated or biased the research method. Indeed they could be said to have enhanced and extended the utility of the Delphi technique.

Turning to the substantive results, the walking Delphi has shown that across Europe, there is a consensus that:

- All organisations, whether governmental, academic or NGOs, will see walking as being more important by 2010.

Specifically, there will be:

- more facilities, infrastructure, information and resource commitment for walking.

However:

- whilst there will be more walking for leisure and health, there will be less everyday walking.

And there will be:

- less walking by everyone overall.

This produces a conundrum, an opportunity and a challenge. The conundrum is that whilst it seems that there will be more discussion of walking, more provision for it and more planning around it, the amount of walking will continue to fall across Europe. In short there will be less walking, but more talking about walking. The experts are, it seems, identifying a critical phase in what has been a long, secular decline in everyday walking and recognise that this will not be reversed without specific action. As the amount of walking continues to fall, so concern about the effect on the quality of life in our cities rises proportionately.

The opportunity and the challenge follow. The experts present a negative picture of the future of walking in Europe which is not one that fits with concepts of environmental, social and economic sustainability. There is a need to change present trajectories in order to create more appropriate futures. The discussion suggests that the increased interest in, and discussion of, walking might bring an unparalleled advance in policy, strategy and practice. The challenge will be to translate this into practice to reverse existing trends.
References

ADONIS (1998). *Analysis and development of new insights into substitution of short car trips by cycling and walking*, Danish Road Directorate, Copenhagen


CAST (2000a). *Walking Delphi research project - the future of walking in Europe: a Delphi project to identify expert opinion on future walking scenarios*, [www.staffs.ac.uk/geography/cast](http://www.staffs.ac.uk/geography/cast)


DETR (1999). *Walking in Great Britain*. Personal Travel Factsheet 4


WALCYING (1998). How to enhance WALKing and CycliNG instead of shorter car trips and to make these modes safer. EC contract number UR-96-SC.099


Drawing by Manuel João Ramos, Lisbon, Portugal
B.3. The future of walking
The impact of an ageing society

Iris Mühlenbruch
Büro für Evaluation, Forschung und Planung, Essen, Germany
iris.muehlenbruch@buero-muehlenbruch.de

Barbro Rönsch-Hasselhorn
Forschungsstelle der Eugen-Otto-Butz-Stiftung am Institut ASER, Wuppertal, Germany
roensch@uni-wuppertal.de

‘Forty is the old age of youth; fifty is the youth of old age.’
Victor Hugo (1802 - 1885)

‘Prediction is very difficult, especially about the future.’
Niels Bohr (1885 - 1962)

Summary

This article focuses on the impacts of the ageing society on walking within the European Union. The demographic development with the increase of the old and very old age groups of the population will have an important influence on the quality valuation of the walking system. A durable walking system should take into consideration the special needs and demands of the elderly pedestrians.

In a first step, the chapter at hand names important framework conditions of the mobility behaviour, such as demographical changes and mobility costs. In a second step, results from gerontological mobility research are presented explaining the mobility behaviour of elderly people and its changes in connection with increasing age. After that, the transport behaviour of elderly people is described and also how it has changed already in comparison to the past looking at empirical data. Then, the demands and requirements of elderly people on transport are shown, followed by an outlook as to what the transport behaviour of elderly people could be like in the future. Afterwards, a short overview of different scenarios of what the future of transport in general could look like is given.

Summarizing the first chapters a walking-friendly environment can be seen as an important part of a transport environment suitable for elderly people. The measures which should therefore be implemented can be found within the field of built-up environment (as road design), services (as personal assistance services) and information/awareness-raising.

1. Introduction

This article focuses on the impacts of the ageing society on walking within the European Union. The demographic development with the increase of the old and very old age groups of the population will have an important influence on the quality valuation of the walking system. A durable walking system should take into consideration the special needs and demands of the elderly pedestrians. Hence, an important question to ask is what we know about the mobility patterns and their underlying factors such as lifestyle or physical and mental capacities of elderly people.
Mobility behaviour is a result of both individual and environmental conditions. Constrictions of mobility are a result not only of personal or environmental factors but also mainly of the combination of both. In a dynamic perspective, which should be adopted by this part of the COST 358 Pedestrians’ Quality Needs group, we focus on the development of factors which have an influence on mobility behaviour and which may influence and change it within the next decades (Figure 1). In doing so, we try to focus on the impacts on the walking system.

In a first step, the chapter at hand names important future mobility trends with regard to an ageing society. The shown demographic development within the EU is based on Eurostat data. In a second step, results from gerontological mobility research are presented that explain the mobility behaviour of elderly people and its changes in connection with increasing age. Most results are specific to the respective cohort of elderly people. But we try to focus on general patterns and to sum up what is reported to be relevant for the mobility of future old age groups. After that, the transport behaviour of elderly people is described and also how it has changed already in comparison to the past. Then, the demands and requirements of elderly people on transport are shown, followed by an outlook as to what the transport behaviour of elderly people could be like in the future. Afterwards, a short overview of different scenarios of what the future of transport in general could look like is given. One can see that the oil price will have an enormous effect on the future mode share in transport. Finally, an attempt is made to conclude how the requirements of road and urban design will change in the future regarding the impact of an ageing society.

![Figure 1 Factors which have an influence on mobility behaviour](image)

It is known that each country or even each region uses its own forecasting methods, and the techniques, methods, assumptions and time horizons of their approaches differ substantially. For that reason, this article focuses on the most important trends that are seen in most, if not all, studies and scenarios. The framework conditions in particular differ widely in terms of themes and, therefore, due to space limitations, cannot be described comprehensively within this article. While demographic changes and mobility costs will be looked at in detail as two examples of important framework conditions, other factors such as economic development are only named, knowing full well that they will have major impacts on the future development.

This article is based mainly on selected gerontological studies and mobility research from Germany as well as on mobility and transport research supported by the European Commission. The main sources are:
MOBILATE Project (Mollenkopf et al. eds., 2005): The aim of the EU project was to study the everyday mobility in older age (55 years old and older) in connection with personal resources and with respect to the physical and social environment of the elderly people. The standardised questioning and data analysis of a random sample (N=3,950) were performed in cities as well as rural areas in Finland, the Netherlands, Germany, Hungary and Italy in 2000.

MOBILATE Follow up II (Hieber et al., 2006): The project interviewed a sample of elderly people (N=82) from two German cities (Mannheim, Chemnitz) who had been interviewed five and ten years earlier (1995, 2000) about their mobility behaviour in older age. The study aimed at showing the development of outdoor mobility within a period of ten years. It focused on changes which were relevant to the outdoor mobility and which appeared in the direct environment of the elderly people or resulted from changes of personal factors. An important question was how the elderly people perceived the changes of their outdoor mobility.

MOBIAL Study (Limbourg & Matern, 2009): The project aimed at studying the mobility behaviour, mobility demands, mobility motives and attitudes towards mobility of elderly people as pedestrians, cyclists, users of public transport, car drivers and motor cyclists. In addition, information about mobility constraints with respect to gender, cultural background and environmental aspects were gained. In the quantitative study 1,283 people at the age of 60 years and older were interviewed mainly in the German cities Essen, Mülheim and Oberhausen. A younger group of people (N=482) between 40 and 59 years was studied as control group. By means of a qualitative study, the range of different individual preconditions of mobility was shown. 56 men and 40 women between 59 and 91 years were interviewed, 24 people of the sample were immigrants.

SIZE Project (http://www.size-project.at): SIZE - "Life quality of senior citizens in relation to mobility conditions" was a project conducted within the EU's Fifth Research Framework Programme. The project aimed at explaining and describing the present mobility and transport situation, the problems, needs and wishes of different groups of senior citizens from their own perspective compared with experts' points of view (wide range of different disciplines). In addition, relevant solutions for existing problems were identified and guidance for setting up and implementing policies aimed at “keeping the elderly mobile” were provided. In this article, mainly the results of the focus group interviews and in-depth interviews with senior citizens and experts (University of Technology Cracow & Universitat de València, 2003) and the state-of-the-art report (Transport Research Centre Brno, 2003) are referred to.

STEPs Project (http://www.steps-eu.com/): STEPs (Scenarios for the Transport system and Energy supply and their Potential effects) was a project carried out as part of the EU’s Sixth Research Framework Programme. The STEPs project had the objective of developing, comparing and assessing possible scenarios for the transport system and energy supply of the future. The state of the art of relevant research was taken into account, and strategic modelling was used as a key instrument. Within this article, the different results of one of the scenarios developed for the German metropolitan area of Dortmund are described. The main report of STEPs was published in 2006 (Monzón & Nuijten eds., 2006).

MiD 2008 “Mobilität in Deutschland 2008” (Mobility in Germany 2008) (http://www.mobilitaet-in-deutschland.de): On behalf of the German Ministry of Transport, Building and Urban Development, a Germany-wide representative mobility survey was conducted in 2008. The former study was conducted in 2002. The objective of MiD 2008 was to identify the everyday mobility of private households, to replicate the results of the MiD 2002 survey and to compare the results to
former surveys. To this end, a sample of 25,000 households was questioned, mainly in the form of phone interviews. The main results were published in 2010 (Infas & DLR, 2010).

2. Framework conditions

To discuss the development of mobility patterns of elderly people in the next decades, one has to consider some overlapping trends, such as:

- Demographic changes in detail (ageing as well as shrinking and growing populations, see below)
- Mobility costs, especially price of oil (see chapter 5.2)
- Income and economic development of households
- Social lifestyle changes between the cohorts of elderly people
- The general idea and image of walking along with that of other modes of transport
- Policy strategy used (for example demand oriented or technology investments)
- Climate change: The need for action could become very urgent so that car use would be more restricted in the future

Within the STEPs project the oil price and the kind of policy strategy are the main criteria for different scenarios concerning traffic behaviour in the future. If one looks at the results of the different scenarios, as shown below (see chapter 5.2), the wide variety of different outcomes and the uncertainty about the development of several important mobility factors becomes clear. In contrast to that, the demographic development within the next decades is well predictable.

The number of elderly people, and the proportion of the population that is elderly, has been increasing for many years. "Life expectancy has been rising steadily, with an increase of two and a half years per decade in the countries holding the record of highest life expectancy. If the pace of future progress in the reduction of mortality remains the same as it has been over past decades, most people in the EU will live very long lives." (European Communities, 2009, 18).

The percentage of older people is going to increase everywhere in Europe, with the largest relative growth in Italy, Austria and Germany. The population of very old people (85+) is also going to increase in all countries. All the populations in the EU are ageing, albeit at different rates and with huge regional differences. Some of the faster-ageing countries, such as Ireland, had a low mean age in 2004, whereas some of the slower-ageing countries, such as Sweden, had a high mean age that year. In other countries, such as Bulgaria, fast ageing is expected to continue until 2030 in spite of their high mean age today, and slow ageing in countries such as the Netherlands is also expected to continue until 2030 even though they have a low mean age today. Regional differences in mean age may be larger within countries than between them. Taking ageing and shrinking populations together, demographic change will generally be more distinct in the future (2004-2030) than it was in the past (1990-2004) (cf. Tivig, Frosch & Kühntopf, 2008, 8). The following tables show the anticipated percentages of senior citizens in the European countries.
Table 1  Anticipated percentages of senior citizens in % (≥ 65) EU27 2008-2050,

(Giannakouris, 2008)

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>17.04</td>
<td>17.22</td>
<td>19.51</td>
<td>22.87</td>
<td>25.03</td>
<td>25.70</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>17.31</td>
<td>17.47</td>
<td>20.34</td>
<td>23.28</td>
<td>26.70</td>
<td>31.26</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>14.64</td>
<td>15.39</td>
<td>20.22</td>
<td>22.94</td>
<td>26.32</td>
<td>30.94</td>
</tr>
<tr>
<td>Denmark</td>
<td>15.58</td>
<td>16.37</td>
<td>20.11</td>
<td>22.82</td>
<td>24.83</td>
<td>24.47</td>
</tr>
<tr>
<td>Germany</td>
<td>20.05</td>
<td>20.57</td>
<td>22.79</td>
<td>27.61</td>
<td>31.06</td>
<td>31.71</td>
</tr>
<tr>
<td>Estonia</td>
<td>17.16</td>
<td>16.99</td>
<td>18.77</td>
<td>21.74</td>
<td>24.18</td>
<td>27.42</td>
</tr>
<tr>
<td>Ireland</td>
<td>11.16</td>
<td>11.33</td>
<td>13.28</td>
<td>16.02</td>
<td>19.36</td>
<td>23.74</td>
</tr>
<tr>
<td>Greece</td>
<td>18.63</td>
<td>18.85</td>
<td>21.13</td>
<td>24.18</td>
<td>28.40</td>
<td>31.54</td>
</tr>
<tr>
<td>Spain</td>
<td>16.61</td>
<td>16.69</td>
<td>18.18</td>
<td>22.13</td>
<td>27.66</td>
<td>32.11</td>
</tr>
<tr>
<td>France</td>
<td>16.50</td>
<td>16.74</td>
<td>20.19</td>
<td>23.20</td>
<td>25.34</td>
<td>25.62</td>
</tr>
<tr>
<td>Italy</td>
<td>20.08</td>
<td>20.34</td>
<td>22.68</td>
<td>26.13</td>
<td>30.62</td>
<td>32.62</td>
</tr>
<tr>
<td>Cyprus</td>
<td>12.39</td>
<td>12.65</td>
<td>15.03</td>
<td>17.95</td>
<td>19.97</td>
<td>23.23</td>
</tr>
<tr>
<td>Latvia</td>
<td>17.27</td>
<td>17.36</td>
<td>18.57</td>
<td>22.18</td>
<td>25.43</td>
<td>29.58</td>
</tr>
<tr>
<td>Lithuania</td>
<td>15.84</td>
<td>16.05</td>
<td>17.57</td>
<td>22.14</td>
<td>26.34</td>
<td>29.69</td>
</tr>
<tr>
<td>Hungary</td>
<td>16.17</td>
<td>16.61</td>
<td>19.82</td>
<td>21.95</td>
<td>24.95</td>
<td>29.35</td>
</tr>
<tr>
<td>Malta</td>
<td>13.83</td>
<td>14.76</td>
<td>20.34</td>
<td>24.20</td>
<td>25.69</td>
<td>29.05</td>
</tr>
<tr>
<td>Netherlands</td>
<td>14.72</td>
<td>15.33</td>
<td>19.80</td>
<td>24.10</td>
<td>26.89</td>
<td>26.65</td>
</tr>
<tr>
<td>Austria</td>
<td>17.17</td>
<td>17.56</td>
<td>19.36</td>
<td>23.69</td>
<td>27.23</td>
<td>28.17</td>
</tr>
<tr>
<td>Poland</td>
<td>13.46</td>
<td>13.56</td>
<td>18.22</td>
<td>22.99</td>
<td>25.90</td>
<td>31.63</td>
</tr>
<tr>
<td>Portugal</td>
<td>17.42</td>
<td>17.79</td>
<td>20.08</td>
<td>23.25</td>
<td>26.83</td>
<td>30.12</td>
</tr>
<tr>
<td>Romania</td>
<td>14.91</td>
<td>14.93</td>
<td>17.43</td>
<td>20.25</td>
<td>25.52</td>
<td>30.92</td>
</tr>
<tr>
<td>Slovenia</td>
<td>16.08</td>
<td>16.62</td>
<td>20.42</td>
<td>25.29</td>
<td>29.09</td>
<td>32.50</td>
</tr>
<tr>
<td>Slovakia</td>
<td>11.98</td>
<td>12.29</td>
<td>16.44</td>
<td>21.27</td>
<td>25.53</td>
<td>31.63</td>
</tr>
<tr>
<td>Finland</td>
<td>16.52</td>
<td>17.06</td>
<td>22.41</td>
<td>25.52</td>
<td>26.21</td>
<td>26.83</td>
</tr>
<tr>
<td>Sweden</td>
<td>17.52</td>
<td>18.18</td>
<td>20.81</td>
<td>22.52</td>
<td>24.27</td>
<td>24.72</td>
</tr>
<tr>
<td>UK</td>
<td>16.10</td>
<td>16.38</td>
<td>18.29</td>
<td>20.55</td>
<td>22.45</td>
<td>22.95</td>
</tr>
</tbody>
</table>

Table 2  Anticipated percentages of senior citizens in % (≥ 80) EU27 2008-2050,

(Giannakouris, 2008)

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>4.68</td>
<td>4.91</td>
<td>5.58</td>
<td>6.45</td>
<td>8.39</td>
<td>9.96</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>3.57</td>
<td>3.78</td>
<td>4.57</td>
<td>6.10</td>
<td>7.97</td>
<td>9.60</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>3.37</td>
<td>3.59</td>
<td>4.10</td>
<td>6.64</td>
<td>8.40</td>
<td>9.32</td>
</tr>
<tr>
<td>Denmark</td>
<td>4.11</td>
<td>4.12</td>
<td>4.69</td>
<td>7.07</td>
<td>8.13</td>
<td>9.73</td>
</tr>
<tr>
<td>Germany</td>
<td>4.73</td>
<td>5.06</td>
<td>7.09</td>
<td>7.98</td>
<td>10.29</td>
<td>13.99</td>
</tr>
<tr>
<td>Estonia</td>
<td>3.63</td>
<td>3.97</td>
<td>5.22</td>
<td>5.88</td>
<td>7.31</td>
<td>9.04</td>
</tr>
<tr>
<td>Ireland</td>
<td>2.77</td>
<td>2.81</td>
<td>3.13</td>
<td>4.26</td>
<td>5.68</td>
<td>7.26</td>
</tr>
<tr>
<td>Greece</td>
<td>4.10</td>
<td>4.57</td>
<td>6.48</td>
<td>7.10</td>
<td>8.92</td>
<td>11.24</td>
</tr>
<tr>
<td>Spain</td>
<td>4.60</td>
<td>4.80</td>
<td>5.42</td>
<td>6.38</td>
<td>8.31</td>
<td>11.28</td>
</tr>
<tr>
<td>France</td>
<td>5.02</td>
<td>5.31</td>
<td>6.03</td>
<td>7.31</td>
<td>9.34</td>
<td>10.49</td>
</tr>
<tr>
<td>Italy</td>
<td>5.50</td>
<td>5.85</td>
<td>7.32</td>
<td>8.51</td>
<td>9.98</td>
<td>13.11</td>
</tr>
<tr>
<td>Cyprus</td>
<td>2.78</td>
<td>2.82</td>
<td>3.40</td>
<td>4.57</td>
<td>6.10</td>
<td>7.26</td>
</tr>
<tr>
<td>Latvia</td>
<td>3.57</td>
<td>3.92</td>
<td>5.22</td>
<td>5.92</td>
<td>7.92</td>
<td>9.88</td>
</tr>
<tr>
<td>Lithuania</td>
<td>3.27</td>
<td>3.64</td>
<td>4.91</td>
<td>5.60</td>
<td>7.85</td>
<td>10.66</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>3.49</td>
<td>3.76</td>
<td>4.30</td>
<td>4.99</td>
<td>6.71</td>
<td>8.59</td>
</tr>
<tr>
<td>Hungary</td>
<td>3.71</td>
<td>3.94</td>
<td>4.73</td>
<td>6.23</td>
<td>8.41</td>
<td>9.12</td>
</tr>
<tr>
<td>Malta</td>
<td>3.16</td>
<td>3.33</td>
<td>4.55</td>
<td>7.07</td>
<td>9.33</td>
<td>9.86</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3.79</td>
<td>3.90</td>
<td>4.72</td>
<td>6.93</td>
<td>8.90</td>
<td>11.09</td>
</tr>
<tr>
<td>Austria</td>
<td>4.61</td>
<td>4.74</td>
<td>5.20</td>
<td>6.69</td>
<td>8.38</td>
<td>11.45</td>
</tr>
<tr>
<td>Poland</td>
<td>2.95</td>
<td>3.31</td>
<td>4.38</td>
<td>5.67</td>
<td>9.43</td>
<td>10.07</td>
</tr>
<tr>
<td>Portugal</td>
<td>4.21</td>
<td>4.48</td>
<td>5.80</td>
<td>6.77</td>
<td>8.45</td>
<td>10.46</td>
</tr>
<tr>
<td>Romania</td>
<td>2.78</td>
<td>3.03</td>
<td>4.21</td>
<td>4.93</td>
<td>7.44</td>
<td>9.42</td>
</tr>
<tr>
<td>Slovenia</td>
<td>3.52</td>
<td>3.91</td>
<td>5.41</td>
<td>6.68</td>
<td>9.87</td>
<td>11.96</td>
</tr>
<tr>
<td>Slovakia</td>
<td>2.58</td>
<td>2.73</td>
<td>3.23</td>
<td>4.74</td>
<td>7.77</td>
<td>9.34</td>
</tr>
<tr>
<td>Finland</td>
<td>4.32</td>
<td>4.64</td>
<td>5.64</td>
<td>8.18</td>
<td>10.13</td>
<td>10.77</td>
</tr>
<tr>
<td>Sweden</td>
<td>5.35</td>
<td>5.32</td>
<td>5.41</td>
<td>7.62</td>
<td>8.39</td>
<td>9.53</td>
</tr>
<tr>
<td>UK</td>
<td>4.52</td>
<td>4.61</td>
<td>4.97</td>
<td>6.27</td>
<td>7.26</td>
<td>8.93</td>
</tr>
</tbody>
</table>
3. Selected results from gerontological mobility research

3.1. Theoretical approaches

Mobility may be understood as a means to reach an aim or a place or it may be an end in itself (Mollenkopf & Flaschenträger, 2001, 26). Hieber et al. (2006, 19ff.) and Limbourg & Matern (2009, 54ff.) give a short overview of the development of important gerontological theories and their implications for the understanding of the mobility behaviour of elderly people. According to Cummings’ and Henry’s disengagement theory, elderly people may choose to reduce the number of their trips and concentrate on necessary trips in order to increase quality of life. Contrary to this approach, the theory of activity proposes that a high level of activity, which may include much travelling, corresponds to a high level of satisfaction. A third assumption is that elderly people try to keep up the level of activity from middle age on because the continuity of social as well as individual activities is what provides the most satisfaction. When getting older, most people are confronted with changes in their individual mobility and have to adapt to difficulties with travelling and losses of mobility. According to the cognitive theory of ageing, besides objective factors, the individual subjective perception and interpretation is crucial to how people experience mobility and try to compensate difficulties with travelling.

In contrast to the theories which focus on the subject, a second group of theories stresses the interdependency between subject and environment. A well-designed environment may help to compensate age-related constraints of mobility. Moreover, it may be the precondition of mobility, social participation, self-determination and an independent life.

3.2. Definition of elderly people

The boundary between middle age and old age cannot be exactly defined. Ageing is a lifelong and irreversible process of change in different dimensions. It comprises both losses and gains, stability as well as reduction. People change with respect to biological, social and mental parameters. The process of change varies strongly between individuals as well as between the different dimensions within a particular individual (Engeln & Schlag, 2001, 26). Therefore, the chronological age only indicates a period of life and a biological process of maturing with typical characteristics. The psychological age refers to the ageing process as perceived by the individual. In addition to that, it means the psychological changes during the ageing process, which are, for example, the mental resilience or the satisfaction with ones own life. In this context it should be taken into consideration that cultural as well as historical and social influences have an impact on the psychological age because they influence the perception of the members of an age cohort (Engeln & Schlag, 2001, 27). The classification of different age groups is based on the chronological age and often refers to social conventions and social roles like the beginning of school, the definition of full age, becoming grandparents or the beginning of retirement. In many countries, such as the USA and the United Kingdom, the age of retirement, which is 65, is often considered the beginning of old age. Results from gerontological research show that it is useful to differentiate between a third age (70-84 years) and a fourth age (85 years and older). Whereas people between 70 and 84 years show stability or only minor changes in certain functions, very old people near to death change a lot (Lindenberger et al., 2010, 681).

The following distinction is very common and is used, for example, in the mobility survey conducted on behalf of the German Federal Ministry of Transport, Building and Urban Development (Infas & DLR, 2010, 170).

- Younger Elderly: > 65, < 75 years
- Older Elderly: > 75, < 85 years

Some distinguish a further group: the very old people over 85 years. The different studies which are referred to in this chapter use different age categories.
3.3. Age-related development of physical and cognitive capacities

Very often, age-related changes of physical and cognitive capacities are described with respect to the ability to drive a car. However, as health factors and functional impairments which have an impact on car driving may at the same time have a negative effect on the use of other modes of transportation, the ability to drive a car may be seen as crucial for the interaction between age, health, social participation and quality of life (Schlag ed., 2008, 28).

Due to space limitations, the following remarks are very brief and selective. Kramer & Kray (2006) give a very good summary and review of the relevant literature about age-related changes in attention. Perception is an essential precondition for a safe outdoor mobility independent of the mode of transport. In general, the process of ageing is connected with a decrease in perceptional capacities. The beginning of the decrease differs depending on the respective perceptional capacity. For example, the capability to see at night decreases relatively early in life as compared to other dimensions of the visual capacity (Schlag ed., 2008, 30). With increasing age, the capability of selective and divided attention and the ability of multi-tasking decline. It could be shown that, compared to younger people, elderly people are more easily distracted. However, this effect seems to be of less importance if the visual scanning is controlled by the observer’s expectancies about events in the environment (Schlag ed., 2008, 30).

Elderly people need more time to perceive a piece of information, to process it, to take a decision and to act. Whereas healthy elderly people are able to perform known and automated actions nearly as well as younger people, the ability to adapt to new complex situations takes more time compared to younger people. This has a negative impact if the environment changes a lot or requires quick reactions (Schlag ed., 2008, 31). Especially for pedestrians and cyclists, the age-related decrease of mobility and motor capacities are important factors. In addition, the limited regenerative abilities and exhaustion have an influence on the outdoor mobility (Schlag ed., 2008, 31). Discussing the age-related development of physical and mental capacities, it is important to see that the different aspects of performance may differ substantially between individuals of the same age as well as regarding the single individual itself.

Some of the deficiencies can be compensated for with the help of technical means such as, for example, good light or using a car (Engeln & Schlag, 2001, 29; Schlag ed., 2008, 31). Boenke et al. (2010, 16ff.) point out that the built-up environment should be adapted to the fact that elderly people often have to cope with constraints of their musculoskeletal system which makes it difficult to go long ways and to handle differences in altitude. In addition, it might be difficult to grip handrails, for example, or to handle a ticket machine.

3.4. Individual factors

The elderly who were interviewed as part of the MOBILATE Follow up II project reported four main reasons for the perceived decline of their outdoor mobility within the last 10 years: Among personal factors, a lack of health and constraints of financial resources were named to be most important. With respect to environmental factors, the need to care for the spouse as well as a bad built-up environment were reported to be of most importance (Hieber et al., 2006, 62f.).

Among personal resources, health can be seen as the most important one, and its lack or weakness as the main risk factor for outdoor mobility. MOBILATE showed that better health was related to a greater number of journeys per day, especially in Finland and Italy. The authors propose that health is probably the most universal factor affecting outdoor mobility generally, independent of country, region and gender. They showed that with increasing age and decreasing health the use of all transport modes was reduced and outdoor mobility
B.3. The future of walking

decreased (Mollenkopf et al., 2005, 302). As regards psychological resources, it has been supported that basic functioning at the cognitive level (operationalised as visuo-motoric coordination/processing speed) directly influences the performance of outdoor-related behaviour (Mollenkopf et al., 2005, 302f.).

In the German Mobility Survey “MiD 2008” better health, more people with car availability and more women with driving licenses are cited as main reasons for changing transport behaviour of the elderly in comparison to the “former elderly”.

3.5. Environmental factors

Different outdoor mobility aspects in different countries can be at least partly explained by different environmental conditions such as the population density or the density of roads. They affect the distances and times to get services or to meet relatives and friends. MOBILATE showed that the elderly people mainly lived less than 100 meters from the nearest neighbour. Most of them in all countries had good access to fundamental services such as food stores, doctor, pharmacy, bank, post office, bus or tram stop, except for Finland. In MOBILATE the mode of transport most often used in all countries to reach services was walking (Mollenkopf et al., 2005, 303).

As the German Mobility Survey (MiD 2008) shows, elderly people who live together with others within a household are more active and mobile than those who live alone (Infas & DLR, 2010, 168). MOBILATE showed that the presence of an out-of-home social network is a stimulus to go out. Close relatives, namely the children, are the most important persons of the elderly people’s social network outside the house. In the rural areas, important persons live closer to the older people than in the cities. Those confidants who live less than 15 minutes away are mainly reached on foot in all the countries investigated by MOBILATE (Mollenkopf et al., 2005, 305).

4. Today`s mobility behaviour of elderly people

The MOBILATE research project describes out-of-home mobility to be based on interaction between an individual and his or her living environment. Having good health, accessible public transport and being able to use a car are the most important prerequisites for out-of-home mobility. The factors are strongly related and decisive for out-of-home mobility and for elderly people’s satisfaction with their mobility opportunities (Mollenkopf et al., 2005, 302).

4.1. Trips and performance

Generally the volume of travel of elderly people in terms of numbers of trips a day is lower than that of average middle-aged people (situation today). The number of car driver journeys fall as age increases. Especially people over 80 have a significantly lower mobility rate (Gerlach et al., 2007, 59). But the elderly of today are more active than the elderly in the past. While in the year 2002 a person aged between 65 and 74 conducted 2.8 trips a day on average, it was 3.2 in the year 2008. If one looks at people aged 75 years and older, the trips per day increase from 2.0 trips a day up to 2.3 trips a day in 2008 (figures for Germany, Infas & DLR 2010, 171).

People travel fewer kilometres a day the older they are (average kilometres per day: age 51-59, about 43 km; 60-69, about 30 km; 70+, about 22 km (Chlond, 2008). As the activity rate increased, the travelled kilometres a day have changed over time, as the following table shows:
Table 3 Kilometres driven a day 2002 and 2008 in comparison

<table>
<thead>
<tr>
<th>Age</th>
<th>Kilometres driven a day</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 – 64</td>
<td>33</td>
</tr>
<tr>
<td>65 – 74</td>
<td>26</td>
</tr>
<tr>
<td>75 and more</td>
<td>15</td>
</tr>
</tbody>
</table>

4.2. Transport modes

One of the findings of the MOBILATE project was that “Out of the different types of predictors employed in the analysis, the region a person lives in had the greatest impact on the variety of transport options used in all countries. … Besides region, higher income and education, better health and better visu-motoric coordination were important prerequisites for using a large variety of transport options as well.” (Mollenkopf et al., 2005, 300) In all countries that participated in the study, older people in urban areas had significantly more transport modes available than older people living in rural areas due to a better availability of public transport in the cities. The greatest variety of transport modes was reported by older Finnish people, both in urban and rural areas. The smallest range of transport modes was reported by the elderly in Hungary and Italy. A possible explanation is differences in the infrastructure and mobility habits in different cultures (Mollenkopf et al., 2005, 300).

According to the German Mobility Survey MiD 2008, the car remains the most often used mode of transport in all age groups. Looking at the elderly people over 65, the car was more often used in 2008 than in 2002. Besides car use, walking is the second most important mode of transport for the elderly people, as mentioned above. (Infas & DLR 2010, 181).

Elderly people walk more often than other groups regarding the share of all walking trips made (Gerlach et al., 2007, 45). The figures in Table 4 show how the share of walking increases the older people get.

Table 4 Percentage of walking trips out of all trips for different age groups in 2002 (Gerlach et al., 2007, 45)

<table>
<thead>
<tr>
<th>Age</th>
<th>18-59</th>
<th>60-64</th>
<th>65-69</th>
<th>70-74</th>
<th>75-79</th>
<th>80-84</th>
<th>&gt;85</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of walking trips</td>
<td>22</td>
<td>32</td>
<td>33</td>
<td>33</td>
<td>41</td>
<td>44</td>
<td>50</td>
</tr>
</tbody>
</table>

In MOBIAL it was shown that elderly people between 60 and 80 years of age walk on average 20 minutes per day. People older than 80 years walk increasingly less. At the age of 85 people walk on average 15 minutes per day, at the age of 90 they walk on average less than 5 minutes per day (Limbourg & Matern, 2009, 101). The interviewed elderly men and women reported a similar walking behaviour (Limbourg & Matern, 2009, 108).

4.3. Motives and purposes

As people age, there are more journeys to other destinations than to work. Shopping, leisure and private trips become more important. As the results of the European “SIZE” project show, the structure of the daily mobility situation of older people is similar across countries. According to the study, basic needs in the mobility domain include daily activities (such as shopping and health care), walking (for example with the dog) and leisure.

“Among other responsibilities, older people often emphasise their involvement in taking care of other older people or children. As many participants stated, this type of activity was an important source of self-acceptance (feeling important and useful), and thus, an important
source of motivation for mobility. Religion (religious activities) also played a role as a factor which enhanced mobility” (University of Technology Cracow & Universitat de València, 2003, 8). The MOBILATE study showed that elderly people most often walk to reach services like food stores, the doctor, pharmacy, post office and so on (Mollenkopf et al. 2005, 303).

With respect to walking, MOBIAL (Limbourg & Matern, 2009, 119) identified the following motives of older people:
- walking allows an autonomous mobility in older age
- continuity in the biography
- improvement of physical and mental well-being
- possibility to do sports
- walking the dog
- social contacts
- complementary mode to car driving or public transport
- all the goals are well within walking distance
- avoidance of driving after having drunken alcohol

4.4. Mobility avoidance behaviour

In the analysis of the mobility behaviour of elderly people as pedestrians, the MOBILATE study differentiates between people who could walk and people who evaluated their physical mobility as poor or very poor (Mollenkopf et al., 2005, 113f.). The study showed that nearly half of the group of pedestrians who could walk avoided specific situations, if possible. This means that these older people were conscious of hindrances in the outdoor environment. Specific situations which were avoided by more than 50 % of the pedestrians who could walk were poor weather, insufficient light, walking along busy roads without sidewalks, going to unfamiliar places and busy traffic.

The study pointed out that the subgroup that felt that their physical mobility was poor reported a much higher avoidance behaviour compared to the group that could walk. In general, avoidance was lower in each subgroup in the rural areas, with the exception of unfamiliar places and poor weather. The oldest age group reported more avoidance behaviour than the youngest age group. Women reported avoiding more situations than men.

4.5. Accident involvement

People over 75 have the highest risk of being killed in a road accident (Gerlach et al., 2007, 59). This risk differs depending on the age groups (in general, the tendency is, the higher the age (especially over 75) the more dangerous it is). But there are differences between men and women, as the following table shows.

Table 5  Index: risk of casualty (casualties per 1 million “transport activity hours”, figures from 1991), (Flade, Limbourg & Schlag, 2001, 215)

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Pedestrians</th>
<th>Cyclists</th>
<th>Car drivers</th>
<th>Car passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-64</td>
<td>Men</td>
<td>4.2</td>
<td>30.8</td>
<td>15.5</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>2.6</td>
<td>21.7</td>
<td>12.6</td>
<td>14.1</td>
</tr>
<tr>
<td>65-74</td>
<td>Men</td>
<td>2.8</td>
<td>24.1</td>
<td>7.8</td>
<td>9.2</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>3.4</td>
<td>24.2</td>
<td>10.7</td>
<td>11.1</td>
</tr>
<tr>
<td>75+</td>
<td>Men</td>
<td>6.5</td>
<td>55.3</td>
<td>9.9</td>
<td>14.9</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>9.7</td>
<td>41.3</td>
<td>13.4</td>
<td>10.2</td>
</tr>
</tbody>
</table>
5. Mobility behaviour of elderly people in the future

It is to be expected that the elderly people of tomorrow will be different from the elderly of today. The statements on those aspects are, of course, not 100 per cent certain, but the following forecasts can be found in the relevant literature:

- Older people will be healthier and fitter in the future
- As a whole, the economic situation of elderly people in the future will be good (Germany) but there will be one group of elderly people that will be affected by poverty quite heavily (Gerlach et al., 2007)
- There will be a polarisation between the poor and the rich (Chlond, 2008)
- More (nearly all) of the elderly will have a driving licence in the future, especially women (Chlond, 2008)
- More elderly people will have a car, especially women (Chlond, 2008)
- The elderly will be more active
- Some of the changes have already started as shown in chapter 4.1.

A Swiss study estimated how the transport behaviour of the elderly in the future (2030) will change in comparison with the transport behaviour of elderly people today (2000). The following table shows the main results (cf. Mobilservice Redaktion, 2008).

<table>
<thead>
<tr>
<th>Characteristics of mobility patterns</th>
<th>Individuals with driving license</th>
<th>Individuals without driving license</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Daily number of trips per person</td>
<td>+20%</td>
<td>+20 to 25%</td>
</tr>
<tr>
<td>Daily mileage driven per person</td>
<td>+25%</td>
<td>+20%</td>
</tr>
<tr>
<td>Average duration of travelling</td>
<td>+25%</td>
<td>+20%</td>
</tr>
<tr>
<td>Share of trips by car</td>
<td>± equal</td>
<td>+10%</td>
</tr>
<tr>
<td>Share of mileage by car</td>
<td>± equal</td>
<td>+10%</td>
</tr>
<tr>
<td>Share of mobile people</td>
<td>+5%</td>
<td>+10%</td>
</tr>
</tbody>
</table>

6. Will there be more pedestrians or more car users in the future?

It is still difficult to say if we will have more pedestrians than now because of the following conflicting trends:

- So far, there has been an increase in walking as people get older
- But the elderly of tomorrow will be different (fitter, healthier and, partly, wealthier)
- Compared with now, a higher proportion of the elderly will have a driving licence in the future and more elderly people will own and use a car
- The elderly in the future will be used to using a car as the most important means of transport

The scenarios differ concerning whether there will be more motorised transport in the future or not, or at least with respect to the question as to when a decline of transport performance can be expected. One German study points out that, with more intensive use of cars by the elderly, automobile mobility (performance) will increase or stay more or less stable up to 2030 (TRAMP et al. 2006, 121). A Swiss study forecasts more car use and more kilometres
driven looking at the overall nationwide development (from 2000 – 2030, Mobilservice Redaktion, 2008). Another German study states that transport performance (kilometres travelled a year) could become less (because of the elderly in combination with the shrinking population in Germany) in the long term (ILS NRW, 2005), after an increase in the short term. This can lead to fewer kilometres driven in cars already after 2015 or 2020/2030, depending which scenario one refers to (ILS NRW, 2005, 47).

The results of the STEPs project show the wide range of scenarios and its main messages depending on a variety of different assumptions. As the following results show, the oil price can have an enormous effect on the distance travelled as well as the mode of transport. Within the STEPs project, different modelling tools and methods were used. Some models were specified at a local level, one of them was developed for the German region of Dortmund, which will be looked at further on in this article. For reasons of limited space, it is not possible to explain all different scenarios of the Dortmund model in detail. Therefore, the following table is restricted to showing the main aspects. The most important criteria are the oil price on the one hand (low, high and extreme fuel price growth) and the kind of policy strategy on the other hand.

Table 7 Scenarios used in STEPs (STEPS, 2006, 5)

<table>
<thead>
<tr>
<th>No policies</th>
<th>Business as usual</th>
<th>Demand regulation</th>
<th>Technology investments</th>
<th>Integrated policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low oil price growth</td>
<td>A-1</td>
<td>A0</td>
<td>A1</td>
<td>A2</td>
</tr>
<tr>
<td>High oil price growth</td>
<td>B-1</td>
<td>B0</td>
<td>B1</td>
<td>B2</td>
</tr>
<tr>
<td>Extreme fuel price growth</td>
<td>C-1</td>
<td>C0</td>
<td>C1</td>
<td>C2</td>
</tr>
</tbody>
</table>

The results of the scenarios looked at in Dortmund show that fuel price increases have a major impact on travel behaviour (c.f. STEPs, 2006, 144ff.). In all scenarios, the proportions of walking and cycling (and public transport trips) increase and the proportion of car trips decrease compared with the scenario A-1 (cf. Figure 2).
7. Conclusion

Even if scenarios and studies differ concerning forecasts of transport activities, the following can be stated in general:

- Transport performance will be different in different areas
- Society will be older across Europe in absolute and relative terms
- Mobility is part of the quality of life and will become more difficult to realize as people get older. At the age of 70 to 75 half of the people report a decline in their outdoor mobility
- Even if the elderly of tomorrow are fitter and healthier, there will still be a higher proportion of disabilities among them
- The situation will be especially difficult for certain parts of the population in certain areas where walking will be the only option because public transport and cars will no longer be affordable
- So the requirements on infrastructure will change: Safety and comfort will be more important than speed

Creating a walking-friendly environment can already be seen as an important part of a transport environment suitable for elderly people. For that reason all measures that improve walking (as discussed in other chapters and articles of the COST group) could also be named here.

Looking at the results of the different studies cited above, measures to realize a transport environment suitable for elderly people can be found within the field of built-up environment, services and information/awareness.

**Built-up environment/infrastructure**

First of all, it is important to provide local supply (basic services like food stores, medical services and so on) and recreation facilities in residential areas (within walking distance). This presupposes, however, an adequate land use structure.

With respect to infrastructure, this means increasing the safety and comfort of elderly pedestrians, cyclists, public transport users and drivers, in particular (Boenke et al., 2010):

- To keep the traffic systems as simple as possible on all levels, including for example ticket machines
- Important information should be given in such a way that it can be perceived by at least two senses
- Important information should be highlighted or given over a longer period of time
- More lighting in public space and traffic facilities, also for personal security purposes
- Shelter and benches at bus stops and other places
- (New) parking spaces (with parking permission for residents only)

Also, road design should be changed in such a way as to meet the requirements of elderly people, which means for example:

- Upgrading or the creation of more and broader pavements without any barriers
- More and better adapted urban furniture, like benches, public toilets and so on
- More pedestrian areas
- More contrasts in road design
- Installation of suitable handrails along stairways
- Better maintenance of streets, pavements and urban furniture
On the basis of empirical research as well as geronto-psychological knowledge, Boenke et al. (2010) have developed guidelines to improve the outdoor mobility of elderly people by means of an adequate infrastructure. The handbook offers proposals for ways in which to design specific important traffic situations in cities with respect to elderly people’s needs. In addition, principles for a planning process are presented which make it possible to integrate elderly people’s needs into the planning processes.

The Planning processes should focus on:

- participation of elderly people, planning through the eyes of elderly people
- a more integrated approach, not only in road design, but also in terms of easy access to (public) buildings, shops, and so on

**Services**

- Creating new services for elderly people, for example guided tours to unknown places, personal assistance service
- Support by service personnel
- More control by local policemen
- And others

**Information**

- Campaigns to raise awareness of the needs of elderly people
- Provision of information, that would help the elderly to cope and to put any organisational structures and lobbying measures
- And others

If an adequate infrastructure and urban facilities could be provided to support walking, not only elderly people, but also everyone else would have a better quality of life – as it is not only necessary to enable elderly people to take part in life, it could also contribute to a healthier life for all of us.

**References**


B.3.7. The impact of an ageing society


University of Technology Cracow, Poland and Universitat de València, Psychonomy Research Unit Valencia, Spain (2003). *SIZE “Life quality of senior citizens in relation to mobility conditions” (EU-Project) – results of focus group interviews and in-depth interviews with senior citizens and experts*, deliverables D5 and D6 internal paper from WP3 & WP4. [http://www.size-project.at/results/SIZE_D5-6_complete.pdf](http://www.size-project.at/results/SIZE_D5-6_complete.pdf) (11.05.2010).
Walking and health

Hans Orru
Department of Public Health, University of Tartu, Estonia
Hans.Orru@ut.ee

Kati Orru
Department of Geography, King’s College London, United Kingdom
Kati.Orru@kcl.ac.uk

‘Happiness lies, first of all, in health’
George William Curtis

‘An early morning walk is a blessing for the whole day’
Henry David Thoreau

Summary

Walking is the simplest mode of moving, practiced by almost everybody daily. It has many health as well as environmental benefits. If everyone walked at least half an hour a day, it would have a major effect on public health. This chapter gives an overview of major physical and environmental benefits of walking. It also introduces the main light transport-related health trends of the past and coming decades. Finally, it discusses the possible political tools to achieve health targets and the contribution walking could make to achieve these goals.

1. Introduction

Walking is the most basic and common mode of transportation. Almost all people walk every day, even if the distances vary to a large extent. Whereas some people walk tens of kilometres, others walk only in the office, shopping mall, around home etc. Walking is recommended for a healthy lifestyle, and it has numerous environmental benefits, such as consuming less fossil fuels and reducing air, water, and soil pollution. Walking is also considered to be a clear example of a sustainable mode of transport, especially suited for urban use and/or for relatively short distances.

There is clear evidence that physical activity, including walking, has substantial benefits for public health (Lee and Bucher, 2008). Walking is a simple health behaviour that can reduce rates of mortality, morbidity and hospitalization, with only a modest increase in the number of activity-related injuries. First, walking is the most commonly reported activity in adults who follow physical recommendations. Second, walking is easily accessible. It is a universal form of physical activity that is appropriate to promote, regardless of sex, ethnic group, age, education, or income level. Walking does not require expensive equipment, special skills, or extra facilities. It can be done indoors (e.g., mall walking and treadmill walking) or outdoors. In this regard, walking is particularly important for its potential to reduce disparities in health, related to lack of physical activity.

The health benefits of regular physical activity are far-reaching: reduced risk of coronary heart disease, stroke, diabetes, and other chronic diseases; lower health care costs; and improved quality of life for people of all ages. Regular exercise provides health benefits for
older adults such as a stronger heart, a more positive mental outlook and an increased chance of remaining indefinitely independent. This is a benefit that is of increasing relevance to the aging western population.

2. Importance from the public health point of view

Nowadays, public health research and promotion are putting more focus on chronic diseases. It is important to reduce the incidence of disease, disability, and the effects of aging. Modern public health is often concerned with addressing determinants of health across the population, rather than advocating individual behaviour change. Moreover, our health is affected by many factors, including where we live, genetics, income, educational status and social relationships.

As life expectancy has increased, the population in Europe is aging (Figure 1). Europe has 19 of the world's 20 oldest countries in terms of population age (Kinsella and Phillips, 2005). Nearly 25 percent of people in the European Union will be over age 65 in 2030. This has increased from about 17 percent in 2005. As much as 20 percent of Europe’s population will be above age 80 by 2050. Older people need more treatment, which will increase the cost of health care. The healthy life period is up until 65 years. Thus, for approximately the 10-15 last life years, we are not in full health anymore; in Eastern Europe up to 20 last years are not fully healthy (Figure 1). One of the main public health goals should be to extend the healthy life period. This is for the benefit of individuals as well as for the macro-economic situation as a whole.

For these reasons, walking is poised to increase in significance for public health, especially in aging populations. As the risk of chronic disease increases with age, physical activity – an effective therapy for many age-related chronic conditions – is advised. Due to the fact that the preference for more moderate-intensity activities, such as walking, increases with age,
walking emerges as a leading therapeutic modality. Furthermore, because the costs of medical care are substantially lower in physically active adults, walking has the potential to reduce medical expenditures, particularly among older adults where the prevalence of chronic diseases is high.

The Berlin Aging Study showed that in age groups 70 to 84 – 9 percent needed help with bathing, 6 percent needed help climbing stairs and going for walks, and 4 percent needed help with dressing. In the 85-and-older age group, 46 percent needed help with bathing, 33 percent with climbing stairs, 34 percent with going for walks, and 18 percent with dressing (Baltes and Mayer, 2001). Walking strengthens muscles, bones, and joints: walking has been seen to help strengthen your entire body. Movement keeps the body active and, therefore, can help to maintain the tone of muscles and joints in older age. The following sections will introduce how walking activities benefit the cardiovascular system, preventing obesity and cholesterol related diseases.

First, studies have shown that a moderate level of physical activity, such as walking 30 minutes a day, has lengthened life by 1.3 years and added 1.1 more years without cardiovascular disease, compared with those with low activity levels (Franko et al., 2005). Those who chose a high physical activity level have gained 3.7 years of life and added 3.3 more years without cardiovascular disease.

Second, walking also manages your weight: combined with healthy eating, walking can play a key role in any plan for long-lasting weight control. Obesity is one of the greatest public health challenges of the 21st century. Since the 1980s, the number of those affected in the EU has tripled and continues to increase at an alarming rate, especially among children (COM, 2005). 7% of total EU healthcare costs are estimated to be spent on treating obesity-related illnesses. Keeping your weight within healthy limits can lower your risks of type 2 diabetes, heart disease, stroke, cancer, sleep apnea, and osteoarthritis.

Furthermore, walking helps you boost "good" cholesterol: cholesterol levels are something that all individuals need to be aware of at any age. Walking helps reduce low-density lipoproteins ("bad" cholesterol) in the blood, which can cause plaque build-up along the artery walls. Walking also helps to prevent you from getting sick: walking has been shown by research to reduce your risk of catching a cold. The act of walking strengthens your immune system, allowing your body to fight off sickness more easily. The Honolulu Heart Study found that walking just two miles a day cut the risk of death of 800 men almost in half over a 12-year period (Hakim et al., 1998). The walkers' risk of death from cancer was significantly lower.

The absolute number of people with diabetes in the EU27 is estimated to increase from approximately 31 million in 2007 to 37 million in 2025. This implies an increase of 8.6% to 10.2% of the total population. These figures are based on current age and gender specific prevalence rates. It is likely that age-specific prevalence rates will rise as a result of the increasing prevalence of obesity (IDF, 2006).

The four leading causes of disease projected for 2030 include – besides HIV and depression – ischemic heart disease and road traffic accidents (Mathers and Loncar, 2006). Manson et al (2002) have reported that a daily brisk walk does as much for a woman’s cardiac health as more strenuous forms of exercise. They found that women who either walked or exercised vigorously for at least 2.5 hours a week were about 30% less likely to develop heart disease than sedentary women were. More favourable results were seen in women who exercised more than 2.5 hours a week and in those who walked at an average speed of at least 3-5 km/h rather than at a slower pace. The 20-year Nurses' Health Study of 72,000 female nurses has shown that exercise such as brisk walking for three hours a week – or just half an hour a day – is associated with a 30% to 40% lower risk of heart disease in women (Willett et al., 2000).
As for other health benefits, regular walking plays a role in decreasing surgery needs. For instance, a study by Leitzmann et al. (1999) showed that physical activity lowers the risk of needing gallstone surgery by 20% to 31% (among more than 60,000 women ages 40 to 65). It also protects against hip fractures – concludes a study of more than 30,000 men and women ages 20 to 93 (Feskanich et al., 2002).

Walking also boosts mental health. This includes lowered stress levels, improved sleep, better performance at work or school and an elevated overall mood and sense of well-being. Walking helps prevent depression: studies have shown that walking daily helps a person’s mental health. The act of walking, ideally outside, helps a person feel livelier. This in turn means that they are happier.

Physical activity, such as walking, is being seriously proposed as a means to prevent dementia, reflecting the probability that all the health benefits of physical activity, including walking, are not yet known. The prevalence of cognitive impairment increases dramatically with age in adults over 65, with moderate to severe dementia affecting over 30% of adults aged 85+. Research now suggests that physical activity during middle age and older reduces the risk of cognitive decline with age (Weuve et al., 2004).

3. Indirect factors related to walking and health

Another factor favouring walking over other activities is injury risk. The ability to identify physical activities with the lowest injury risk is limited by insufficient research data. However, it has been reported that greater amounts of walking were not associated with a greater injury risk (Hootman et al., 2002).

Another type of injury is related to traffic accidents. Pedestrians injured in automobile accidents constitute one of the most frequent serious problems in management for emergency room surgeons. The incidence of deaths among pedestrians is significantly higher than among other road users (Harnam et al., 2007). If walking were safer, there would be an essential effect on public health.

However, the public health benefits of promoting walking extend beyond its direct benefits. As an example, promoting active transportation (e.g. walking to work) reduces automobile use and thereby road congestion and air pollution. Reducing air pollution is expected to lower rates of respiratory and cardiovascular diseases and cancer (Pope & Dockery, 2006). For instance, if the currently and previously agreed policies relating to the emission reductions of particulate air pollution were fulfilled, the average life expectancy in Europe would increase by 2.3 months by 2020 (WHO, 2005). Moreover, walkers are in the same situation as passive smokers – they do not pollute, but they are exposed to air and noise pollution. Reducing automobile use theoretically reduces also risk of injury from automobile collisions. Hiking increases contact with natural environments. There is increasing evidence that exposure to natural environments improves mental health. Walking is often a group activity that results in social interaction, which also has independent effects on health as indicated by evidence that low social interaction is associated with increased mortality.
4. Walking and public health policy

The above analysis touched on several health benefits of walking. However, a question arises – how can these advantages of walking be achieved? The answer lies in the health promotion field, but also beyond. It necessitates an incremental change of behaviour and attention agendas, as well as the conscious cooperation of different interest groups.

Thanks to its accessibility, walking is one of the most cost-beneficial ways of maintaining physical fitness (Wang et al., 2005). It does not require expensive gadgets or training facilities. Furthermore, it is an individual activity that can be practiced independent of trainers and group members. Therefore, it is a form of physical activity that can be afforded by many populations. The latter also includes less financially secure populations in Eastern Europe.

Although walking can be done independently, it is still necessary for people to have general health awareness and favourable value systems to take up the walking habit consciously. We acquire our main value traits during the socialisation process, beginning in early childhood (White, 1977). Thus, in order to facilitate the upbringing of healthy generations, we would need to introduce little children to the benefits of walking through play and joy. This, however, requires adults to acknowledge and believe in the benefits as well. Awareness building among adults through popular media channels can help to form a positive image of healthy lifestyles where walking habits play a crucial role (McQuail, 2005).

Attaching the health benefits to the monetary gains can help to bring about greater recognition of the payback of walking habits. It needs to be emphasised in public awareness building programmes that walking is a way of exercising that does not require too much financial input. In fact, the financial gains – decreased expenditures on transportation and personal car fuel, time saved from sitting in traffic jams and looking for parking places in overcrowded cities - are considerable.

Attaching walking activity and related health behaviour to other topics high on the public agenda would facilitate their recognition (Baumgartner, 2002). Relating walking to environmental gains would win even more public attention to facilitate the behaviour change. Reducing emissions from transportation benefits the environment! This is a simple, understandable message that should be emphasised more when we talk about the benefits of light transportation, including walking and cycling.

Political agendas and public opinion are closely related. Public pressure as well as media coverage can be an important impetus for policy-makers’ agendas (Gaskell et al., 1999; Soroka, 2002). Gaining politicians’ support would help to shift the focus from transportation infrastructure development towards planning walking facilities that are inviting and more accessible. Separating motorways and walkways, establishing green buffer zones between heavy traffic roads and walkways, increasing accessibility to parks and natural areas are only a few simple measures that would help to pave the way for more walkers.

For politicians the state of public health and health care costs are vital issues. Easily accessible and understandable knowledge on the positive effects of walking on public health and reduction of health care costs are essential for changing the municipal managers’ and state officials’ opinions. For an increased inclination of the latter, the scientists themselves could become more involved. Slightly shifting the focus from the scientific publication and peer group recognition treadmill towards translating science into catchy, commonly understandable policy papers could help to gain attention to easy health promotion solutions such as walking.
The EU has a vital role to play in devising and implementing environmental and public health policies (Weale et al., 2000). If policy instruments are effective, we would have a larger percentage of everyday walkers and the public would value its health. But it is quite easy to fail as well. Young children walk less and less, which means that they have established no habit for walking for their own future (Wen et al., 2009). In 2030 they adults and many of them will already be in their thirties and forties. This means that policies will have to be effective at every level.

One of the key issues in creating walking-friendly environments is the sustainable planning that offers the greatest protection of pedestrians. Pedestrians are quite often involved in accidents; moreover they are exposed to air pollutants and other risk factors. Investments should be made in areas where the greatest number of walkers benefit. Good walking environments are expensive and walking facilities are sometimes difficult to build because of bad planning in the past.

Furthermore, as the population ages, the answers have important policy implications because they influence health and social care needs as well as residential options for older people (Kinsella and Phillips, 2005). It presents again how many different angles the policy must have. However, it is said that efficient interventions to promote walking already exist, and there is rising interest in programs that promote children and youth to walk or bike to school. But the question has to be asked – Is that sufficient? Especially if the health trends among younger populations are declining in many countries.

5. Conclusion

If everyone would get at least 30 min of moderately intense physical activity each day, the benefits would be extensive. There would be a dramatic reduction in medical expenditures (the lower rates of chronic diseases such as obesity and CVD are predictable), with only a modest increase in the number of activity-related injuries.

On the side of policies, walking should be made as easy and accessible as possible. The physical environment should be safer and the natural environment cleaner (e.g. less air pollution and noise). The evidence of health benefits and effective interventions justifies that policies promoting physical activity, for example improving pedestrian access to enjoyable places and encouraging walking to school and work, have given the best results.

6. Recommendations

- Promote walking, as it is one of the easiest ways to maintain health
- Make walking as simple as possible *vice versa* make the use of personal cars etc. more complicated
  - For instance reduce the investment on road transportation and increase the investments for pedestrian roads and areas
  - Tax benefits etc. for walkers
- Include walking as an obligatory part of treatment for patients with chronic diseases
- Promote walking among school children
- Increase investment on pedestrian safety
- The walking paths has to be build at least 15 m from the main roads to reduce the effects of air pollution and noise on health

PQN Final Report – Part B:  Documentation
References


Tourism and recreation

Thérèse Steenberghen
SADL, K.U.Leuven, Belgium
therese.steenberghen@sadl.kuleuven.be

‘People who cannot find time for recreation are obliged sooner or later to find time for illness.
J. Wanamaker

Summary

This paper presents a reflection on trends in tourism and recreation which have impacts on the future of walking. Tourism is expected to continue to grow in the next decades. When people travel, they walk in unfamiliar environments, and therefore have specific requirements. They need spatially coherent cities, coherent either in structure, or in sufficient support for finding their way around. The surroundings and networks between visitor icons are more important than the traditional shopping streets, which are preferred by the local recreational walkers. For tourist destinations, the economic revenue generated by pedestrian tourists is a stimulus for improving public space, as tourists will stay away from unattractive places. On the other hand, tourism stimulates commercialisation of public space and of supporting activities for walking such as drinking and resting. Tourism may also conflict with other pedestrian uses of public space.

Leisure is related to a state of mind ‘free from obligations’. Walking in an enjoyable setting helps us to relax, to free our mind. This is an important motivation for walking. This implies that improving the leisure qualities of pedestrian environments will stimulate people to walk more, and help them to feel more relaxed.

1. Introduction

Tourists are people who are “travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited” (UNWTO, World Tourism Organisation). From this definition, we derive two key issues which entail specific pedestrian requirements: the duration, and the ‘usual’ environment. If the travel and stay are for leisure, but in the usual environment, we draw the line between tourism and recreation. In the case of MICE (Meetings, Incentives, Conferences, Events) the travel and stay are not for leisure, but they are outside the usual environment and this is also treated as tourism. So, no matter what the purpose of the travel, tourist pedestrians are walking outside their usual environment. And, near home or away, recreational pedestrians are walking for the purpose of leisure. Thus, we further focus on two aspects: walking in an environment that is not the usual environment, and walking for leisure.
2. Away from the usual environment

Over the last decades, tourism has experienced continued growth and diversification to become one of the fastest growing economic sectors in the world. Today, the business volume of tourism equals or even surpasses that of oil exports, food products or automobiles. The extent of this growth is reflected, for example, in international travel. From 1950 to 2005, international tourism arrivals expanded at an annual rate of 6.5%, growing from 25 million to 806 million travellers. Although the evolution of tourism in the last few years has been irregular, the underlying structural trends have not significantly changed. Experience shows that in the short term, periods of faster growth (1995, 1996, 2000) alternate with periods of slow growth (2001 to 2003). It is generally expected that the current slowdown will be compensated in the medium to long term. UNWTO's *Tourism 2020 Vision* forecasts that international arrivals are expected to reach nearly 1.6 billion by the year 2020. Of these worldwide arrivals in 2020, 1.2 billion will be intraregional and 378 million will be long-haul travellers. The total in tourist arrivals by region shows that by 2020 the top three receiving regions will be Europe (717 million tourists), East Asia and the Pacific (397 million) and the Americas (282 million), followed by Africa, the Middle East and South Asia. This increase in travel implies that people will walk more and more in environments which are far away from their home.

![Conceptual model of the resources and constraints that affect tourists' spatial activity (Freytag, 2002).](image-url)
While away from the usual environment, different variables influence the spatial activity of the tourist. Walking, as all the other spatial activities, will be determined by combinations of spatial characteristics, society (at the origin and at the destination), and the individual’s characteristics. Figure 1 represents a conceptual model of the resources and constraints that affect tourists’ spatial activity. In order to understand what walking means for tourism and vice versa, we need to understand the tourist as well as the destination.

3. The walking tourist and public space

Tourism is characterized by visits to a number of immovable assets, such as monuments, scenic outlooks, landmarks, squares and streets. As such, it generates specific geographical patterns, which are determined by the relation between a mobile demand with specific time and money endowments and the location and spatial form of such assets. These patterns influence to a large extent the spatial structure of the tourist supply and the resulting spatial behaviour of visitors (Russo, 2008, p43.). Tourism produces a world of visitor icons: images which stick in the memory of the hurried traveller are easy to trace in the sometimes complicated fabric of city centres, and are visually appealing enough to drive a production chain based on the serial reproduction of that image on souvenirs, and all kinds of commercial products with local connection. As a consequence, tourists are more vulnerable and require hospitality in their destination because they are less familiar with the surroundings. They need spatially coherent cities, coherent either in structure, or in sufficient support for finding their way around. This signalisation should be user-friendly and understandable regardless of the language.

With the exception of specific routes with special historical, cultural or scenic value, pedestrian networks by themselves are generally not tourist attractions. They are part of the supportive facilities which transform a place of interest into a tourism destination. The improvement of public space for pedestrians may not attract more people in the way that primary tourist attractions do. The effect of such improvements is that visitors tend to spend more time walking around besides visiting tourist sites … and usually spend more money.

The routes and itineraries followed by visitors connecting these visitor icons depend on the local qualities as well as many individual characteristics: available time and money, adventure-seeking or risk-aversion … Destinations offering merely tangible heritage in individual locations will stimulate a visitor attitude of ‘gazing’. Heritage networks and routes, specifically when combined with intangible assets, will stimulate the ‘seeker’. For tourists, the surroundings and networks between visitor icons are more important than the traditional shopping streets, which are preferred by the local recreational walkers.

Sightseeing appears to be the main activity of tourists in cities. As a consequence, the quality of public space plays a particular role in their appreciation. A comparison between tourists, frequent visitors and inhabitants in the city of Ghent showed that areas that are less attractive to all pedestrians are virtually excluded from the tourist walking zone (Verbeke et al., 2008, p. 28). Also, the image and appreciation are strongly related to the activities undertaken. Tourists demonstrated a great affinity with the cultural icons of the city, while for recreationists the main shopping district and new shopping centre structured their routes. We conclude from this, that when people walk as tourists in a city, they are even more sensitive to the pedestrian quality of the public space and thus more demanding pedestrians.
4. Walking as part of the total tourism experience

Travelling consists of a chain of actions, which, together, determine the tourism experience (figure 2). If one link in the chain fails, the total tourism experience will be affected. When do tourists walk in this total experience? In most cases, walking is an essential part of the familiarisation upon arrival. Travels to cities are also likely to involve walking at the destination, for sightseeing and shopping, and as part of excursions to the surroundings. Therefore, walking is a critical part of the total tourism experience.

The walking experience depends very much on the circumstances, and thus, favourable conditions tend to shift. Intangible factors such as unexpected opportunities have a positive effect, while overcrowding may negatively affect the attractiveness. A cycle can develop, with increasing mass of tourist gazers replacing the genuine cultural exchange. In large cities, motivated travellers will look for other sites which they find more enriching and unique. For a city to keep attracting tourists, continuous redesign of their diverse resources, blending tradition and innovation, is a key to success.

If, in order to keep tourists interested in a city, there is a need for continuous improvements, thus these demanding pedestrians, in view of their economic importance, can provide strong motivations for cities to improve their public space. These improvements go beyond the improvements for pedestrians in their usual environments. The city should offer the tourist chances for unprepared, intervening opportunities which make their walking more exciting by allowing the discovery of unexpected assets. On the other hand, the city should help the tourist avoid unpleasant surprises, by taking care of safety, cleanliness, overcrowding, etc. These improvements will, in the end, benefit all pedestrians.

By not limiting these improvements to existing tourist attraction zones, but rather extending them by creating new attractive zones and networks between zones, cities can attract more tourists, and thus more tourism related economic activity. Thus, to keep tourists interested in a destination, the public space improvements should not be limited to the area near the current resources. Tourism requires a continuous search for new attraction zones and routes.
Because walking is part of a total tourism experience, there is a whole industry depending on its quality. This industry can help the authorities at the destination understand the tourist’s needs, and will also influence the travel and the walking of the tourist. Tourist guides can make a walking experience completely different from the uninformed walk through the same area. On the other hand, they may replace or diminish interaction with the locals. Tourists using technology such as gps, location based information services, story tellers, … will also have a different walking experience. Such technological support can stimulate walking in unfamiliar environments, and influence the walking experience. Tourism stimulates the introduction of new technology to support walking.

Tourism also has adverse effects for walking. A walking tourist in a city doesn’t generate tourism income unless stopping to consume or participating in a paid pedestrian activity such as a paid visit. Tourism thus stimulates commercialisation of public space and of activities (drink, rest …). The walking tourist is not always compatible with other uses of public space. Wandering visitors may be perceived negatively by local pedestrians, especially in cases of overcrowding by tourists. Similarly, a space filled with rushing people is not a good environment for recreational tourists.

5. Long distance walking (and routes)

As opposed to walking in urban environments, hiking is a special form of tourism and recreation, usually in beautiful natural environments. Generally, hikers prefer nature areas and scenic routes connecting points of interest. The management of hiking is increasingly well-organised through the design of specific routes or trails, guides and supporting facilities.

Aside from the dedicated facilities (the paths, guides …), the hikers also use the recreational assets of areas where other functions, such as nature preservation and agriculture, are dominant. An increase in the number of hikers may stimulate new economic activities and change the character of the area. Management of hiking needs to be part of destination management in order to steer development. This may require a limitation in the number of hikers allowed in an area, or restrictions and concentrations of economic activities.

While the action of an individual may not strongly affect the environment, the mass effect of a large number of hikers can degrade the environment or increase risks such as forest fires. Information and education of hikers are very important, not only on overall principles such as how to deal with human waste, but also on specific local vulnerability of the environment.

6. Leisure

The Latin translation of leisure is literally ‘to be free’. Leisure time is generally defined as time available to an individual when work, sleep and other basic needs have been met Leisure activities are without coercion, are freely chosen, self-rewarding, and intrinsically motivating (Neulinger, 1990). Leisure can also be thought of as a combined measure of time and attitude of mind to create periods of time when other obligations are at a minimum (Cooper et. al. 2005).

The need for leisure time has been recognised in most civilised societies for centuries, as is reflected in the ‘day for recreation, study, relaxation’ found in many religions. Since the 1960’s, employees increasingly have a legal right to vacation days. These earned vacation days and the number of vacation days people actually take differ by country (Expedia, 2009).
In our post modern western society, vacation participation is quite high; it is no longer the privilege of a happy few, and is accepted as a basic right of all. Today the fact that some people choose not to take a break has become a research topic (Sun-Young et al. 2009). Recreation is, and will remain, an important part of people’s lives, and part of this involves walking, in other words, walking with a state of mind free from obligations.

7. Walking for recreational purposes

People tend to have difficulty separating their state of mind during the trip from the trip purpose (Ory et al. 2005). The same walk may or may not be experienced as leisure because of the activities happening before or after the walk. Very often, the purpose of walking is to reach this state of mind, as we see in “Making walking count (J. Walker, 2009)”:  

- Why do people choose to walk?  
  - Objectives: exercise, being outdoors, enjoying environment, relaxation.  
  - Motives: Pleasure, convenience, meeting people

In the same analysis, the personal barriers mentioned (it takes too long, …) don’t count as much when dealing with recreation time which is, by definition, not filled with obligations. The environmental barriers, on the other hand, appear to be much the same for leisure and for functional walking.

This implies that the environment in which people walk for recreation should, on top of the overall pedestrian qualities, have the additional quality of helping people free their mind, i.e. be enjoyable, relaxing, etc. When these qualities are present, nice walking areas will start attracting people. The more unique these qualities, the further people will travel to go walking in those areas, and eventually, the walking area may become a tourist attraction.

When people free their mind, their walking becomes a different experience. That is noticeable when people walk towards their recreational destination with a state of mind which is not free; it is tied by the intention to arrive somewhere. Once the destination is reached, the state of mind changes, and the walking becomes more relaxed, certainly if the recreational activity at the destination is essentially walking: in a park, a shopping street, a square, …

For most people, leisure time is fragmented between periods filled with obligations. Therefore, spaces with the required qualities should be easily accessible from homes and locations with recreational facilities, to allow for leisure even for those who don’t have much free time. Ideally, all public space should have the qualities required for leisure. A first step in the right direction is to combine the qualities needed for efficient connections of activity centres (functional routes, the shortest connections), and qualities for recreation (the most scenic, relaxing route), as represented in figure 3.

PQN Final Report – Part B: Documentation
8. Concluding remarks

Tourism and recreation are both increasingly important in our society. Walking is part of the tourism experience, and thus, tourism destinations need to be pedestrian-friendly. On the other hand, walking may also be threatened by stronger economic actors in the tourism industry.

The need for recreation is a stimulus for walking in our Western society. Improving the leisure qualities of pedestrian environments will stimulate people to walk more, and help them to feel more relaxed. On the other hand, more (pedestrians) is not always better; some natural or cultural environments are very fragile.

The key is to find a balance between the pedestrian touristic and recreational activity and the resources and constraints of the environment, acknowledging the spatial characteristics, society and the individual characteristics.

![Figure 3 trying to combine the functional and the recreational routes](image)
References


Changing lifestyles

Emil Drápela
Transport Research Centre (CDV), Brno, Czech Republic
drapela@cdv.cz

‘Change is the law of life. And those who look only to the past or present are certain to miss the future.’
John F. Kennedy

Summary

The Chapter brings an overview on pedestrian issues in Eastern European countries. Particularly focused on Czech and Slovak conditions it describes economic and social processes which occurred in a shorter time than in Western Europe which lead to different conditions for pedestrian infrastructure improvement. The Chapter describes the complicated situation of pedestrian promoters which collides with increasing car-dependency and misapprehension from officials. However, there are also good examples and practices shown and opportunities for improvement outlined. Presented experience can be useful for other countries on a similar development level, not only for Eastern European countries.

1. Introduction

Due to the different historical development, there are different dynamics of economic and social processes in countries of the former Eastern Bloc which has an impact on pedestrian traffic and sustainable transport in general. After more than 40 years of a planned economic system, dramatic changes occurred in the economy as well as in the society which resulted in both changed transport behaviour of the population and in the attitude of towns and villages to pedestrian infrastructure. Those changes brought about new opportunities for promoting walking to make towns and cities more pedestrianized, but on the other hand one needs to realize the causes and origin of threats the sustainable transport in towns and cities is facing today.

2. Economic welfare and its impact on travel behaviour

The most important change out of all changes the post-communist countries of Central Europe went through is the economic change. Although the reforms crucial for the transition from the planned economy to market economy were implemented gradually and often only as late as the end of the 1990s after several years of stagnation (1990 – 1993), a rapid economic growth occurred, in comparison with the previous time period, triggering major changes in the lifestyle of former Eastern Bloc inhabitants. Although that growth was interrupted in different countries at different times (e.g. a small economic crisis in the Czech Republic in 1998 – 2000, see Kunc & Toušek 2000, or the current economic crisis), it is nevertheless the major forming factor of transport behaviour of the population. An economic growth brings about the increase in living standards which is focused on consumption, particularly due to a sharp increase in availability of a large number of consumer goods. In
terms of transport behaviour of the population, there has been a sharp growth in passenger car traffic since 1990.

In comparison with the previous times cars are much more easily available. Passenger cars are not a scarce commodity for which waiting lists were made as was the case of Skoda Favorit, Lada and Moskvitch cars in 1989. Since 1989 financial availability of passenger vehicles has increased dramatically, not only in terms of the variety of models and makes, but also in terms of the vehicle price and average wage ratio. While the average wage increased more than seven-fold from 1989 to CZK 23 430 (EUR 920) in 2008, the costs of acquiring a new vehicle increased about three-fold.

At the end of 1989, a Škoda Favorit from Mladá Boleslav car factory cost about CZK 84 600; its two generations later Fabia currently costs about CZK 229 900. The price of a litre of petrol has increased from CZK 8 in 1989 to CZK 28, and the price of a litre of diesel has increased from CZK 7.50 to CZK 26. The result is that while in 1989 there were 4.29 inhabitants per one passenger vehicle in Czechoslovakia, it is now 2.38 inhabitants per vehicle. The number of passenger vehicles in the Czech Republic nearly doubled in 1989 – 2009: from 2.4 million to 4.4 million. The demand corresponds with the supply; while in 1989 the only manufacturer of passenger vehicles, Škoda Mladá Boleslav, produced 404 000 vehicles, in 2008 the car manufacturers Škoda, TPCA (Toyota, Peugeot, Citroën) in Kolín, and Hyundai v Nošovice produced 947 000 vehicles in the Czech Republic. In 1989 no passenger vehicles were produced in Slovakia. In 2008, the car manufacturers VW in Bratislava, Kia in Žilina, a PSA Peugeot Citroën in Trnava produced 675 000 vehicles. In comparison with the production of passenger vehicles per 1000 inhabitants, Slovakia ranks first in the world (see Figure 1). The Czech Republic is not very far behind.

| 1  | Slovakia   | 106,291   | 11 | Hungary | 34,498   |
| 2  | Slovenia   | 96,488    | 12 | Sweden  | 33,117   |
| 3  | Japan      | 90,652    | 13 | United States | 28,249 |
| 4  | Czech Republic | 90,280 | 14 | United Kingdom | 26,763 |
| 5  | South Korea | 78,759    | 15 | Poland   | 24,958   |
| 6  | Germany    | 73,771    | 16 | Thailand | 21,987   |
| 7  | Belgium    | 67,367    | 17 | Mexico   | 20,374   |
| 8  | Canada     | 61,329    | 18 | Malaysia | 18,752   |
| 9  | Spain      | 55,292    | 19 | Austria  | 18,058   |
| 10 | France     | 39,478    | 20 | Italy    | 17,006   |

Figure 1  List of 20 countries with highest motor vehicle production per capita in 2008 [vehicles/1000 inhabitants] Source: OICA correspondents survey

Thanks to a much wider choice, any user can buy a model which would suit him/her the best. That is why users tend to have a closer relationship with the vehicle and they are not easily parted from it. The car, as well as designer clothes, fashionable dress accessories, mobile phones, or a preference for a music style, becomes a means of presentation in public, a part of one’s lifestyle. In a way the car becomes a part of one’s personality which is the reason why one gives it up only with reluctance. The car is believed to reflect the social status of its owner; only few businessmen can afford to come to an important appointment in a small economical car, even though it would be more suitable for heavy city traffic rather than a large limousine. To come by public transport is still considered, in the eyes of many people, nearly a faux pas.
Although there are very good public transport systems in the Czech Republic as well as in Slovakia, particularly in city and suburban areas, there is a phenomenon that after having bought a new car people use it excessively, more than they need to and more than is economical. It is common that even high school students, after becoming 18 years of age and obtaining a driving license, regularly drive a car to school, although they used public transport before. However, the time saved is often minimal, in terms of several minutes. The same applies for people travelling to work – sometimes because of a single negative experience with public transport, they chose a car for their most frequent journeys. This phenomenon may only be dealt with by the quality of public transport and pedestrian routes, because, if walking is constantly considered as “transport for the poor” and related to unpleasant experiences, it will never become an alternative for the majority and even the frequency of services or density of lines may not help to increase the popularity of walking.

The sharp increase in motorism together with the reception of the concept of sustainable development are both trends which are copied rapidly from the Western European environment. However, the reception of a new philosophy is a longer process, so although works dealing with the issue of sustainability and sustainable development started at the beginning of the 1990s, this conception was brought into awareness only gradually and it became generally accepted only in the new millennium. The major role was played by the professional community and environmental non-profit organizations, which worked together and, through complex educational activities, they put forward the issue of sustainability to the press and high school curricula together with other environmental issues.

After 2000, a range of initiatives arose at the local level with the aim of dealing with the overloading of city and town centres with vehicles. In the Czech Republic, they are e.g. the foundation Partnerství and the association Zdravá města. There are various programmes supported by regional authorities aiming to promote sustainable transport modes – they are e.g. 5 P for Prague, School for sustainable life, Greenways, etc. At the national level these projects are usually supported by green-focused parties, which are however only rarely involved in the government to a larger degree in Central Europe. This difficult position of green parties is caused by both the opinion promoted in communist times that the environment is not as important as the highest possible development, and by the global goals of green parties themselves that do not touch voters as much as some burning social or economic problems.

Although the economic growth that started in the 1990s could have brought about a lot of benefits to public transport as well as to pedestrians, funds were predominantly invested into the insufficient infrastructure, which was overloaded due to the increase of motorism. The issue of pedestrian traffic was largely neglected. Only after 2000 did the first attempts for a systematic approach to pedestrian traffic come up, although new ideas are only being implemented as late as today. The question is whether too much time was not wasted because within the last 20 years, modal split, determining the proportion of population using passenger vehicles, public transport, bicycle, or walking for their journey to work or school, has become more unfavourable. While in 1989 this indicator was more favourable for public transport in most Czech cities (Prague 60:40, Brno 66:34, Ostrava 50:50), in 2009, with some exceptions, the car traffic dominates (Ostrava 40:60, Prague 45:55, Brno 52:48). Although this indicator is influenced by local conditions (the large area of Ostrava, the large number of students in Brno), it clearly shows the negative trend which we are unfortunately unable to stop (see Figure 2).
B.3. The future of walking

Brno
Ostrava
Prague

Figure 2 Modal split in three biggest agglomerations in the Czech Republic – loss of public transport and walking between 1989 and 2009
Source: Unofficial data by public transport companies – ROPID, DPMB and DPO

3. Socio-demographic changes in society

As well as in the other European countries, the biggest demographic change in Central European countries is the ageing population. Growing population average age, higher number of retired citizens, and narrower age pyramid – all these are too real in developed countries, particularly in Central Europe. Apart from population ageing, the former Eastern Bloc countries struggled from the end of 1980s, and some countries are still struggling, with extremely low birth rate, when this demographic indicator showed some of the lowest values at the global level. While the lower birth rate in Western European countries is partly compensated by the higher birth rate of immigrants, the low immigration to Central European countries leads to the population decrease.

These two demographic trends then lead to faster ageing of the population, which needs to be dealt with. Not considering the impact of an ageing population on countries’ economies and focusing only on the issue of the transport behaviour of the population, we find out that the situation is not bad at all in terms of using sustainable transport modes and walking particularly. Today’s seniors were, for several decades, growing up in a society which was much less motorised than nowadays. Although many of them needed a car for their daily life and owned it, they used it much more reasonably and economically than today’s generation. It used to be more common to walk or use public transport for short everyday journeys (see modal split above). The current generation of seniors then form a great potential in terms of promotion of walking and regeneration of town and city centres.

To ensure that seniors accept their role in the issue of walking and public space, they need to find it attractive. The research performed within an international project SIZE in the Czech Republic (Schmeidler 2006) showed that the biggest problem which makes it difficult for seniors to be in a public space is the lack of public conveniences in towns and cities. Seniors mentioned some other serious reasons such as the lack of benches and spaces for sitting, poor safety, poor maintenance of pedestrian routes, and annoying car traffic. At sites where pedestrian infrastructure is well provided (e.g. in historical town centres) there are clearly more seniors on streets, even though their health condition, as their major limiting factor of movement, is statistically equal to that of seniors in other parts of a town or city. Today a range of seniors’ clubs are actively involved in creating public space and improving the quality of pedestrian routes, and it is expected that this trend will intensify. Thus seniors may form a major lobby group to fight for the rights of pedestrians.
However, the question is what happens when the generation which experienced the sharp growth of motorism in the 1990s and which is virtually dependent on cars, since they use them for nearly all of their journeys, will retire. Will these people stop using cars in everyday life, since they won’t be forced to use them, or have cars become so much a part of the people’s lifestyle that they won’t be willing to give them up? And will these people feel the need to go to town and city parks and streets for recreation, or due to the fact that they have only been doing it on few occasions, will they stay at home or drive somewhere by car? Therefore, the pedestrianization of seniors is still a big challenge for the future.

In contrast, a big threat for the future is the ongoing suburbanization and only low degree of re-urbanization. While the cities and city parts are depopulating (see Chapter 5), suburbs and outskirts are suffering from excessive development. Although cities and their neighbourhoods are trying to regulate the development, large built-up areas are being developed with minimum services in given localities. Their inhabitants are then forced to travel to other neighbourhoods to find basic services, thus increasing their dependency on cars. Non-conceptual development of such suburbs leads to a serious disturbance of city space structure, which is manifested by the increased need for mobility. For the future it will be necessary to adopt legal measures for providing a better guarantee of a balanced development of housing estates and thus reduce the need to travel for basic services.

4. Modern countryside – society of car dependents?

The discussion on the transport behaviour of a population and using walking as a transport mode should not only focus on towns and cities but needs to concentrate on rural areas, too. Although villages have, thanks to their lower size, somewhat different character, they have their centres, major and minor transport channels, and a differentiated functional space structure. Therefore, major principles in designing pedestrian routes can also be applied even in small villages. In addition, pedestrian traffic has a long tradition in rural areas; in contrast to city inhabitants, the inhabitants in rural areas were still able to walk to work daily up to 7 – 10 km in the first part of the 20th century. Unfortunately, the current situation is completely different.

Due to the collectivization of agriculture, which took place in the countries of the Eastern Bloc in the early 1950s, smaller lots were integrated into larger lots and walking became inconvenient for pedestrians. Walking became uncomfortable due to the fact that some roads and paths were discontinued and detours were too long, thus the travel time increased significantly. In contrast, the quality of public transport, which was massively supported, improved greatly. As a result, rural areas inhabitants were given an alternative which was relatively cheap, provided enough services and sufficient comfort within its means. The discontinued walking routes then were not missed excessively.

At the beginning of the 1990s a privatization of bus transport, which provided the majority of public transport services in rural areas, started and a drastic rationalization of the public transport system occurred based on the profitability of individual services, which resulted in the discontinuation of a large number of services and even lines. A large number of smaller villages were suddenly without a single public transport service; services connecting many other villages were often reduced to morning and afternoon services for people travelling to and from work or school. Many inhabitants of rural areas were facing a situation where they were unable to cover their daily journeys by public transport and thanks to better availability of new passenger vehicles they decided to use the latter option. However, after several years, authorities started to deal with the situation and began supporting public transport in regions, damage was done. The change from passenger vehicle back to public transport is not easy.
We may ask whether, after the restitution of agricultural lands into hands of their original owners, a re-fragmentation of integrated lots and restoration of the original paths and routes occurred. Unfortunately, in majority of cases the answer is no. Even though the land after restitution is owned by more owners, they are unwilling to work in agriculture as their ancestors did, so they sell or rent them to farmers, who usually farm on larger lots and the existence of integrated lots is beneficial for them. In contrast, at sites where the collective farms operated before and which are now closed down due to unfavourable conditions in agriculture, roads and paths are gradually overgrown by woody plants and becoming impenetrable. As a paradox, rural areas become much less favourable for pedestrians than a city full of built-up areas.

Another unfavourable factor is the lower number of jobs in rural areas in comparison with previous decades. Rural area inhabitants then need to travel longer to work, which is a factor contributing to passenger car traffic again. Furthermore, when inhabitants travel to regional centres or even further, they use the services (daily shopping, etc.) within their daily travelling off their place of residence. In the rural areas, the demand for services decreases, which brings about problems for people who otherwise need not travel.

Due to the higher need to travel, rural areas are slightly less favourable for their inhabitants than suburbs with homogeneous built-in areas from the point of view of pedestrian traffic. Walking may not satisfy all the needs of mobility and in combination with public transport the passenger car wins, which is an interesting phenomenon. Due to lower income, rural area inhabitants often behave more economically than town and city inhabitants. If there is a service they can use and thus save costs for transport, they often use it. However, public transport stops are further apart than in cities and suburbs, and people often need to walk to a stop for up to even 20 – 30 minutes. That is why they often use a car to get to a stop, even though they use public transport for the rest of the journey. Thus one of the domains of pedestrian traffic is again in many cases taken by the passenger vehicle.

Another unfavourable factor which affects transport behaviour of rural areas inhabitants is the fact that people who move to the country often accept the fact they would need to use a car for all their journeys. Being from towns and cities, they are used to a much better public transport service than is available in rural areas, as well as much lower travel distances and times. If they move to rural areas to make a living at their place of residence, the low number of services will most likely not satisfy their demands, and thus, they would use a car to a maximum degree. On the other hand people often move to rural areas to live in a healthier environment, which means that potentially they may be lobbying for a more pleasant life in rural areas and thus for better conditions for pedestrians be it only for recreation purposes.

Although it may seem that life in rural areas is not very beneficial for pedestrians, it is necessary to mention that rural area inhabitants are usually strongly fixed to their village, and they value social life and life on the streets in the village, which is impossible without good quality infrastructure for pedestrians. That is why villages with good management and sufficient funds for investments usually have a pedestrian infrastructure in good condition, at least within the built-up part of the village. Walking in the village has not only a transport function, but also a social function.
5. Towns and cities for living

One of the most burning problems of Czech cities today is the migration of young educated people to suburbs. The situation is generally caused by high prices of accommodation in city and town centres, but also by the unbalanced situation in the Czech real estate market. About 20% of flats – around 700 000 accommodation units (e.g. in Poland it is even 29% - 2.7 million accommodation units) are flats with regulated rents.

Although it is an unconstitutional regulation which harms the owners of flats - 50% of whom are private owners and not towns or the state - it is the remaining communist heritage with which the Czech market is coping only slowly. The cause is the reluctance of politicians who make sure not to lose their political preferences. Although politicians often defend the regulation of rents by social intentions and an effort to provide better living standards for economically weaker households, the real intentions are quite different. The flats with regulated rent are not occupied only by economically weaker people but by people from various social and economic groups, who also live in flats with much higher open-market rent. However, it is virtually impossible to obtain such flats thanks to the significant advantage of the regulated rent. To keep such flats, the existing inhabitants need to live in them, which often leads to absurd situations when a single, retired person lives in a spacious flat in the city centre, or a family, who rent other flats in the open market and live in a flat with regulated rent. Due to the unbalanced situation on the Czech market, there is a group of people who use flats bigger than they need or would be unable to afford under normal conditions.

Although the deregulation of rent has been in progress for several years, the difference between open-market and regulated rent is significant: for an average flat of 68 m² in 2008 in Prague the regulated rent of CZK 4 104 (EUR 161) was paid, in the North Bohemian town of Chomutov (50 000 inhabitants in an unattractive locality) it was CZK 1 195 (EUR 47). The average open-market rent in the same year was CZK 10 472 (EUR 411, in the centre often CZK 15 000 = EUR 588) in Prague and CZK 6 732 (EUR 264) in Chomutov. Obviously, another reason why the open-market rent is so high is the fact that one fifth of all flats are "blocked" by the regulated rent, due to which the supply of flats is artificially reduced. As well as the high open-market rents, the flat prices are high accordingly – particularly in large cities such as Prague, Brno, or Bratislava, where flat prices are at European levels while incomes are only one third or one fourth of that of West Europeans. The result is the above mentioned moving of young families out of towns and cities.

This negative demographic trend then creates a kind of a paradox: young people who used to use public transport and walk at the time they were studying in cities, in other words lived a nearly ideal sustainable life style, are confronted with the real world where they can only afford living in an old multi-storey house in the outskirts, or go to newly developed houses in the suburbs. After having moved, their travel times increase, which eventually leads to reconsideration of their values – time is money and many of them start using a passenger car for their everyday journeys. Then, the shift back to sustainable transport modes is very difficult.

As an example we use the city of Brno – it loses around 4 000 inhabitants a year, which is more than 1% of its total population, due to the migration of population out of the city to the adjacent Brno-venkov district. Between 1994 and 2007 then the city of Brno lost 23 432 inhabitants. Fortunately, this trend stopped, maybe thanks to the financial crisis, but the question is whether the trend will not be resumed after an economic revival. As of 1 January 2009 the average age was 41.8 years in Brno while 40.0 years in Brno-venkov.
Despite the flats with regulated rent, there is, of course, a large number of flats in city centres and adjacent neighbourhoods which are used under standard economic conditions. Like anywhere in the world the price of flats grows with shorter distance from the city centre. Only a wealthy person or a company searching for an office can afford a flat right in the city centre. However, wealthy people, out of all social groups, are the most dependent on passenger vehicles (see Drápela 2008), and a higher number of offices installed instead of original flats leads to the depopulation of city centres. Both trends then contribute to using non-sustainable transport modes and slow down the pedestrianization efforts.

The advantage of a large number of Central European towns and cities is their long historical tradition reflected in their well-preserved historical centres. These centres are natural localities for social life thanks to their aesthetic value and specific spatial layout unfavourable for cars. These places are natural localities for building pedestrian zones and other multi-function pedestrian and cyclist friendly areas. Especially the pedestrian zones in historical city centres help to portray the areas for pedestrians as areas for good quality recreation in towns and cities, while bringing significant economic benefits. In general, pedestrian areas are considered beneficial by the Central European public (see Drápela 2008), but on the other hand people require sufficient space for parking, which reduces the space for pedestrians. That concludes that the most important factor which may help promote the areas for pedestrians is the gradual change in behaviour of population towards sustainable transport modes.

Whether the change of preferences in transport behaviour will be reached through technical measures, political decisions, or activities of local associations, there will always be the most important task of providing the stakeholders with the pros and cons of individual measures and explaining why walking is important and desirable. Although the discussion on revitalising cities through pedestrian traffic has been going on for some time in West European countries, the issue is relatively new, in Eastern European countries and the public are only gradually aware of it. Therefore, it is necessary to focus on educating the involved state administration members as well as the wide public in this field, so that the issue will be approached professionally, conceptually, and from the long-term perspective.

6. Conclusion

The economic growth which began in the former countries of the Eastern Bloc in the early 1990s triggered fast changes in the life style of their inhabitants. In terms of the transport behaviour of the population, a massive motorisation of the society occurred within all social groups. The reaction to this trend was the reinforcement of the road infrastructure, which due to its high costs prevented investments in other transport modes including pedestrian traffic. Due to easier financial availability of passenger vehicles, this transport mode is today used even in cases where it would be more suitable to use public transport or walk. As a reaction, the formerly favourable proportion between the number of car users and the number of people using public transport is getting unfavourable for sustainable transport modes, and town and city centres become overloaded with cars. With a more than ten-year delay, new initiatives are arising with the understanding that this situation is unsustainable and the sustainable transport modes, particularly walking, need to be promoted.

In the social area there was a sheer drop in the birth rate in the 1990s, which has not been fully compensated until today and which intensified problems related to population ageing. However, an economic problem may not be a problem in terms of pedestrian traffic. Seniors are some of the most frequent users of pedestrian routes and thus the public street furniture needs to be adapted for their easier use. Taking into account specific needs of seniors they
may help to support the issue of public area layouts and even become some of the biggest promoters of pedestrian traffic in cities and towns.

Currently, a big issue of Central European cities is the deformed real estate market, which leads to a lack of available flats in city centres and their neighbourhoods for young people. Young people then move to outskirts and suburbs, and have to commute longer distances. Thus, there is the threat in the form of changing a transport mode from public transport to passenger vehicle, which is the worst possible scenario in terms of sustainable transport. In contrast, the inner parts of cities are populated by wealthier inhabitants, who can afford expensive accommodation in city and town centres. However, these people prefer to travel by passenger cars, so the inner cities are overloaded with passenger cars.

The situation for pedestrians in rural areas is not easy either. While walking used to be the most common transport mode due to collectivisation of agriculture and its impact on land use, many formerly-used pedestrian routes have disappeared and the countryside has become much less pedestrian-friendly. Due to over-designed conditions of public transport in the communist era, and as a result of the reduction of public transport at the beginning of the 1990s, people have since stopped walking in rural areas and have started using passenger cars for the majority of their journeys. Walking is still the major transport mode in villages, since village inhabitants value the social contact walking provides.

7. Recommendations

In terms of transport, the major problem of Central European post-communist countries seems to be the insufficient awareness of the issue among authorities as well as the wider public. Although the situation is slowly improving, also thanks to the PQN project, there is still a way to go. Experts on walking and pedestrian traffic mention making education and the awareness of the public the first priorities. It is necessary to organize seminars with the involvement of state administration members and organize events supporting pedestrians at the appropriate sites. Civil and transport engineers need to be informed of technical solutions that contribute to better quality of pedestrian routes. And last but not least, the issues of pedestrian traffic need to be integrated in binding documents of land development, so that this area will be approached efficiently and conceptually.

The well-known saying of reaching a goal step by step, slowly but surely is not just a phrase but also an instruction of how to proceed in order to really reach the required goals. A good example is the conference the foundation Partnerství organized with the help of CDV in Brno in 2008, where foreign experts had papers on the issues of pedestrian traffic and where involved city councillors were invited. They obtained better insight into the issue and agreed that the new development plan will also include the general plan of pedestrian routes, the necessary tool for a conceptual approach towards pedestrian traffic in the city. Now, a year later, the general plan has been commented on and really adopted, which is why pedestrians in Brno have a better position for negotiating, since they can appeal to the binding document which applies to all development activities in the city of Brno. The development of a pedestrian network in the city is on-track. Thanks to other accompanying events, which took place during production of the general plan, officials from other towns and cities who showed an interest in preparing a similar document for their towns and cities learned about the project.
References


Data:
Transport Research Centre (CDV): <http://www.cdv.cz/english/>
Changing urban structure and its impact on walking conditions

Karel Schmeidler
Transport Research Centre (CDV),
Dpt. of Transport and Urban Sociology, Brno, Czech Republic
karel.schmeidler@cdv.cz

‘There are two kinds of pedestrians: the quick and the dead’

Summary

Walking was the dominant mode of transportation in our cities for centuries. For this reason, the needs of pedestrians, besides other important things like defence, played a central role in the design of the shape and size of our cities. Amenities were located within walking distance and public spaces as well as all pedestrian routes were designed to enable easy waking and thus fostered social life in the public realm.

The industrial revolution changed this situation dramatically. Mass production and the advent of motorised transportation changed the size and shape of the European city. The rapid development of this new means of transportation and its related infrastructure fuelled urban growth at an unprecedented rate and dramatically changed the relationship between the various loci of activity within the quickly evolving city structure. The dramatic increase in private automobile ownership encouraged urban sprawl, leading to the need to commute and ultimately making city inhabitants and visitors dependent upon motorised transportation. In Central and Eastern Europe, these changes were much faster: within two decades, they reached the same level of motorisation and developed the same automobile-related problems as their counterparts in Western Europe. Due to decreased accommodation time and the lack of proper infrastructure, the problems seem even worse. Central and Eastern European state and regional transportation authorities have not learned much from the latest environment-oriented developments in Western Europe.

Ongoing problems, such as climate change, growing congestion and environmental pollution, call for both short- and long-term solutions which can sustain mobility and provide healthy environments for urban inhabitants. The realization of liveable and sustainable cities is connected with many changes such as a shift from private motorised transportation to public and non-motorised forms of transportation, the coordinated interaction of land usage and transportation planning, transit-oriented development and user-friendly design, and delicate renovation of European cities for their inhabitants and visitors.

1. Introduction

The enormous increase in urban vehicle traffic has meant more mobility for its inhabitants as well as greater residential distribution. At the same time, however, it has created a series of conflicting situations in people’s every day lives, both disrupting their living environment and disturbing the functional purpose of towns as self-contained entities. (See Fig. 1)
The poor environmental conditions for urban inhabitants – especially pedestrians – and the currently unsatisfactory condition of public spaces in many European cities are caused by a number of things. One is the inability of historic, traditionally structured urban design to meet the requirements of modern high-volume vehicle traffic. The physical urban environment was originally designed for less demanding modes of transportation – particularly for walking. Additional problems are caused by the uneven distribution of urban activities, which is currently increasing at an unacceptable pace.\(^1\) This distribution is strongly affected by a strict segregation of living functions as a consequence of the widespread adoption of the pre-war Charter of Athens. Traffic origins and destinations have spread over a large area, resulting in both an enormous increase in urban motorised traffic as well as a corresponding decline in walking (see Fig. 2). The current situation is also due to the application of predominantly technically-oriented solutions to problems that have shown no respect for delicate urban planning and environmental requirements.

2. Impact of transport on the development of settlements and urban areas

Since the 1960s, statistical data drawn from European cities and urban areas reveal a new phenomenon: the largest cities have stopped growing and signs of de-concentration have emerged. Settlement geographers have devised a “general theory of modern urban

\(^1\) According to our last estimate, the average distance to services in some Czech cities has become five times longer since WWII. (Schmeidler K.: Key role of Urban Planning in Creation of Green Transport Network. 2008)
development*. According to this theory⁰, which serves as a general model, certain cycles are always repeated in all examples of urban development, first of all appearing in innovative centres, and then extending to the rest of the world. This concept is in compliance with the general theory specifying that urban process be determined by economic progress, industrialization and transport infrastructure development, which crucially impact the optimum location of populations and their activities. The determination of optimum location is more or less independent of the political system or the social and economic establishment. These only constitute side and modifying factors. The basic urbanization model is also slightly modified by the historic and national features of different regions.

Figure 2  Diagram illustrating the rapid increase of motorised transportation and the decline in walking during the last 160 years. Source: Jan Perner Faculty of Transportation, University of Pardubice, Czech Republic adopted by RNDr. Jan Tecl, CDV, Brno, Czech Republic, 2010

3. Spatial development based on proximity of places of activities and fast-developing urban transport

New technologies and patterns of development helped to evolve cities into something more than mere centres of religion and government. Settlement structure changed significantly: apart from the development of a capital or several major elements, a number of industrial cities were formed. In the cities themselves, residential areas were developed within walking distance of factories and businesses due to underdeveloped public transportation. Further along, urban growth was achieved as a result of the development of public transportation, the building of railways, the construction of water supply and sewage networks, and the establishment of basic forms of residential development and city formation. A typical developmental form or pattern was that of the radial-concentric city - a star-shaped urban

⁰ This theory is based on the assumption that the development of cities consists of successive phases of urban development (for example Van den Berg, L./Drewett, R./Klaassen, L.H./Rossi, A./Vijverberg, C.H.T., 1982).
conglomeration from which the roads extend in the shape of arms. Industrial urban development culminated in the establishment of coherent urbanized areas. The term *conurbation* is sometimes used in this context.3

The urban population in Europe has exceeded eighty percent, which means that Europe as a whole has reached the “ceiling of urban development.” No further development is awaited in this direction.

In the early stages of pre-industrial and industrial urban development, walking was common. At that time, people were used to walking upwards of 15 kilometres to reach their workplace. Businesses, homes and places for cultural and religious activities and leisure were built mostly in proximity to one another, as other modes of transportation were prohibitively expensive for the majority of the population.

In Central Europe and Eastern Europe in particular, this process bears some special features that differ from the general model when compared to Western Europe. Changes have often been delayed by several decades, and the transformation of settlement structure was not so aggressive due to various political factors and the slow pace of modernization in agricultural production. The term “suburban development” is used to describe situations in former socialist countries. The level of infrastructure is not in balance with the amount of urban population, so newcomers usually settle in housing estates on the outskirts of the cities.

Walking was widely supported by the government in communist-ruled states such as Czechoslovakia as the general health of the population was seen as an important prerequisite for maintaining a “healthy nation” capable of performing military service. Walking competitions such as the “100 Kilometre Walk” for adults and the “50 Kilometre Walk” for youths were organised on a massive scale, and extensive footpath networks were built. From that time on, Czechoslovakia and the Czech Republic have had some of the best footpath networks in the world. Walking was seen as an important leisure activity for the masses with an impact on the health of the nation and its cultural and demographic development.

4. Suburban development and car dependency increase

Suburban development accompanies a new phase of the socio-economic revolution in which the focus of economic activity is shifted from industrial production to services, which place high demands on knowledge, skills, mobility, and the supply of information. The secondary changes in settlement structure patterns are thus induced by changes in the economy and society. This process is influenced by the attenuation of heavy industry and the departure of workers to the tertiary sector and light industry production on assembly lines requiring single-floor industrial halls with spacious areas.4

---

3 Even though rapidly growing conurbations and related travel demand may seem to be the greatest problem today, this is debatable.

4 Administrative and research parks with pilot operations have thereby followed industrial parks to suburban locations which allows them to take advantage of newer, faster roads, cheaper construction plots and ample parking space, and avoidance of the drawbacks of the city, such as congestions, poor quality of environment, crime, growing poverty in central areas, and other negative phenomena. Administrative parks represent cheap locations for companies that are not yet established and need cheap start-up conditions. Due to intensity of investment and international business development, new, mainly warehouse and commercial constructions, proliferate “in the green belt” in clusters of urban conglomeration. Shopping centres have grown almost spontaneously in suburban locations. Outward-bound roads and motorways are surrounded by tens of kilometres of sheet-metal auto dealerships, assembly halls, warehouses and shops. Cities are thereby chaotically extended at the
We are witnessing a slowing in the traditionally rapid pace of urban development typical of the first post-war period. Extensive urban development is slowing, and increasing numbers of the population are leaving large cities. On the other hand, suburban living environments and infrastructure is improving (e.g. shops and facilities have followed people). As a result, the number of job opportunities has grown and the income of residents (mostly middle-age, qualified, “white-collar”) has increased. Tertiary aspects affecting society in most advanced countries have led to changes in housing requirements. People who have the opportunity to obtain private means of transportation tend to change their place of residence accordingly. The increased use of the private automobile has enabled an increasing portion of the population to move quickly between home and workplace. Leaving the city is becoming more characteristic of a wealthier population for whom satellite or ‘villa towns’, adjacent to suburban areas or neighbouring villages, are built in proximity to larger cities. The term “social exclusiveness” is starting to be used for new locations experiencing an increased concentration of socially similar groups. Newcomers usually do not integrate with the original local population because of their considerable socio-economic differences. “Walled communities” emerge with their own exclusive environment.

The uncontrolled growth of cities further reinforces unhealthy social trends regarding both power consumption and preservation of recreational and agricultural areas. Weekend trips to the country taken by members of the urban population begin to resemble the people movement that pollute the environment with exhaust – provided, that is, that the strained transportation system is capable of handling the increase in traffic. Under these circumstances, we need to view countryside utilization and the structure of population distribution more pragmatically as this highlights transport requirements. Many cities in Central and Eastern Europe suffer from the fact that private automobiles have encroached upon areas traditionally utilized exclusively by pedestrians. Cars have taken over roads, pavements, squares and embankments. The reason for this has been the desire to be able to reach any point by car, which is often equated with a feeling of freedom. The following formula applies here: the denser the population within the city, the lower the requirements for transportation and the greater space for free countryside, wild nature and walking.

Suburban development as the growth of the city at its outskirts is closely linked to the process of spatial specialization and segregation. It connotes both the concentration of certain branches of industry in certain parts of the city as well as the concentration of certain segments of the population into specific zones of the urban structure. Specialization and segregation, for example, lead to an increase in distances between homes and places of work, education, shopping, leisure or recreation. Since these processes are usually not coordinated and occur independently of the existing transportation system, distances are constantly increasing, favouring the use of private transportation to the disadvantage of public transportation and/or walking. This is a gradual process in which public transport looses its validity and, subsequently, ceases. As a result, numerous segments of the population - children, teenagers, mothers with children and senior citizens in particular - have reduced access to transport and their spatial mobility decreases.

---

expense of traditionally agriculturally utilized countryside; which again intensifies negative ecological pressure on recreational areas and agricultural production.
5. Urban De-development and decline of walking in cities

The growing importance of the tertiary (i.e. services) sector is a factor, which contributes to the migration of segments of the population to smaller settlements. As a consequence, service-providing companies also migrate to places with cheaper land and labour costs. This trend has helped fuel the development of means of long-distance communication and transmission of information (e.g. faxes, mobile telephones, computer networks, the Internet, telecommunication satellites, etc.). With the assistance of telecommunication technology, business and financial operations can be conducted from distant locations. Due to traffic congestion, inner-city areas are becoming less accessible to their inhabitants. This is accompanied by the unregulated growth of cities, transportation systems crises and the increased use of private automobiles due to the construction of commercial shopping centres and residential zones, and sometimes, due to non-coordinated residential building (see Figure 1). Essential changes in the settlement structure patterns of European countries have affected the style and quality of life of their inhabitants. This is particularly applicable to children, senior citizens, the handicapped and women, who are generally of ill health, less wealthy, more vulnerable and less mobile.

Since the introduction of motorized transportation, pedestrians have received a decreasing mount of attention. With the steadily increasing number of vehicles and roads for them to travel upon, the position of pedestrians is steadily worsening. The disadvantaged position of pedestrians is also underlined by their significantly greater vulnerability in road traffic as compared to other road users (see Fig. 3).

*Fatalities according to category of the road users in the Czech Republic (1980 - 2000)*

![Figure 3](image)

Figure 3 The diagram illustrates the increase of fatalities after societal changes in 1989 and stable portion of vulnerable road users - pedestrians killed in the same time. Source: RNDr. Jan Tecl, CDV, Brno, 2010
To deal with the issues of traffic and parking, costly transportation and parking facilities have been built. Prerequisite conditions for enabling an intensification of transportation are also being established. As a consequence, we are witnessing a massive mobilization of people and a corresponding devastation of the environment, even beyond the borders of the directly affected regions. Historic city centres are often damaged and the internal environment is deteriorating. It is paradoxical that the construction of freeways which connect developing suburban areas with the city centre are contributing to the destruction of the city centre itself by enhancing the dispersion of the functions crucial to the health of urban centres. This means that, if the concentration of retail, light industrial production, recreational, cultural and educational functions, which are vital for urban livelihood, decrease, city centres will be destroyed. The road system supports the spatial distribution of the population, but also enables the shift of vital activities to new, more distant centres.

Another problem has been created by the ill-considered and non-regulated growth of administrative buildings in European city centres. Where new buildings could not be built, old buildings were used. It was a misfortune for the people who lived there, senior citizens in particular. Adjacent historic squares then automatically became parking places. We recognize such derelict places according to their negative effect upon pedestrians (see Fig. 4). The buildings are so close to the roads that there is no space left for sidewalks. The great distances, which must be traversed to reach some of these places, make doing so impossible by any means other than an automobile. We are all familiar with similar situations, e.g. with the shopping centres located on the outskirts of our cities. Very little has been gained by this approach, and the tendency of inhabitants to leave cities is increasing as the cities become uninhabitable because all the negative aspects of civilization are often concentrated there. This leads to an increased desire in people to spend as little free time in cities as possible—and they have more and more free time. The urban population thus leaves the city, first to places in their immediate vicinity. Due to the extending suburban areas, however, they are forced to drive longer distances in their hopes of coming into contact with an intact natural environment, and to spend time in the untouched countryside. The increased use of private cars damages the environment dramatically, and this phenomenon has also begun to encroach upon previously unaffected areas. The term “urban sprawl” is used to describe this tendency. Shopping and cultural centres are also built outside the city in the proximity of motorways because of the availability of mass customer parking space. And this again aggravates transportation conditions (congestions, combustion gases and dustiness, incidents, traffic accidents etc.) near large cities.

![Figure 4 Negative prognosis – artist’s view of the future state of inner city areas if no countermeasures are applied](image.png)
In European cities, senior citizens comprise a relatively large portion of inner-city inhabitants. Due to uncontrolled urban development and inappropriate urban planning policies, they have lost access to the facilities they need to live (e.g. shopping, sport, leisure and medical care). Cities are endangered by the flight of investment from central portions, the so-called “urban sprawl”, growing social segregation arising from different income levels and social statuses, deteriorating living environments in cities, loss of agricultural land and original rural environments, and erosion of architectural monuments. The image of city centres is aggravating; the press refers to the “crisis of cities”, “decline”, “pathology”, “alienation” and decreasing investments in these areas. Changed accessibility and deteriorated environmental quality (noise, air pollution, traffic vibration, etc.) limits walking and strolling in public spaces and may induce greater migration. People of a higher economic status move out of these locations because they feel they are becoming less habitable. The population migrates to less urbanized places which have, however, easy accessibility. Then it is followed by services that contribute to the rapid development of new settlements, often at the expense of the quality of the environment. Increased mobility becomes a feature of the era. It has, however, some drawbacks. In reality, attachment to a certain place is not restricting: it enables, for example, intensification of human relationships. Every year, several hundred thousand inhabitants leave our large cities.

The settlement network thus becomes more balanced. The city centre population is quickly declining; the same applies to the number of job opportunities. As a result, we experience the transformation of formerly overpopulated inner parts and transition zones. Some parts of the city lose their function or become inhabited by groups of lower status. These groups occupy the emptied areas, and, consequently, social problems begin to occur. In the last twenty years, the power of globalisation has given rise to a strong social polarization which is mainly visible in urban residential areas: they experience considerable social fragmentation and segregation. Sooner or later there will be no other option but to rehabilitate the living areas that have become redundant. In some places, this process is so far advanced that some functionless areas have been grassed over or restored.

6. Urban re-development and an attempt for restoration of pedestrian friendly cities

Negative tendencies related to walking prevail in many prognoses. Private car ownership in Central and Eastern Europe is still growing and the building of transport infrastructure and huge transit-related constructions follows. Social life is more atomised, city inhabitants still prefer privacy at home than intensive social life in streets. Leisure activities tend to be more passive, less physical or movement-demanding activities. The physical condition of urbanites is deteriorating, because, having sedentary professions, jobs and hobbies, they move much less. Especially alarming is the quickly deteriorating physical condition of young people, as paediatricians and military physicians confirm. Low physical activity and unhealthy lifestyles result in a high occurrence of obesity with related illnesses in young age that sharply reduce the abilities to move and walk. This is a vicious circle. These circumstances have been highlighted only recently, when suitable solutions have been discovered on a worldwide scale, particularly with regard to healthy lifestyles, support of walking making especially the roads in towns safer and friendlier to pedestrians.

Regular walking is from the point of view of positive influence on human body not possible to substitute. (Children’ physician MUDr. Pavel Stejskal, Czech republic) According his statement, the average distance made by Czech people by walking is about one or two kilometres every day. It is much less than previous generation did. About 80 years ago people when walking to work made about 15 kilometres distance. (Lidove Noviny, Praha, July 2010)
To stop such dangerous tendencies, many strategies have been designed. Their aim is to make cities liveable places again, to restructure important activities, to use sustainable modes of transportation and to reverse the negative trends that endangered living conditions. Urban development has become a tool for making cities more attractive for living - business, investment, social life, sport and tourism, and for increasing real estate values in the highly competitive global market. This is demonstrated by a renewal of the formal image of the cities, for example by restoring liveable public spaces, walkable street systems, urban avenues, embankments and squares for municipal celebrations, building new, and restoring old parks, or building shopping streets and green areas. This brings some segments of the population back to the cities (i.e. yuppies – young urban professionals). To make this trend sustainable, central urban areas are renovated to become attractive for light industry, business, tourism and walking. In newly restored parts of the inner-city, more solvent groups move to renovated houses, thus pushing lower classes out of that housing market (gentrification). Administration offices and businesses often replace habitable units. It is not always necessary to tear down older buildings: it is often possible to find new uses for old warehouses, breweries or assembly halls. These buildings, abandoned in the past by the middle class and businesses, are offered by some prudent and enterprising city administrations to attract companies and international capital to re-invest in these locations. The effort aims at the restoration of existing city centres with coherent urban regions, the reconfiguration of large, rapidly growing city suburbs to communities with positive neighbouring relationships, and maintaining the natural environment and architectural legacy of past generations. At the beginning of this 21st century, some European cities are experiencing a kind of renaissance. City centres – often considered bad and, therefore, ignored and abandoned – have, after repeated waves of suburban development, become centres of life once again. Renewed cities have restricted private automobile traffic, supported and developed public means of transportation as well as walking, cycling, intermodal and ecological transportation and have given preference to pedestrian comfort over cars (see Fig. 5). This was justified by the fact that between 10 and 20% of all trips by car are to destinations within walking distance. Thus, there is considerable opportunity for reducing ecologically disadvantageous automobile use and replacing it by walking.

6 Urban re-development is closely linked to the world economy: some cities have evolved into special, positive situations and have become nodes of increased information flow and capital (which gave rise to the term “nodal urban development”). The new expansion of some city centres may be caused by the decline of traditional industries and the increased role of information processing and services. Another factor is the response of large cities to suburban de-development: restoring central parts, adopting legislative measures slowing suburban de-development, decreasing volume of transport (micro-electrotechnics) and more even distribution of job opportunities in the city structure. An effort to make the cities attractive again is quite apparent; it is being done with the application of permanently sustainable development procedures; prevention and restriction of social exclusiveness; cooperation among managers, and new approaches to cooperation and mediation.

7 This process is described in different ways: revitalization; gentrification; renewal - where the transformation is of the negative, “dead”, “poor” and “non-productive” environment into something positive: “live”, is emphasized; and the quality of the environment and the commercial price of land is increased in a costly manner; which results in situations where city centres adopt the apparent features of sub-urban administrative parks.

8 Urban developers, developers, local self-governments as well as citizens take great interest in the new urban development and its approaches; this particularly applies to the regions in which damage was incurred by an uncoordinated city growth. Many consider the new urban development as the approach which will bring benefit to all involved; the city growth is channelled into such a physical form that suits the current city structure, does not increase requirements for the use of private cars, is less demanding in terms of finances for services, and saves land and natural resources.
An important benefit of this is the reduction of urban traffic accidents involving pedestrians. Pedestrians are particularly vulnerable users of the urban landscape. The liveability of public spaces is directly linked to traffic calming, the pedestrianisation and other measures protecting pedestrians. Some countries, such as the United Kingdom, the Netherlands or Switzerland, have made substantial achievements in this direction (see Fig. 6).
We can observe increased investments and economic movement, which, in turn, instigate an increase in job opportunities in pedestrianised city centres. We are witnesses to the expansion of cultural facilities, the retail innovation, the growth of urban tourism and the consequent new image of some cities or their parts.\(^9\) The demand for habitation has risen, which may result in increased population numbers. An important objective is to maintain a certain share of residential habitation in city centres to prevent the commuter phenomena that renders the city dead at night. Permanent inhabitants provide the feeling of occupancy, community, warmness and life, which is mainly felt at night when the streets are enhanced by the light shed from windows.

Environmental awareness is increasing and there is a protective approach to city values.\(^10\) In this way, cities re-attract people who either wish to live and work in social atmospheres or who want to visit them for tourism or cultural reasons.

The generalized findings of individual cases of successful urban re-development show that the ideal would be to have a compact city with the sustainable multimodal mobility that protects the living environment. Such a city would not only be able to stop the drain of people from it, but might even increase the population. This would have positive consequences on social diversity, protection of land resources, concentration and optimisation of urban services, possibilities for the building of intra-city optimised transportation routes, and the construction of cycling routes and pedestrian zones.\(^11\) The use of high-quality public urban transport would increase. It has been proven that intra-city passenger transport by private automobile can be limited by the introduction of effective multimodal transport and can decrease the volume of private transport by up to 20-30\%. Walking is, of course, advantageous from an ecological point of view: it produces no exhausts and little noise. Compact urban structures and mobility that protects the environment will also result in higher economic effectiveness by making the city centres more attractive and lowering the cost of infrastructure and public transportation routes.

\(^9\) New “urban” or “street” sports have been re-invented (for example street ball, skateboarding, jogging, roller skating), social, conference and entertainment complexes have been built.

\(^10\) It is also important that public opinion has changed. The attitude toward cities is changing. The image of city centres is improving: they are being mentioned in a number of articles in the press and other mass media. Despite the burden of the heritage of the past, economic, social and cultural forces have arisen and united in the name of traditional city values and urban life. Scattered residential developments that promote ‘sub-urban sprawl’ are being criticized, and the disadvantages of suburban lifestyles are being discussed. This controversy includes the boredom and stereotypical aspects of suburban areas, as well as their negative impact on children and adolescents. There is often a saturated demand for habitation in suburban areas and upon their commercial facilities. On the other hand, new job opportunities in urban locations have increased the purchasing power of urban populations. Demographic characteristics are changing and new types of family structures and ways of living are arising. More qualified and wealthier populations need diversity and stimulation; they search for the “spirit of community” and the “identity of place”.

\(^11\) Every year, Europeans spend over 500 billion Euros for transportation. Losses caused by delays are estimated at 150 billion Euros a year. New solutions are therefore sought which would enable the reduction of the high incident rate, traffic congestion and air pollution. The only solution for the future will probably be a more consistent, more flexible and more effective traffic management using intelligent traffic systems.
7. Changes that affect walking in cities

The initial demographic assumptions are critical: Czech demographic changes in the last decade have led transport planners, architects, urban planners and politicians to reconsider the concept that current city space is adequate for the changing conditions. Some user-groups continue to increase, which impacts the architectural creativity of residential spaces. One such group is the elderly.12

This will, of course, affect the needs of inhabitants insofar as they are related to urban space and its conditions for walkability. Many older people make their journeys by walking. European policy regarding the elderly aims at maintaining their mobility. This is a central element of their integration in society. Senior citizens want to stay autonomous and independent as far as possible. Without the possibility of maintaining mobility, senior citizens cannot lead independent lives, which can lead to many other problems, such as isolation and deteriorating health. However, pedestrian casualty rates are much higher among people over 60 compared with younger adults, and fatalities of people aged 75 and over account for a quarter of all pedestrian fatalities (see Fig. 7). Although walking and cycling are recommended to older people as the best way to keep fit and healthy, the safety and security conditions are often difficult for older persons.

Results of our research confirm our statement that walking is the most important mode of transportation.13 Many investigations have pointed out the subjective view of elderly road users, focussing on the importance of social relations and social behaviour in public areas. There are plenty of suggestions and ideas from older people concerning the improvement of public spaces, streets, walking and cycling paths and their connections to other means of transportation.

12 The Czech family has undergone a major transformation recently. In many respects, we have been adopting models that have asserted themselves in Western Europe, but there are also important differences. Remarkable changes can be traced in regard to the size and stability of the nuclear family: the typical household consisting of two parents with children has been gradually replaced in the Czech Republic by so-called "singles," whose number has increased considerably in Western Europe recently, or by single parents with one or more children, or by unmarried couples. The model of the cliché 1950s nuclear family, with the father as the family provider and the mother taking care of the children, no longer represents the prevailing family model. Instead, there are an increasing number of single-parent families, which are mostly female-dominated. There are also an increasing number of childless couples and families with two working parents. There are many families with adult children staying at home due to an inability to find separate living quarters, and/or pay for them. There are an increasing number of formerly rare solutions, such as rural families with grandparents who move to the city and create city-situated nuclear families.

8. Technical and technological change that affects commuting

One’s way of life, including mobility, commuting and travel behaviour, may also be affected by changes in the realm of techniques and technologies, work and lifestyles, etc. In relation to changes in the method of work and the overall intensification of work with regard to scientific and technological progress, the current situation will probably undergo a profound transformation, which will also manifest itself in the modification of needs. The share of actions, processes, and professions that are characterised by higher intellectual content, qualification demands and lengthy skills preparation will increase together with the demand for concentration, responsibility and creative initiative. In some categories, the number of hours devoted to work activities will decrease, while in others, the length of working time will increase. The available extra time will be used by certain types of employees for shortening their working hours, and this will result in an increased demand for leisure activities carried out at home or in the neighbourhood. This will increase the importance of local public spaces in close proximity to homes and the activities taking place there, such as walking and sojourning. Additionally, these changes will manifest themselves in increased mental stress, as well as hyper-stimulation leading to stress, as a result of certain work tasks required of the more qualified segments of the population, especially among those holding executive positions. One of the risk factors of any market economy, well-known to industrial psychologists and psychiatrists, is the enormous amount of nervous stress among businessmen and professional staff which can, in turn, lead to family instability. This will also negatively affect our environment. This trend towards increasingly excessive demands will bring with it an increase in the need for compensation. The hard-working individual will need

---

14 The working hours are assumed to shorten by two to four hours a week, for example many European countries have adopted the model of 36-hour workweek because of economical troubles.
to be protected from work-generated stress and informational over-saturation. This is why the importance of certain functions of the walkable neighbourhood, such as providing the individual and the family with needed privacy, enabling spontaneous and selective communication, physical and mental regeneration and relaxation after as well as preparation before work, and various sorts of creative activity, will increase. Walking, in any of its various forms, is, from the point of view of the positive impact on human health, practically irreplaceable.

Computerisation and home work and its affect on commuting
The other mega-trend is characterised by the progress of computerisation and data transfer in its various forms, with the Internet boom, so often mentioned in mass media, being only one of multiple aspects. The various branches of telecommunications, data collection and processing, the soaring development of chips, hardware and software together with the Internet are the most quickly developing areas of business. This advance establishes itself much more quickly in the areas of lifestyles and quality of life than do demographic changes.\textsuperscript{15} The current progress of communication technologies facilitates telecommuting in a number of different professions. The world of work is transforming: it is no longer necessary to personally visit mid-town offices. Public space becomes vague and less perceptible, having been integrated with computer networks, modems, mobile phones, videophones and facsimile transmitters, all of which are sometimes collectively referred to as hyperspace by IT experts. In future, the scope will widen, especially in the developed countries.\textsuperscript{16} Work activities, especially those with high demand for education and professional training, are being relocated to more pleasant locations, which offer cheaper construction options and seemingly unlimited space. The change in the nature of relationships in the work arena caused by the new technologies will substantially affect the spatial separation of what we have called "place of work" and "residential space". The soaring development of computer technology that has created the demand for construction of "information highways" indicates that "home work" on a computer connected to a computer network might eliminate many negative phenomena of modern civilisation. Hundreds of thousands of people would no longer need to commute to work, jam roads and streets, consume fuel and pollute the environment. The transportation of people along roads and streets would no longer be needed, as it would be replaced with the transportation of information along wires or even wireless satellite connections. And information, as is well known, can do without petrol, a demand for car space, train space or aircraft space. And on top of that, it moves at the speed of light – which can never be said about public transportation. Certainly, many people will also welcome the fact that they would no longer need to live near their firm, in an overcrowded city agglomeration or an ugly housing estate in a polluted environment. They can settle virtually anywhere they like. The huge concrete dormitories will be replaced with countryseats scattered in greenery. Together with this, the day of the abandoned family model might return, where all family members live and work together, where parents can be close to their children and spend time with them while the children can see their parents working, and, thus, passively prepare themselves for their

\textsuperscript{15} If in 1969 only four computers with Internet address were registered in the whole world, a decade later there were about a hundred, in 1989 their number had increased to 100,000, and currently there are over 60 million computers of this type.

\textsuperscript{16} According to Professor Katharine Rosenberry, who is seated at San Diego University in California, and has been examining the legal aspects of settlement: up to 80% of all Americans, especially those with higher education, will work from home, connected by information and communication networks, as early as 2014. Even the conclusions of the study carried out by Essex University Professor Richard Scase suggests that professional staff will spend about half of their working hours at home; and the number of part-time workers will increase, together with term employment and private, self-employed, sub-contractors. Even today, Urban Development Professor Sakkie Badenhorst, of South African University of Pretoria, has noticed a substantial increase in the amount of home office work and other trade tasks performed in private residential buildings, allowed by a connection to computer networks.
future work career. This might, in effect, considerably lower the divorce rate, juvenile
delinquency, drug addiction and a number of other nightmares of the contemporary world. It
is the opinion of experts that the computer network and Internet are still in the cradle, only
being used in about 20% of potential applications. The remaining 80% is still available for
domestic engagement, which is also likely to increase the demand for ergonomics of the
domestic work environment.

Electronics and computers will change our lifestyles with regard not only to the options for
working at home, but also to those of studying at home, or Pic-Tel, so-called e-learning. The
educational level of the population will increase, and it will be subjected to continuous,
lifelong learning. ICT network connections in the home are the ideal means. On the eve of
the Internet age, over 200 million people all over the world are online in some form or other.
The number of documents placed in the "world wide web" increases by roughly one million
every day. In 2002, over eight billion documents were already part of the global computer
network; today, that number has increased exponentially. The home and the closed
neighbourhood will, thus, once again become a place for spending meaningful leisure time,
 enjoying culture, furthering one’s education and indulging in recreation including all forms of
walking.

9. Social exclusiveness - differentiation of lifestyles

In the 1990’s, segregation of population took place rather quickly. First, walled communities
emerged. At the same time, a strong differentiation began to take place in terms of the
requirements of individual groups of households regarding the quality of living (e.g. flat size,
layout, social environment, environmental quality, etc.). It is realistic to assume that this
pressure will continue to increase due to the shift of some households to higher income
brackets and the increasing distance between the individual income groups. This increase in
family income is expected to be dedicated to flat acquisition and improvement. Change in the
demand and needs distribution will reflect the changes in the social and professional
structure of the population. Certain forms and qualities in residential development will be
preferred.17 People in top income categories have become the pioneers of suburban
migration, i.e., moving to suburban areas. Even today, a significant feature of residential
suburbs is that they have been developed in the more ecologically favourable surroundings
of big cities. Also important is the fact that suburbs are principally built and settled by so-
called yuppies - young urban professionals, i.e. young, educated, upwardly mobile and
wealthy people who can afford a certain exclusivity of living. The structure of the suburban
population is nearly homogenous. A dwelling with a large garden set in a natural landscape
with access to nature yet maintaining a permanent link to the city and possessing the
characteristic attributes of individualism and material wealth, such as a private pool, ideally
with counter-stream a winter garden, a double garage for luxury cars, etc., will not be without
effect on the lifestyle of its occupants. Social exclusiveness, however, may mean that the
dwelling will only be used as a dormitory, as the workload of these people is enormous.
Another effect might be the development of tension between this prospering minority and the
less prosperous majority of the population.

Route changes and prolongation – shift in housing habits

Because of the prevalence of low density, single-family houses, neighbourhoods are
unsuitable for public transport. Low densities make public transport inefficient and

17 Despite the expected revaluation increase to ‘economic rent’ (that has been continuously
postponed), there is a significantly higher demand for a greater number of larger rooms, greater
storage capacity, and design issues in the flat, as well as, the quality of the wider residential
environment (privacy, aesthetic quality, social surroundings, etc.).
unbearably expensive. This means that families living there will be dependent upon private car usage. Or, where more enlightened design is applied; an increase in walking will be encouraged in combination with other modes of transportation in the future.

Blocks of flats, as an alternative to detached family houses, are often rejected as ideal space for family life. One’s own house, or a “family house”, remains the ideal for the family. Various international surveys, including some of our own efforts, in which respondents from different social groups and income levels took part confirm the preference for a family house with a limited number of floors. A family house is preferred by more than a half of the population – regardless of the age, region and size of the place of residence. Even elderly people prefer a single-storey house at the outskirts of the city with good connection to the city centre. The survey clearly shows a preference for owning a home: nearly 8 out of every 10 respondents wished to own their flats. The surveyed group preferred family houses to flats. Communal flats were shown little preference. No one preferred social flats, i.e. cheap flats with low rent. Similar data has been obtained in neighbouring Austria.18

10. Conclusion

Experience with traffic control and planning the development of towns has demonstrated that supporting walking as a green mode of transportation and ensuring harmony between traffic and town infrastructure presents one of the most serious problems of contemporary communal policy. This problem involves two levels of treatment. On the social level, it is a question of the social, economic and cultural problems in the processes of town planning; these processes can be controlled; restructuring, remodelling and sometimes growth of towns can be orchestrated. Furthermore, it is a question of value orientation of the society in its approach to economic development, to the protection and creation of sustainable living environments, and to the development of sustainable modes of transportation. At the level of operational and developmental control of the city, it is a question of selecting the optimum sustainable multimodal transportation system, of ensuring pedestrian and motorist safety, and of removing or minimising the negative influences of traffic on the urban environment by support of non-motorised modes of transportation. This is especially possible with regard to ensuring harmony between the city structure and the traffic network including pedestrian pathways, and to maintaining a balance between organized operational exploitation and the determination and development of an acceptable level of urban growth in a given area.

The basic requirement for a purposeful planning process is the understanding of the multi-layered mechanism of urban transport, pedestrian needs and their effects on the urban structure and environment. Over the last few decades, basic research has gained a better understanding of the regularities and cause/effect relationships regarding mobility, urban development and transportation. Of particular interest are the complex, dynamic, and time lag-determined connections between sustainable traffic, land-use, urban planning and their effect upon the environment.

---

18 As reported by Hermann Reinning, of the planning office of the Government of the Lower Austria: own family house was preferred by 73% of the population of the federative region; while 17% preferred to own a flat in a block of flats; and only 10% wanted a rented flat in a house.
11. Recommendations - How to create a pedestrian friendly city

Issues related to Urban Planning and Design:

City for Pedestrians - General principles
- To provide for pedestrian access to, and clear routes across, all parts of the city
- To establish comfortable routes, both from the point of view of technical parameters and with regard to the user-friendliness of the proposed solutions
- To give preference to single level crossings inside the city with application of modern safety and calming elements. Even though single level crossings reduce automobile traffic fluency, they provide pedestrians with the needed user comfort and safety if designed correctly
- Multilevel crossings should be designed to minimise loss drops and provide facilities for persons with reduced mobility and/or orientation

System Approach
System design of pedestrian routes
- To provide footpath connections from all city quarters to the city centre
- To provide footpath connections between the individual residential areas and other urban areas
- To provide footpath connections to rest and recreational facilities in the city outskirts
- To provide footpath connections to the surrounding municipalities

Safety
Conditions for safe pedestrian movement
- To apply modern elements of traffic calming, such as raised pedestrian crossings, slow-down islands, elements for the reduction of passage speed, etc.; Traffic professionals should make long-term efforts at putting elements intended to calm traffic and increase traffic safety into practice.
- Pedestrian crossings should be located at convenient spots in pedestrian routes.
- To provide protected pedestrian crossings along school and healthcare institution access routes
- To prefer separate of foot- and cycling paths over dual-purpose paths

Technical Standard
Conditions of technical standard of pedestrian routes
- To provide for conditions for the use of public foot areas pursuant to Decree no. 369/2001 Coll., of the Ministry for Regional Development on general technical requirements for the use of buildings by persons with restricted mobility and orientation. The condition of wheelchair access is one of the basic requirements for public spaces. Some important areas in the city centres still await implementation of this requirement.
- To provide for conditions for the use of public buildings pursuant to Decree no. 139/2001 Coll., of the Ministry for Regional Development on general technical requirements for the use of buildings by persons with restricted mobility and orientation
- To provide for conditions for the use of city transport stops pursuant to Decree no. 139/2001 Coll., of the Ministry for Regional Development on general technical requirements for the use of buildings by persons with restricted mobility and orientation; to resolve shortening and improvement of transfer routes in the changing nodes
- By preventive and consistent actions to create conditions for quality of foot traffic along pavements and other public areas not to be negatively affected by objects forming obstacles to pedestrian movement. In addition to moveable obstacles, there are fixed objects, often permanently placed on the pavement, in the form of pillars, switchboard and fuse boxes and other technical equipment
Pleasant Feel
Usability and aesthetic quality of pedestrian areas

- To support the development of foot traffic by placing emphasis on the aesthetic quality of foot paths
- To support the development of foot traffic by the equipping of footpaths, foot areas, squares and parks with suitable street content. Conveniently placed, aesthetically pleasing and functional benches represent the most frequently used street contents
- To support the development of foot traffic by equipping of footpaths and areas with greenery, especially that which provides shade. The shade of trees planted along footpaths creates a pleasant environment, which invites people to walk.
- To develop the residential function of the current urban space and parks by intense maintenance and/or reconstruction of the urban areas with the aim of increasing their usability value for short-term recreation. The development of the residential function of public areas not only enlivens the urban environment but also affects an increase in the intensity of foot traffic

12. References

Act no 50/1976 Coll. on Urban Planning And Building Rules (Civil Act), Prague, Czech Republic, Ministry of Environment and Planning, Prague, as amended.

Urban Planning and Building Code, No.: 183/2006, Came into Power January 1st 2007

Decree no 369/2001 Coll. of the Ministry for Regional Development on general technical requirements for use of buildings by persons with restricted mobility and orientation, Prague, Czech Republic.


OECD (2001). Ageing and Transport - Mobility and safety issues, Paris, France


B.3. The future of walking

Drawing by Manuel João Ramos, Lisbon, Portugal

PQN Final Report – Part B: Documentation
From the past for the future: visions and interventions

Lucia Martincigh
Department of Design and Architectural Studies
University of Roma Tre, Italy
martinci@uniroma3.it

“To begin with I should say that I am a visual person. I experience with my eyes…”
Fritz Lang, “Metropolis”, 1926

Summary

This text will try to show that, by referring to visions elaborated in the past and by analysing the urban environment through its history and stratifications, it is possible to collect inputs that are useful for devising a vision for future settlements and urban spaces, where pedestrians can perform walking and all other related activities in a satisfactory way, and for proposing consequent appropriate interventions. This approach, supported by a philosophical thesis, is based on the recurrence of visions and of interventions to realize such visions, and on the observation of the persistence, notwithstanding times and places, of some characteristic aspects defined as “invariants”. A ride through some meaningful historical periods, pointing out several interesting, and still valid, features of the urban structure that concern, directly or indirectly, pedestrians, deepens and illustrates the issue. From the consideration of each period stems a list of main inputs to be used for the design of a future city at pedestrian size. The closing recommendations consider some interventions that are consequent to such inputs.

1. Introduction

The quality of the pedestrian realm depends on a complex interlacing of spatial, functional, social and cultural aspects. The process for designing such urban texture, if based on a user oriented approach, requires then a double slant: on the one hand, the study of pedestrians’ requirements, needs and demands and, on the other hand, the consideration of the suggestions given by the environment itself. This approach is aimed at making demand and supply compatible and, at the same time, ensuring environmental sustainability.

In particular the quality of the spaces where pedestrians spend their everyday life is tightly related to the possibilities, they really have, of easy and comfortable mobility, of exchange and of relationship; the agreeableness of such spaces is an added value not to be undervalued.

The devising of an appropriate pedestrian realm can receive inputs from the analysis of the urban environment through its history and stratifications, resulting from visions and experiences (i.e. realized visions) made in the past. Walking is indeed an integral part of the European cultural tradition, urban spaces were shaped above all according to this aim, and so they allowed for social interaction, as buildings have been designed taking care of dwellers’ requirements regarding the use both of the indoor spaces and of the surrounding outdoor ones.
2. Visions from the past for visions of the future

According to the above stated for devising a vision about future settlements and urban spaces where pedestrians can perform walking and all the other related activities in a satisfactory way, it seems right to refer to the visions elaborated in the past. This approach is supported by a philosophical thesis. Giambattista Vico theorized that the progress of things is made of "corsi e ricorsi storici" (historical courses and recurrences) \(^1\). In the case under discussion, the recurrence is meant not only as a regression, in a negative sense, but rather as a revival of visions and interventions that are still significant. Then, perhaps, the visions that are shaped at present for the walking environment of the future can be based on past positions and solutions, possibly updating them to greater or newer exigencies.

Some hints from experiences of visions that were already made in the past by persons with different cultural backgrounds and interests could be very useful and may still be appropriate. Architects measured themselves with "ideal cities", above all from an enlightened social perspective, or gave directions on how urban spaces should be designed to be agreeable to people using them, indirectly giving visions on how the cities should be. Artists made paintings and drawings that depicted urban spaces and their uses in every day life or on special occasions: feasts, events, that convey to us their ideas of street life; writers described in their books urban spaces, allowing our imagination to "see" who used them and in which conditions; film directors interpreted and presented to the public urban spaces of the past, of the present and of the future.

The recurrence of visions, and of interventions to realize such visions, can be proved by some specific cases. I deal here with two of them that seem to me emblematic. The wish for a city with safe and comfortable spaces devoted to pedestrians is made evident by the use, in Roman times Pompei (I), of stony "bollards" for enclosing the forum, and then again much later, in the second half of XIX century, by the use of high bollards for defining safer corridors, in a shared-space square in front of the opera theatre in Milano (I), and lastly today, thanks to the revival of some interest for pedestrians, by the use of retractable bollards to create a pedestrian area, with a car controlled access, in The Hague (NL).

Evidence of the vision of a city where pedestrians can always walk at the same level is seen again in the remains of Roman times Pompei (I), where the forerunner of a raised crossing still exists (today it could be called a Berlin cushion). To facilitate pedestrian mobility by using a path that is level with the sidewalk is something from the remote past, but in many present-day cities, despite raised crossings, as a well known traffic calming measure, still remains a vision.

---

\(^1\) Giambattista Vico (Naples, I, 1668–1744) is an Italian philosopher, historian and jurist. His conception of a new science, the science of history, to which are necessary the contributions of philosophy and philology, is discussed in a series of books: "Principi di scienza nuova d’intorno alla comune natura delle nazioni (1725, 1733 and 1744). His thesis contributed to the subsequent development of historicism and had many authoritative followers in the XIX and XX century, in particular, in Italy, Benedetto Croce.
3. The invariants

The concept of urbs arose in answer to religious, political, commercial and social demands of public common places, apt to house people’s activities and to fulfil their needs and desires; in our European towns, the urban structure and the stratification of buildings and styles, that today can still be observed, prove the various “answers” that have been given throughout the centuries to people’s changing expectations.

Visiting such towns and reading their historical, urban and sociological analytical descriptions by various authors, it is possible to gather that they were the result of a common vision: towns structured and organized for people moving on foot and built to their size, using “rules” that resulted in harmonious urban environments.

Some of the aspects characterizing this common vision can be said to be “invariant”, notwithstanding times and places. They have indeed persisted, for historical, social, economical and technological reasons, till the modern age and the “car invasion”; for this reason I mention them here, once and for all, as important features that contributed to making the pedestrian city a success, before starting to point out some more peculiar visions, and possible invariants within, that can be ascribed to different ages.

Some of these factors are general, and basic, such as the dimension of the settlement, that makes it “walkable”, and the presence of a mix of uses, both in quarters and in streets, that makes them lively and worth strolling in; some are more particular and give an added value to the environment in which people live and walk; they are described briefly below.

The facades of the buildings were shaped congruously to their role of interface between public and private realms: benches, porches and lobbies, that marked them at street level, canopies, eaves and tents, at the upper level, allowed indeed rest and meeting activities and provided protection from sun and rain. Courtyards, widenings and squares, owing to the surprise of natural elements as water from fountains and green from espaliers, pergolas and trees, acting also as comfort regulators, favoured neighbourhood relationships and collective activities and characterized paths by different and stimulating views and perspectives. Streets and open spaces, in continuity with the indoor ones at ground floor, formed places for social and commercial exchanges. **2** This urban layout was appropriate to host both everyday life and special events, for which many people could gather at the same time; for the latter special equipment or decorations were organized, such as the watering of Piazza Navona, in Rome, on the occasion of carriage races or naval battles, the ephemeral settings on the occasion of religious processions or civil parades, of weddings or visits of the nobles etc.

In the old towns, architects designed the “standing out” buildings, the rest of the urban texture was usually built by craftsmen with the participation, often, of mere citizens; the slow evolution of the building process and techniques made indeed possible the diffuse knowledge and culture of good construction, that in turn enabled the building and renovation of the habitat, maintaining its “homey” character.

---

2 This last paragraph is translated from: Martincigh, L. (1999), Gli spazi intermedi nelle zone residenziali: qualità urbana e mobilità sostenibile, in: Atti del Convegno Internazionale: “Quale architettura per la residenza del terzo millennio”, Università degli studi di Napoli Federico II - Dipartimento di Ingegneria Edile, Napoli, 8-9 ottobre 1999, LUCIANO EDITORE, Napoli (IT).
4. A ride through history

With time different lifestyles characterized urban spaces and shaped them; some are still conformable and are already, or could be, revived. Going quickly through some meaningful historical periods, it is possible to point out several interesting aspects, more or less peculiar, pertaining to various visions of the urban structure, that concern, directly or indirectly, pedestrians.

This quick analysis of visions and interventions from the past has two aims: the first concerns the elaboration of visions for a future urban structure suitable to pedestrians too; the second concerns the individuation of solutions that make a good walking urban environment. These are listed, at the end of each sub-section, as “Inputs” for drafting recommendations or guidelines to be used for congruent design and construction.

In the analysis of these “visions”, the physical environment is considered at different levels: district (structure, activities and services), street (morphology, dimensional relationships), detail (materials, components, equipment) and particular attention is paid to the interventions chosen to realize them.

4.1. Antique Rome: lively streets and the forum as city core

Vitruvio, the Roman theorist of architecture and town planning, in the first book of De Architectura, describes a model city and in particular points out the directions the streets and lanes should have, as to the cardinal points, to be salubrious. This underlines the importance they had in the urban layout; they were indeed the stage where most of city life went on.

This urban model is the one used in many cities in ancient times, inside and sometimes also outside the Roman Empire. Straight and wide streets (width of 7 m and more), with a certain representative character, marked the main axes of the city and were flanked by narrow lanes (usually less than 5 m wide), for a better protection from sun in summer and wind in winter, where everyday petty activities were usually performed.

Rome, the heart of the Empire, is a town where streets are bustling with life, congested by pedestrian traffic from dawn to sunset. Only few litters, propelled by human power, and horses are present, no carts or wagons. These are allowed to enter the city only at night, for bringing in all the supplies, or during the day only for special occasions. The different culture of the time has to be underlined: riding in a coach inside the city was considered bad manners, in fact even important people went on foot or, at the most, on a mule or on a palanquin.

Streets were so crowded because at that time most everyday activities, such as toilet, eating, working, amusements etc., were not performed at home. Therefore people walked in the streets to go to the common lavatories, to the barbers or to the public baths for their body care; to the cafeterias and restaurants for having their daily meals; to the forum for collecting news, for their public and social life; to the amphitheatre and theatre for games and plays; to the temples etc. Homes were mostly just for sleeping. To this traffic have to be added the errands made by the servants of the richest families, the only ones who could perform these activities at home.

The pedestrian traffic occurs on a street network consisting of quite narrow lanes leading to wider streets, opening out suddenly on smaller or larger squares or green spaces; interesting devices facilitate walking and outdoor life: dados along the buildings, raised crossings, tents against the sun etc.
The main characteristic of the city though is the sequence of the forums, built by several emperors; these are special vast outdoor spaces, surrounded by buildings hosting various functions, where all the citizen flows converge. Such buildings, designed as important architectural structures, together with other decorative elements, shaped the environment of the forum that, borne with a representative and political function, in fact favoured public urban life and constituted the core of the city.

**Inputs**

- The orientation and dimension of the streets, defined for providing comfort and wellbeing to dwellers.
- A continuous path at sidewalk level, made possible by the use of raised crossings.
- The succession of public spaces of different size and character, dotted with a multitude of services and activities.
- The concept of *forum*: a sequence of refined outdoor spaces and public functions, exclusively dedicated to pedestrians.

### 4.2. Medieval cities: streets at man’s size and the three powers structure

In the Middle Ages master builders were practical men, acting directly on the spot, so it is not easy to find many urban models. The towns though can be said to have given, at least in part, concrete body to some visions, the visions of their dwellers, since they were designed and built together with ordinary people, as already mentioned.

The “organic” design of the town moves from need to need, from occasion to occasion, through several adjustments, merges practical needs with aesthetical exigencies and finally produces a complex unity.

The medieval city was characterized by three powers: political, religious and mercantile. Each one of them had a place outdoors that represented it: three squares, usually adjacent, characterized in different way, where citizens gathered for related activities. The first was used for meeting and debating, for communicating, ruling and executing sentences, and featured usually the city hall, taking different names depending on the type of government. The second was used for meeting and attending theatrical performances (religious or moral tales) or religious events such as feasts, processions etc., and featured the church or cathedral, usually elevated on a flight of steps. The third was used for meeting and for transacting business, and featured an open market usually flanked by a loggia and sometimes by a guildhall. All the narrow, winding, and often climbing streets led to these squares that were the pulsing hearth of the city. These open spaces had an irregular shape due to the exigencies of the surrounding buildings or to topographic characteristics.

The streets too were characterized by many activities, which took place outdoors or expanded into the outdoor space; their design is full of elements, as the jutting out of the first floor to create protected lanes, the shrines set in the walls at the corners of the streets, the door and window frames, the presence of gurgling fountains and wells as meeting points, the different vistas suddenly opening through the building fronts or due to the sudden change of directions or to the widening, with different shape, of the lanes; all these features make the route at “pedestrian size”. The curve line characterizes the medieval town, since the slow curve is the natural path of the pedestrian; narrow lanes with sharp bends and “cul de sac” form the labyrinth in which pedestrians move easily to reach public buildings, facing safely the open spaces; the street shape restrains the strength of the wind and, thanks also to the large eaves, protects pedestrians from rain or sun.
Some carts and wagons entered the towns from the countryside and some horses moved around, but for the most part it was pedestrians who walked and sojourned in the streets.

Many personal activities are not performed any more in common, outside the house, as in Roman times (personal hygiene becomes anyway less important), but a mix of activities remain in the streets, thus maintaining their strong social role.

**Inputs**

- The street pattern that, continually changing perspectives, offers glimpses and surprises; that, with the slow curve, accompanies the movement of who walks; that, with its characteristics and proportions, offers comfort from adverse weather conditions.
- The different character and sequence of the squares, that constitute the core of the town.
- The un-designed but stratified form of the urban spaces, reflecting the flowing of people’s life (as later theorized by Sitte).

### 4.3. Renaissance: the ideal cities

In the fifteenth century the figure of the architect gained importance, artists were esteemed and surveying and drawing techniques improved; these were some of the premises for which ideal cities appear in paintings and in architects’ writings and plans. While in the XIV° century the accent was on the people as well as on the buildings (paintings show indeed an environment full of urban life with various activities going on, pedestrians and riders in the streets, people strolling and meeting), in the ideal cities of the Renaissance the accent is on buildings and spaces, both being luminous and airy, well proportioned and varied.

The main elements of town design are the straight street, the continuous roofline, the round arch and the rhythmic repetition of the facade features, all symbols of clearness, openness and simplicity. This new order, although formal, remained vital since the new layouts were combined with, and highlighted by, the existing building heritage, and the dimensions, such as width and length of the streets, never led to monotony.

For example, in Italy: the beautiful narrow and straight street formed by the two facades of the Uffizi, in Florence, could be monotonous, with the convergence of their horizontal lines and the repetition of some motives, if it did not open onto the tower of the old Signoria Palace; the view and the architectural value of Piazza dell’Annunziata, in Florence, could have been ruined if the streets had been coaxial and the buildings had not been built on a pedestal; the “Strada Nuova” in Genoa, is less than 200 m long and less than 6 m wide (Mumford, 1967).

The Renaissance puts the human being at the centre of the universe and thence the research for the good design of buildings, as well as of urban spaces, based on rhythm and proportions, focuses on the study of man. The humanist architects devised an alternative spatial setting to the medieval city’s spontaneous development, applying mathematical and cosmic principles to the city layout. Their ideal cities could have streets as man’s arteries and the core as his head, if they referred to the microcosm, or a central “piazza” as the sun and radial streets as its rays, if they referred to the macrosom. The first fully planned ideal city, Sforzinda, appears in the “Trattato dell’Architettura” (Treaty of Architecture) by Filarete. A built example, still standing, is Palmanova, in the north of Italy, where the streets alternate to smaller and larger squares, the space is at human scale and the whole layout is based on the effect of unity.  

---

3 Strada Nuova means New Street.

4 The design of such ideal city is attributed to an Italian theorist: Vincenzo Scamozzi, who published “L’Idea dell’Architettura Universale” (The idea of the universal architecture) in 1615. It is strongly
For the ideal city, Alberti in his *De re aedificatoria* (1485) underlines the importance of the location, layout and arrangement of roads and squares, to be decided depending on use, importance and convenience.

Serlio, in *The five books of architecture* (1537-1545), depicts three street scenes using geometric perspective and interpreting Vitruvio’s description. The scenes, pictured for dramas to be played, represent the visions of the different types of streets that should characterize the town, depending on its various functions and parts. The tragic scene: a scene with public buildings in classical style; the comic scene: a residential street, with porticos and shops in gothic style; the satiric scene: a path through woods with simple huts.

The three styles represent three different types of town life: the official life, the private life, the natural life and define the street environment depending on its function and aim.

It has to be mentioned that the decrease in private activities performed outside the house continues, and will continue also in the following historical periods, but other activities spring up, so the streets remain always very lively and maintain their social role.

In the urban space, there are many features that connect private and public realms: courtyards, glimpsed through the entrance doors, benches at the base of the buildings, protecting eaves at the top, porticos along streets and squares etc. The street furniture was not the least important contribution of the renaissance tradition. Stone and brick paving, stone stairs, fountains and sculptures enrich streets and squares, and refined details characterize the facades. The vertical movement of the fountain jets and of the flights of stairs added vital spatiality to the pure functionality.

In the sixteenth century, the most famous vision of a city based on walking is the plan for Rome of Pope Sixtus V. The city is organized as a big processional route that guides people by long vistas and landmarks: the great obelisks, that would have later been the generating principle of great meeting points: many of Rome’s wonderful squares. It is the first re-planning of a city made for pedestrians, even if for a special type of pedestrian: the religious pilgrims.

It is interesting to mention that some of the best layouts for pedestrians in present-day Rome have been again realized on the occasion of the 2000 Jubilee. It can be said then that a tradition continues.

**Inputs**
- The new urban layout, that dialogues with the existing one and makes use of its features.
- The design of the street environment, that depends on its function, aim and location.
- The layout of routes and the orientation, based on vistas and landmarks; the décor of the spaces.
- The rhythm and proportion of buildings and urban spaces, devised at human scale; the concept of unity; the continuity between private and public realm.
- The social role of the street.

Influenced by the writings of Vitruvio and Alberti. The quest of the perfect form was based on the effect of “unity”. This very complex concept, long debated and sometimes questioned, is supported by perception and environmental psychology studies; it seems indeed that it is very important when dealing with the walking environment.
4.4. Baroque cities: the avenue and the square, the scene as real life

The radial city and the stellar layout assume a new meaning and a great importance in the baroque period, symbolizing the concentration of public powers in a centralizing institution or in a despotic prince. The scale of the seventeenth-century city is no longer based on pedestrians; the greater dimensions are matched by the strict composition rules and uniformity of legal norms; the result is an exasperated monotony.

The long and large avenues and the open spaces, seemingly endless, are the most important features of the baroque layout. They are the right spaces for the imposing military parades, drills and manoeuvres. In such a linear evolution of the city, wheeled vehicles played a decisive part; its geometric design made easy the traffic flow that assumed a new importance with the fifteenth-century innovations and technical progress.

Speed enters as a parameter in the design of the city. At walking pace, the eye requires variety, at a higher speed the repetition of the visible units is necessary; only in this way, passing very, very fast in front the single element, is it possible to catch it and to reassemble it. What persons staying put or walking consider monotonous becomes a necessary counterweight for those riding swift horses. The men on horseback and the carriages become the owners of the urban space. It is the beginning of a different way of planning the city, a way that will detach more and more from the organic approach and from the pedestrian scale.

The only solution that is worth mentioning, one which avoids the monotonous, agoraphobic aspect of the avenue, is the creation of wooded lanes; the Champs Élysées have indeed a grace that is completely lacking in all the Haussmann boulevards in Paris.

The baroque clichés based on the demolition of buildings and on the destruction of the social texture continue till the twentieth-century, making room for regular blocks, open squares or rondo, with avenues and streets radiating from them and interlacing old mazes and new networks.

Only when the baroque design faced great difficulties, such as topographic unevenness or intensively built zones, did it reach architectural results of very high value, as for example S. Peter's colonnade (before the opening of Via della Conciliazione), the Spanish steps or the Pantheon square in Rome, where there is still a contrasting tension between the medieval closed space and the open baroque one, between the vertical upward movement and the horizontal lines, and where is present a stratification of historical periods that makes the place highly significant; the Pantheon square still represents the human scale, the public "living room", the perfect meeting place, well equipped to be used most of the year.

Also when dealing with economical restrictions, or with events and amusements, the baroque urban design reached exceptional results; architects, who were also stage designers, used scenography techniques for improving facades and materials and for realizing ephemeral interventions in the outdoor spaces. In this case the new spatial perspective was the technique at the basis of the city design.

Other positive contributions, from the point of view of the topic at hand, are constituted by the opening to the public of the royal parks, that have remained the green lungs of the cities, and by the creation of amusement parks.

A typical baroque invention is the residential square; it gathers a group of dwellings, of similar social conditions, without shops or public buildings; its function is to offer a quiet space for the dwellers and parking space for their carriages (a limited number and often in movement). In the eighteenth-century, such residential squares became small parks.
**Inputs**
- The use of scenographic and ephemeral interventions for the setting of events and feasts.
- The squares of Rome and the residential squares.
- The Parisian wooded boulevards and the various types of parks.

**4.5. The industrial city and the commercial city**

The industrial revolution in its paleotechnical period created the most horrible urban environment that had ever been seen; therefore no suggestions can come from this historical period. The commercial mentality attributed too much importance to the transport modes that promised maximum profit; this caused the urban planner to neglect the importance of pedestrians, of the many other urban functions and of the flexibility of mass flows that only walking can guarantee. From the late eighteenth up to the nineteenth century no inputs can be found to be taken into account for a positive revival.

**4.6. The XIX° century: a city of contrasts**

This period is characterized by the birth of modern urban planning and of the modern city, focusing above all on health aspects, on the relation of industry/city and on the new residential districts.

An interesting contribution to the topic at hand is given by an Austrian architect, Camillo Sitte. Observing the environment which resulted from the building of the new cities, he underlines the emerging problems and opposes to this “modern” approach a vision based on the “old times”. He gives suggestions for realizing more proportioned, functional and intriguing urban spaces. In particular he advances the theory that by easing the use of natural paths that pedestrians choose, it is possible to create “quiet islands” where reference and/or meeting points can be placed. As a result, they are suitably located in relation to the routes. The places, designed following these indications, maintain their role in time and thence assume their own meaning; moreover every street, every square presents local solutions. An approach that is very up to date and that is worth recovering.

Some persisting lifestyles, in addition to technological innovations that made it possible, shaped special public spaces for which the period is renowned. For example galleries, winter gardens and boulevards that allowed and promoted social intercourse. Some of them still exist, not all have maintained their role. For example the boulevard type of street, often, has been changed to make space for extra vehicular traffic lanes, but its structure is still there. Some of these building types today are the prerogative of commercial centres or office buildings: the affected atria.

At the end of the XIX° century and at the beginning of the XX° century, cities are invaded by vehicular traffic: horse carriages and cars; sometimes they constituted a wild coexistence and then proposals for reorganization to reduce conflicts started to be made.

**Inputs**
- Camillo Sitte’s considerations and suggestions could be applied for designing spaces at pedestrian size.
- The vision behind these innovative types of public spaces could be revived.
4.7. Modern “ideal cities”
Consequent to the change in dimension and the development of motorized transportation, the design of the city is very much changed and cars have taken very much space away from pedestrians.

At the beginning of the XX° century the Futurism movement exalted the age of machines.

The vision Fritz Lang offered in the movie Metropolis (1926) is representative of Dickensian “best of times, worst of times”.

Visions of cities in that period focussed on automobiles, speed and freely flowing traffic; pedestrians were ignored. But there is also someone who has a different vision of the city and, even considering the presence of cars and the separation of the flows, values the importance of people walking around, freely too.

Tony Garnier (1869-1948), an enlightened architect, proposes a model of the city that becomes the manifesto of the progressive urban planning till the Athens Charter (La cité industrielle, 1904). In this vision the built area is less than half the total block area; the empty part is set up as a garden completely permeable to pedestrian movement, with no fences, railings, hedges or walls: the whole city, as a great park, can be crossed in any sense for reaching the main East-West axis, where public transport means run and services are located. All the streets that constitute the road network, perpendicular or parallel to the main axis, have comfortable sidewalks. In this vision, the attention to the pedestrian needs is witnessed also by the size of the sidewalks and their asymmetrical design: wider and shaded by trees on the South side (from 13 m down to 5.5 m, depending on the street section), narrower and without trees on the north side of the streets (from 6 m down to 2.5 m depending on the street section).

The Athens Charter ⁵ ratifies the theory of Modern movement in architecture and town planning and in particular decrees the principle of separating the pedestrian flow from the vehicular flow; such a principle imbues all the following models for the city, proposing solutions that are less and less focused on pedestrians.

Le Corbusier publishes a kind of manifesto proposing a “machine” vision (La ville radieuse, 1933), in which the death of the “street”, in its proper meaning, is stated. ⁶ Wide roads exclusively devoted to cars are designed for high speed, set free from the building texture; high rise buildings leave large green spaces; pedestrians have dedicated, covered paths within these parks.

Fifty years later, Victor Gruen makes the cars disappear in underground garages and plans squares equipped for people, full of people. People, and not cars, use also fly over passages (Forth Worth, Texas, USA, 1955).

One architectural period is quite renowned for its brilliant visions for cities appropriate to post-war life and culture: the megastructure movement; it is well represented by the utopian drawings of the 1960s and 1970s. The accent is on technology, flexibility and comprehensive size. Yona Friedman, for example, imagines a spatial city (Ville Spatiale, 1975) constituted by a structural framework erected over the existing cities, in which inhabitants insert their houses, conceived and built as they wish. People walk in contact with the buildings and their

---

⁵ The Athens Charter resulted from the Congress Internationaux d’Architecture Moderne (CIAM) meeting in Athens in 1933.
⁶ Since Roman times, street was a synonym of urban life: via vita est.
lure, are enveloped and protected by them, while car flows can be seen as a presence below.

Many of these utopian cities soar in the sky and feature suspended housing, offices, transportation and parks since air, light, sun and green are a main concern; usually people walk and cars drive and park at different levels; walkways, pedestrian plazas and people movers characterize these multilevel settlements (Isozaki, St. Florian, Rudolph). Others go in a different direction proposing to substitute a centralized city with a scattered city (Archizoom, inspired by Archigram).

In the same years Colin Buchanan proposes a model for cities that focuses on the road network as an organizing principle. Roads are hierarchically organized in three levels, defined depending on the different vehicular speeds, that have to be lower and lower approaching the core of the districts; the spaces enveloped in this network are structured in environmental areas, which can be treated as “30 km/h areas”. This model has been developed proposing increasingly larger 30 km/h areas, and even whole towns, that represent, in many cases, the current practice.

What it is still needed is a vision of the city that reconciles this technical tool with the concept of neighbourhood, with the various urban functions, scattered everywhere and with unrestrained, convenient walking.

**Inputs**
- From Garnier’s vision: the high percentage of un-built area; the free flow of pedestrians everywhere, with no restrictions or forced directions; the attention to the performances offered to pedestrians, in particular to comfort (the dimension, the asymmetry, the large use of green) in walkways; the pedestrian plazas well equipped.
- From Buchanan’s vision: the 30 km/h areas or towns.

**4.8. The turning point**

The visions of the first half of the nineteenth century were all focused on one enthusiastic innovation: the automobile with the ensuing speed, traffic flow and the possibility to reach any place quickly etc. The existing structure of the cities was not right for these visions; eventual changes could not keep up with the massive growth of the phenomenon.

The stratified structure of the cities demonstrated, as for example in Rome, the possibility of a peaceful coexistence among pedestrians and trams, horse carriages, omnibus, cars being very, very few and of low speed. The core of the cities and little towns maintained this inclination towards natural coexistence longer (and some of them till today), even with a higher presence of cars, thanks to their antique morphology and peculiar architectural features as well as to the presence of many different functions that do not allow for high speed. Such an ideal balance, though, has been threatened by an overwhelming car presence that has led to the loss of urban life quality.

The above mentioned visions had a main aim: to find the best way to manage urban growth. In this case, as in most cases, they remained visions that do not reflect the actual situation: suburban sprawl, often at low density, that has created problems of commuting, and consequently has thrown weights (traffic flows, people, service dependency etc.) on the older parts of the city, contributing to the decrease in liveability.

---

7 Evidence of this is in a picture, taken in 1916, of one of the main central squares, acting also as an important junction: Piazza Venezia, Rome, I.
B.3. The future of walking

The change in urban dimension and in the mixed use could happen thanks to the great diffusion of the car, which gave the possibility of separating residences from all the other activities. The car gave indeed the possibility of covering great distances in short time with little direct costs, not considering the indirect ones. This is not true anymore: traffic congestion has increased the travel time, cost for petrol and for land use (parking) has gone up and above all indirect costs are too high: injuries and severities, scarce accessibility, pollution, lack of space, ugliness of the cities.

These models need then to be rethought, detaching both from some actual trends that devise environments in which “pedestrian flows” are directed as vehicle ones (commercial centre style) and from some new visions. For example, the future as seen by the movie “Wall-E” (2008) is not very encouraging: un-walking, quite fat people travel, as tasty main courses, lying on flying trays … Each one of them could be also said a futuristic Roman triclinium.

Inputs
- The peaceful coexistence of the various transport mode, made possible by the place morphology, by the critical mass, by moderated speed and flows.

5. Conclusions

At the end of this ride through history it is timely to speak of the future.

Treasuring some of the analysed visions and/or some of the interventions suggested or experimented to realize them, it is possible to try to build some visions for the future that, knitted together, can form an overall vision for a city congruent with pedestrian expectations.

The basic vision is that of a city with an upside down situation: congestion of pedestrian traffic, and not of cars. Obviously this is more a slogan than a vision, nobody wishes for congestion, and therefore a consequent “real” vision concerns a city in which at least 50% of the public space is dedicated to pedestrians and/or 50% of the space left by the road/street network (block area) is intended for creating green areas where pedestrians can move freely as they like (as T. Garnier suggested).

A legislative tool that considers the pedestrians’ right to a space for walking and for performing all the related free activities, and that sets its quantity in a consistent way, is lacking at the national level. It should be foreseen as a law or a national program, as it was already made for the Road Safety Plan; therefore a desirable intervention is a “National Plan for Pedestrian Right to Space” (Martincigh, 2005).

A vision, that has to develop at the same pace as the preceding one, concerns the urban dimension that has to be appropriate to pedestrians. To recoup city compactness and to overcome the ugly urban sprawl, since it is not possible to think of going back to small towns, it seems right to imagine polycentric cities, where each “centre” is a district of appropriate size, characterized by many functions, by a core and by streets showing many activities, that make it lively for most of the day or, possibly, all day long. This solution enables people to move on foot for their everyday needs, to meet inside the centre, to use the bike to reach adjacent centres and public transport to move to more distant centres. To make this work it is basic that public transport be reliable and effective, that parking is not provided for in the centre’s core, that each centre, besides basic every day activities, presents also other interesting activities that play on health, body care, cultural upgrading etc., as well as special events, that get people out of home and consequently bring them to socialize and to
rediscover walking around. It is important also that each centre shows its own particular character, to enhance the identity feeling in its dwellers, and its recognizability to outsiders.

If besides walking also sustainability and climatic change are considered, it is important to outline a vision in which the urban environment is constituted by “built” and “natural” environments, strictly connected and both of high quality and liveable for pedestrians. In this vision the “built environment” is meant as a network of open spaces of various type: paths, walkways, widenings, courts, squares etc., and the “natural environment” as a network of green/blue areas of various type and dimension: parks and gardens, rows of trees, bushes and hedges, lawns and flowerbeds, green façades and roofs. The “natural environment” is planned and designed as an infrastructure playing a role in water management, in urban microclimate and in bio-diversity: as a social infrastructure for leisure, relaxation, human interaction and other social activities. It is a multifunctional structure, where different human (cultural, social, urban) and ecological functions may either support or compete with each other. The interface between green/blue areas and grey areas and the contribution that natural elements can give for improving pedestrian comfort, in the different seasons, and for diminishing pollution, under its many facets, are main aspects in this vision.

If walking is considered in its much broader sense, as a multifaceted activity, the urban street space assumes a new, more complex meaning, for which a new vision is needed. In such vision the different roles the street plays are related not only to the various traffic components: mobility, accessibility and parking/staying of motorized and non motorized modes, but also to many other aspects that assume as much, if not even more, importance. They are the urban structure features: visual attractiveness, built texture, orientation potential; the social activities: connected to residence, to work, to leisure and to displacement; the environmental and ecological characteristics: quality of the air, microclimate, acoustics, biodiversity; the economic factors: costs, economic power, financial value. Such mix calls for a street design that each time is devised in a different way, depending on the prevalence of one or more functions.

Two consequent visions have to be mentioned, they concern a city at man’s pace and no more only at vehicles’ speed, a city at man’s scale and no more only at vehicles’ scale. The pedestrian network then has to present various spaces, with different nuances of mobility, with different solutions from the separation of flows to possible coexistence, depending on the places and on the reduced speed limits. Learning from the past is possible to integrate the pedestrian scale into city design, for example considering a sequence of hierarchized spaces, characterized by a multitude of components and details that are perceived at the pedestrian’s low speed.

In a vision of a city where there will be more free time, more time will be dedicated to social intercourse and then more spaces appropriate for it will be needed, comfortable in the different seasons. For this vision inputs can be taken from the past.

For an overall vision with such slant it is also important to imagine who has the capability to realize it. As regards the scientific part it is necessary an interdisciplinary group that involves all the different necessary competences: architects and engineers, expert of urban design and mobility planning; psychologists and sociologists, expert in the environment and traffic field; economists etc. As regards the realization, political and administrative awareness and knowledge, as well as people direct participation, have to be promoted.
6. Recommendations

The analysis of the visions of the past, that are still meaningful today, takes to formulate some suggestions for the visioning of the pedestrian realm and for the choice of the interventions suitable to make them real.

The “street” should be considered as a three-dimensional space, where several users are present and various activities are performed. As a consequence, a multiplicity of features will concur to shape its architecture: all of them have to be taken into account, verifying each time their weight and their possible interference. The street can be compared to a “room”, with its own morphology and three types of frontiers: the ground surface acting as floor, the facades, solid or immaterial, acting as walls and the sky acting as ceiling. Such “hollow” volume can be characterized at three levels: low, medium and high, both from the functional and perceptive point of view, depending on the place, on the uses etc.

The urban texture should feature the various aspects, already mentioned, that have made, and still make, successful the old pedestrian cities, that is the invariants.

All the inputs that have been listed at the end of the analysis of each historical period, as many other hints that come from the past that could be missing, can be used to design a city at pedestrian size. Some of them have been knitted together to propose intervention fields concerning aspects that seem to be more neglected today. They are reported underneath just as a starting point:

- a guiding, ordering and commanding line dedicated to pedestrians: a runner going all over the city, following the preferred route, straight or diagonal, outdoor or protected, respected by all the other modes, passing through spaces of different types, but always a clear, evident sign.
- a network of paths and spaces: a texture working its way in and throbbing, assuming different dimensions and roles, alternating different shapes and patterns, rich of signifying and orienting features, with a rhythm at man's pace, that enables who walks to grasp easily a sequence of various images, at man's height.
- spaces of different kind that enable various activities: squares where to held open air markets, public events etc.; streets with enough space to host street cafés and with no or congruent vehicular traffic; quiet side spaces, with green and blue features where to sit or stroll in peace, to read or to meet in an intimate way; spaces and streets to host children games, eating and dancing, happenings.
- comfortable spaces in every season: places shaded from the sun in the hot periods, protected from the rain and wind in the cold periods, obtained with interventions that can be natural or built, that can work only in some periods or all year around; the choice depends on the local situation. For improving comfort in summer, besides green and water, tents can be used at roof or at ground floor level, spanning the whole street, from one building front to the other, or jutting from the façade and covering only the sidewalk. For improving comfort all the year round porticos can be used on one or both sides of the streets, around a square or as a path, freely positioned. Old spaces can be revived, as boulevards, arcades and winter gardens favouring social intercourse.
- appropriate and meaningful spaces designed following Sitte’s methodological directions. When devising the interventions to realize these visions, measures guaranteeing good levels of safety, accessibility, use, comfort, appeal and orientation should be applied. They need to be flexible and easily changeable for meeting possible new demands; they have then to be chosen with particular care and studied at detail scale, for choosing components, materials and equipment that are congruent, durable and sustainable. Durability has to be kept in mind, because it is a fundamental requirement, directly
Acknowledgments

This study is run in parallel with “The urban street environment: from devising to construction”, a research funded at national level by DiPSA and co-ordinated with COST Action 358, responsible L. Martincigh.

I am in debt for the search of some drawings, pictures and information to arch. M.Luisa Cochi and Sara Longo.

References


B.3. The future of walking


A vision of public place: relational urban space

Dragana Bazik
University of Belgrade, Faculty of Architecture, Serbia
dbazik@gmail.com

‘the trial separation of bits and atoms is over’
William J. Mitchell

Summary

How does the present age influence the urban environment? Is it possible to timely recognize future changes? Are we prepared to respond to these changes? Could we implement theoretical and academical research in sustainable development strategies and how could we insure their applications in professional practice? Without trying to give final answers, the focal point of this paper is to underline the significance of these questions through considering the current age as Information and Communication Technologies (ICT) Age and Urban Age with its main consequences for a vision of public place. ICT creates new possibilities for tracking city dynamic and complexity in real time within information, communication and cognitive function of urban fabric. The functions of communication and information within urban space are considered through the quality of connectivity and hybridization in multiplex-layered urban relational space. Accordingly, the cognitive function of urban space is explored through the quality of public place user’s suitability in multiplex-meaning track and framework. The 21st century context offers the new way of network communication through picture, sound and text. Public place is no more a source of analogue messages only. It becomes a source of digital signal that connects people and space-time framework by creating new multiplex-meaning in a vision of public place as the relational urban space.

1. Introduction: Elaboration framework

The elaboration framework of this paper considers two present age features: the ‘Information Age’ and the ‘Urban Age’, which both reshape human behaviour, thought, public places and a vision of future urban space.

In the last five years, the Information and Communication Technologies (ICT) became an integral part of everyday life. The open-source initiative and open-source software contributed considerably to the actual Internet usage growth. We are witnessing a transition of some websites from isolated information ‘silos’ to interlinked computing platforms that function in the perception of the user-like locally-available, free or low-cost software. There are a lot of new Internet platforms such as weblogs, social bookmarking, wikis, podcasts and online web services, where users generate and distribute content (upload as well as download) often with the freedom to share it and re-use it. One of them is the famous ‘virtual globe’ Google Earth (2005). In fact, Google Earth and Google Maps are more than new ways of viewing maps and images of the earth online. They have developed communities of enthusiasts who have, as collective intelligence, extended both applications by creating new tools and adding their own content to the new GeoWeb (Bazik, 2008a). In the domain of urban space consideration, it is extremely important that there are possibilities to represent public place qualities through its permanent and global exhibiting that fosters urban design competition.
Along the same lines, in trying to better understand the world around us today, we are no longer limited to our computer screens. The new generation of Smartphones, such as the Apple iPhone, represents a powerful mobile computer which is location-aware. In other words, we are able to access the Internet, information about world geography, and even the global labour space, simultaneously as we are immersed in it, anywhere in the world. Wireless communication networks are diffusing around the world faster than any other communication technology to date. Because communication is at the heart of human activity in all spheres of life, the advent of this technology, allowing multimodal communication from anywhere to anywhere where there is appropriate infrastructure, raises a wide range of new patterns of behaviour and of fundamental changes in existing ones (Castells et al., 2007).

The second feature of the present age is that is it increasingly perceived as the Urban Age, with half the world’s population living in urban areas and up to 85 percent in the developing countries. By the middle of 21st century it will be 75 percent, thus the problems and opportunities offered by city life and urban space merit our greatest attention. According to the initial Brundtland definition (1987), sustainable development is the development that attains the needs of the current generation without hampering their possibilities of meeting the primary needs of future generations. Consequently, the following goals of the balanced city development are implied:

- to ensure the needs of the citizen while respecting the demands of the environment (ecological balance),
- to use the existing spaces in the most efficient way making them attractive for life and work (the rehabilitation of urban spaces);
- the formation of new schemes of construction with emphasis on the concentration of content while minimizing the use of energy on movement between dispersed points (continuity in city development) in order to reach maximum efficiency and flexibility in building.

The implication of the preceding statements is often in sharp contrast with the traditional concept of functionally-formed treatment of the physical space in the city. The locus of the planning approach is moved from the quantitative approach of capacity and representation, through the use of spaces, to the quality of life in the city in relation to the level of pollution, safety and health of citizens, work conditions, aesthetic standards etc.

The aforementioned crucial features of the present age, which are part of my elaborated framework, are integrated in a process of sustainable and more anthropocentric development of built environment, urban space and its future transformation. This includes a new theoretical concept of space and place, as well as some of its application issues in current professional practice. The paper has three parts. First, it discusses the relational urban space as the public space theoretical concept in the context of ICT and Urban Age. Second, it considers new approaches to urban design process implementing in professional projects and practical application. They include the conceptualizations of multiplex-layers and multiplex-meanings in current and future urban spaces and public places. Finally, in the closing remarks, it suggests some pointers for relational urban space design.

2. Theoretical framework: relational space

As wireless Internet and portable computers become widely accepted, it is clear that the patterns of living and working will be, and in some places already are, radically changing. New hybrid living-working places are emerging. Consequently, any place with wireless service is a potential workspace. Such developments have numerous implications for architecture and urbanism. First of all, they point towards a different and potentially better use of urban space in the present day ‘Urban age’. “Better use” has two meanings. First,
‘optimized’ or ‘less wasteful’, and a second, ‘more humanized’, as the phenomenon of wireless might finally begin to liberate the working space, by breaking the working constraints determined by the machine and replacing them with the so-called ‘green and blue’ working environment, i.e., trees and water in the outdoor space.

2.1 Mixed-life concept

‘Mixed-use’ has been the paradigm that the planning profession seems to have adopted without an afterthought over the course of the past decades. However, at the present time things are changing, with another type of mixing emerging in contemporary urban spaces: ‘mixed-life’ or, some would call it, the blurring of the boundaries of living, working and playing.

The direct consequence of the ‘mixed-life’ concept for the professions of architecture and planning is a significant increase in the complexity of systems that sustain city life and the urban metabolism. The so-called ‘urban computing’ means much more than bringing your laptop to a cafe and surfing the Internet. Instead, cutting-edge mobile and wireless services emphasize proximity over connectivity, the local over the global and the here and now rather than anytime, anywhere. Computer geeks suddenly turned urban theorists, many of today’s technologists, harbour even loftier goals for mobile research agendas: to enhance the image of the city itself - the patterns, the complexities and, above all, the sheer serendipity of the urban landscape (Ratti, Berry, 2007).

In the 1990s, the digital revolution led many urban designers and architects to fear the growth of digital communications networks. It seemed as if nearly every stitch of the urban fabric were under assault, as chat rooms challenged corner cafes and e-commerce threatened the retail lifeblood of the street. With a renewed appreciation for the timeless value of urban public space, designers are now embracing an array of digital technologies for display, communications, and navigation in ways that enhance and engage public venues for interaction, as William J. Mitchell puts it in his book ME++: The Cyborg Self and the Networked City, ‘the trial separation of bits and atoms is over’ (Mitchell, 2003). However, there is little intent in recent history to prepare environmental designers at all scales (metropolitan, urban, architectural, and personal) for the pace, variety, and interactivity of digital media technologies now infiltrating urban spaces. There has not been enough research to further the understanding of the entire human-environmental system where computers act as a mediator.

MIT SENSEable City Lab’s recognized that the same technology that introduces a new level of complexity into the urban sphere could also be used to reveal emerging trends taking place within it. Through recent projects, the City Lab’s researcher found out that the city looks more and more like a real-time system, that is, a system where conditions can be tested and monitored instantaneously. Mobile technology allows a great leap towards achieving and understanding the real-time city, because it enables aggregated data to be collected and interpreted quickly and in a centralized fashion. This process opens the possibility of detecting, recognizing and reacting to local conditions in progressively reduced time-frames. The number of mobile technology users is great. Especially in countries with lower levels of Internet use, mobile phones are becoming increasingly popular amongst the urban populace.

The current results seem to open the way for a new approach to the understanding of urban systems, which we have termed ‘mobile landscapes’. Mobile landscapes could give new answers to longstanding questions in architecture and urban planning such as:

(a) how to map the origins and destinations of vehicles;
(b) how to understand patterns of pedestrian movement;
(c) how to highlight critical points in the urban infrastructure;
(d) how to establish the relationship between urban forms and flows, etc.
In this sense, the study of mobile landscapes could have a great impact on complementing and possibly substituting traditional pedestrian surveys in the future. In fact, the whole field of planning and urban studies could be revolutionized by the concept of mobile landscapes, as they yield the potential to reveal – in real-time, as a new ‘reflex’ of the urban system – actual patterns of movement and behaviour in the urban territory. Projects that engage the city in its present, technologically-enhanced state could begin to provide architecture and urban planning with new channels to intervene in the urban realm. They also seem to open the way to a new paradigm: that of the ‘real-time city’ (Ratti et al., 2007).

In 2009 MIT SENSEable City Lab conceived and developed the Copenhagen Wheel and unveiled it at the COP15 United Nations Climate Conference\(^1\). Smart, responsive and elegant, the Copenhagen Wheel is a new emblem for urban mobility. It transforms ordinary bicycles quickly into hybrid e-bikes that also function as mobile sensing units that can monitor levels of carbon monoxide, nitrous oxides, temperature, humidity and noise, and a GPS that can track position. It maps pollution levels, traffic congestion, and road conditions in real-time. The project aims to create a platform for individual behavioural change. "The Copenhagen Wheel is part of a more general trend: that of inserting intelligence into our everyday objects and of creating a smart support infrastructure around ourselves for everyday life," comments Assaf Biderman, Associate Director of the Senseable City Lab.

2.2 Public place as relational urban space

The consideration of the notion 'space' is different according to technological change, to the communication technology that has a serious impact on spatial-temporal change and to the connectivity. In everyday communication, the notion of ‘space’ can have multiple meanings - ‘physical’, ‘virtual’, ‘personal’, ‘material’, ‘mental’ or ‘cosmic’ - that interpret its complexity and ambiguity.

The classic view of space as ‘absolute’ considers the pre-existing space of Newton and Descartes that could be measured and calculated. Space and time are treated separately. For David Harvey, the absolute space is geometrically the space of Euclid and therefore the space of all manner of 2D cadastral mapping and engineering practices (Castree, Harvey, Gregory, 2006).

The Modern Period considered the notion space as ‘relative’ space in keeping with Einstein’s Theory and non-Euclidean geometry. Space and time are integrated as the notions space-time or spatial-temporal, and depend on observer’s movement and preferences. Relative space is physical, real, material, divided, functional, autonomous, positional, measurable, typological, ordered and 3D visualized (Metapolis dictionary, 2000). Comparisons between different spatial-temporal frameworks can illuminate problems of political choice such as spatial-temporal conflict of financial flows and ecological processes that might be disrupted.

The accelerated science and IC technology development contributes to the new interpretation of the notion "space‘ according to achievements of new mathematics and physics. In the present age, the notion of space is considered as ‘relational’ space that exists as a relationship in or internal to process. Processes do not occur in space but define their own spatial frame. Relationship/interaction created in process is spatial-temporal defined and it is impossible to separate space from time. Relational space is real as well as informational, virtual and digital. Relational space is operative, reactive, tactical, and topological, with synergy and 4D attributes for decision combinations in dynamic systems. It is not simple to measure and quantify the relational space, but it could be considered by aesthetic criterion and quality evaluations through new mathematical theory and modular dynamic models.

\(^1\) http://senseable.mit.edu/copenhagenwheel/ (accessed 30 May 2010)
In his consideration of the notion of space, done in 1979, David Harvey underlined that those different human practices create and make use of different conceptualizations of space. Nearly thirty years later, he confirmed this position in his paper, Space as a Keyword (Castree, Harvey, Gregory, 2006). The absolute space concept may be adequate for issues of property boundaries and border determinations, but their placement on the property market depends on relative space in correlation with location position, functionality and equipment, or on relational space that considers the relationship and information of financial and energy flows as well as the compatibility with personal vision, spatial understanding and aesthetic criteria of process participant.

Despite these different spatial concepts, the relational approach becomes, especially at the academic level, more widespread and acceptable in the domain of theory and practice of architecture and urbanism. It is suggested to consider relationships and processes with new mathematical apparatus and technological potential instead of objects and forms.

Today's cities are different from their historical antecedents in that there are no more classic divisions to place, hierarchy, centre and urban growth machine. Instead, we consider the following: transience, mobility, circulation, exchange, de-densification, etc. A decrease in production-based urban economies is met with a rise in knowledge-based economy, cultural recreation and urban tourism (theme parks, scenic drives, wilderness areas, entertainment). A new metropolitan landscape, combining high density and low density urban settlements, has replaced the historical distinction between city and suburb. By integrating research on local place-based urban characteristics with analysis of the larger scale spatial logic that structure contemporary urbanism in all its forms, the construction of Urban Configuration entails identifying and describing thematic relationships between non-proximate but operationally linked places within an urban field.

This approach initiates an urban design process that shifts attention from urban forms to urban issues; from appearances to urban operations and from a bounded to a relational concept of urban site. The concept of urban/spatial configuration means relations take account of other relations in an urban context. According to that, new techniques have been developed and applied to a wide range of architectural and urban problems. The city is no longer conceived as the lifeless inert structure that supports life, as does the sum of buildings, technologies and distinct isolated elements; instead, it is seen as an evolutionary organism that constantly interacts with people; it is customized by people and customizes human behaviour.

### 3. Operational framework: contemporary and future public place

In the current ICT Age, urban fabric might be considered from a specific point of view as a dynamic and complex organism that transmits an endless number of technologically more accessible messages about space and people throughout time. Spatial, social and temporal milieus are integrated and form contexts of everyday city life. The variety of scenes offered by a town (or to be offered) is almost unforeseeable. Therefore, we do not consider urban space as only a physical frame. It simultaneously performs communication, information and cognitive function, and thereby determines the context and the way we act as professionals (Bazik, 2004):

- The communication function of urban space can be compared to the function of the blood and nervous system of a living organism. It includes transmission and distribution of water, energy, waves, flow of people, cars and goods. It also represents the basic condition of the urban fabric of life as a relational network of urban porosity or permeability.

---

2 For example: collecting data with hybrid e-bike 'the Copenhagen Wheel'
The information function of urban space acts in the accumulation and selection domains of spatial form messages. Physical form informs and creates users relation within: (i) possibility and purpose of going, contacting and meeting; (ii) the usability; and (iii) the conditions of orientation in urban space. At the same time, information function of urban space represents the first degree of superstructure regarding the infrastructure town potential as its direct addition and purpose of existing.

The cognitive function of urban space does not influence basic urban functioning, but it has essential importance in the actual sustainable development context. Spatial form represents the articulation of knowledge and skills. As such, it becomes a comprehension and cognition polygon, namely a potential for creating images and as an association source. Spatial forms as public presentation of knowledge can educate, cultivate, animate and dignify. Knowledge distribution means enlarging, rather than wasting. As knowledge is an endless development source, the cognition function of urban space becomes one of the priority options of theoretical elaboration and professional engagement. Coexisting, information technology and its accelerated development influence changes in the communication pattern, behaviour and cognition, including the focus displacement of current urban space as relational space research.

Consequently, in the present Urban Age cities are still counted as a positive force. They are an engine of development and a machine for urban prosperity and freedom. Successful public places are the ones that allow people to be what they want; unsuccessful ones try to force them to be what others want them to be. A successful urban space has room for more than the obvious ideas about everyday city life, because, in the end, an urban scene is something unexpected; it is a performance shared with strangers and opens to new ideas. On the contrary, an unsuccessful urban space has closed its mind to the future. Correspondingly, good urban design of interactive public places enables different relations and produces relational urban spaces, as opposed to the bounded full design that disables those possibilities.

The communication and information function of urban space will be considered through the quality of connectivity and hybridization in multiplex-layered urban relational space. Accordingly, the cognitive function of urban space will be explored through the quality of public place users’ suitability in multiplex-meaning track and framework.

3.1 Multiplex - layered

The urban design process should create an urban design framework that contemplates urban design concepts as a set of prospectus for on-going dialogue with many institutions, organizations, communities and all actors to be involved in the future city development. The proposed urban design framework, perceived in a given location through the connection of social, economic and ecological aspects, should represent the following key objectives of the future development:

- developing context;
- providing accessibility;
- achieving eco-friendliness;
- generating identity;
- discovering an “alternative” or “unusual” experience of activities;
- creating public places - somewhere to Meet, something to Do, something to See - a new public space for pedestrians – a new palette of liveable places with dynamic and variable views;
- creating safer places - right mix of uses, adequate day and night activity, with adequate percent of residential use; well defined movement network; the structures and places with improved visibility and surveillance;
supporting transformation over time - the long-term activity, and the solution is in creating a sustainable regeneration strategy that can be overviewed through adequate transformation phases of site urban design framework; and

- recognizing the information and globalization age - creating the possibilities for different future networking, new building forms grounded on technological innovations and interactive dynamism of façades that incorporate the marketing speed of urban life, the new information coding and the global thinking in a local way (Bazik, Stojanović, 2007).

An intensive development of telecommunications, information flows and spots, three dimensional and video real-time presentations, creates new surroundings for the urban design process. Physical urban space is considered as a place of careful treatment as it could be presented through web cameras on a global level in real-time, as well as, on Google Earth, Wiki, Panoramio, etc. At the same time, mixed-life, as a new possibility of living, creates new relationships in urban space. Public place as the space of real-time relations between physical space and its users generates a high degree of urban complexity and urban space dynamics that influences new urban design conceptualizations. It generates a new hybrid public space form that multiplies its usability for a new style of mixed-life by hybridization natural and artificial environments in actual developments and future projects.

It is very important to underline that all aforementioned influences are not only theoretical or hypothetical statements. There are physical objects and spaces already existing as the polygon for experience research for statement change and acceptance of new urban design approaches. In 1998, the library was built on the campus of the Delft University of Technology3, with adequate atmosphere of lawns with flowers and trees where students and professors meet informally. The grass roof of the library, as a new layer, is freely accessible for walking and lounging, creating a new amenity for the whole campus (Figure 1). The Mecanoo team of architects under Francine M.J. Houben’s leadership designed the library in the 1993-95 period. It offers different answers to integrative urban context, natural environment and topography, sustainability and users responsibility.

Figure 1. The library of the Delft University of Technology, the Netherlands4

---

4 http://www.flickr.com/photos/shoupilou/387215061/ (accessed 31 August 2010)
It is worthwhile mentioning the work of the team of architects called PLOT that was established in Copenhagen in January 2001 by architects Julien De Smedt and Bjarke Ingels in order to develop an architectural practice that turns intense research and analysis of practical and theoretical issues into the driving forces of design. They integrate public place and building envelope and generate polygons for new and unexpected relationships in urban space. The Maritime Youth House\(^5\), 2002-2004, represents the hybrid concept of the integration of a sail club and youth house with outdoor space for the kids to play and perform. The roof is grown out of the ground and simultaneously represents the ramp, stair, rollercoaster, auditorium and sun deck.

In 2006 Julien and Bjarke closed PLOT and opened two new companies: JDS architects and BIG – Bjarke Ingels Group. They continue to create hybrid projects that generate new urban topography and represent significant contribution to theoretical and practical researches in the domain of urban space-time conceptualization.

One of the most famous multiplex-layered objects is the Yokohama International Port Terminal that represents an articulation of a passenger cruise terminal and a mix of civic facilities for the use of citizens in one building. The site had a pivotal role along the city's water front that, if declared a public space, would present Yokohama City with a continuous structure of open public spaces along the waterfront. Farshid Moussavi, born in Iran (1965) and Alejandro Zaera-Polo from Spain (1963) and their team Foreign Office Architects (FOA) won the First Prize in the Competition in 1995 (Figure 2).

![Figure 2. Yokohama International Port, Japan\(^6\)](http://www.flickr.com/photos/colbwt-archi/467043076/ (accessed 31 August 2010))

The three above mentioned examples represent the new concept of activities distribution in the urban fabric. The multiplication of layers creates new space-time hybrids and a new relationship between them that will initiate new unpredictable layers in future. The variety of multiple space-time frameworks of dynamic built environments becomes the focal point of urban design in an attempt to create relational frameworks for interconnected layers without blocking the access or making a public space exclusive. This means layers physical accessibility but also multicultural and multi-linguistical through some cultural qualities recognition and signboards in various languages. The complexity of professional re-thinking is higher but simultaneously the identity potential and variety of argumentation is more inspirational.


Unusual forms of new and future buildings and building complexes became the pattern of power representation of capital, technology and creativity in the field of global competitiveness of world network interconnections. Besides competitiveness, the urban space change also depends on current climatic change. Global warming is the increase in the average temperature of the Earth's near-surface air and the oceans since the mid-twentieth century and its projected continuation. Therefore one of the future demands for urban design is to reduce pavement on the ground and on flat roofs to decrease temperatures. At the same time, green roofs and squares are a better way to regulate atmosphere water and reduce floods after rain storms. Therefore new master-plan concepts for future city development of the next twenty years reduce pavement area and replace it with green areas, as shown, for example, the Master plan for Bradford\textsuperscript{7} created by architect Will Alsop.

Multiplex-layered urban space could motivate and stimulate walking and non-vehicle movement and create separate layers of different transport modalities. There are existing concepts of car-free and zero-carbon cities and they will be a great part of future city development. Walking will increase as a more healthy way of movement and life together with new ways of mixed-life that integrate living_working_recreating space-time framework. Segway and Toyota Winglet could make our pedestrian transport more effective and attractive. One positive aspect is that a pedestrian is a renewable energy source and walking consumes only human energy without air pollution.

Visionary projects for future transport are in the domain of integrated networks of highways, transit, rail, and ports. Simultaneously visions for a congestion-free environment mean the multiplex-layered space-time network as the futuristic project of velo-city above the Toronto roofs is. Toronto Architect Chris Hardwicke proposes “a high speed, all season, pollution free, ultra-quiet transit that makes people healthier. Using an infrastructure of elevated cycle tracks, velo-city creates a network across the City” (Figure 3).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{velo-city_toronto.png}
\caption{Futuristic project of velo-city, Toronto by Chris Hardwick, illustration by Marc Ngui\textsuperscript{8}}
\end{figure}

To satisfy the need for sustainable personal mobility huge research energy is invested in reinventing the automobile (Mitchell, J.W., Borroni-Bird E.C. & Burns D.L., 2010). While maintaining and even enhancing current levels of personal mobility within cities, the new kinds of automobiles and personal urban mobility systems promise: to reduce the overall energy and materials requirements of mobility systems; facilitate a significant shift from non-renewable energy sources to clean, renewable ones; eliminate tailpipe emissions; enhance energy security; and generally improve the quality of urban life. These systems would simultaneously fulfil pedestrian quality needs through the quality of connectivity and hybridization in multiplex-layered urban relational space.

3.2 Multiplex - meaning

Urban space, such as town centres, parks and open space, is considered to be the "physical framework of public domain" that integrates the physical dimension of the built space/artefact and the social dimension/public space. The main motto of urban design activity, "by moderating urban space creating urban place", is accompanied by considering the way of managing the existing and producing new space.

Urban space design does not exist only in the professional domain. The Urban Design process, as the way of creation, realization and development of urban space, contains also artistic and professional elements, which are both creative and technical. It unifies activities of planner, urban designer, architect, landscape designer, artist, engineer, public utility services and users themselves. At the same time, the specific character of any physical, social or temporal environment, rules out generalization, equalization and standardization. There is too much diversity: climatic, morphological, economical, political, technological, social, cultural and temporal. Physical forms transmit an endless number of messages. Reception of these messages depends on the observers’ capability (age, level of education, experience, motivation, perception). Prescriptions or clichés can be of no assistance in this matter. Moreover, as the space has its own past, it contains some hints for the future, too. The Urban Design vision anticipates only one point of the near future vision in the frequent interaction between space and its users; and that vision has its own future that is impossible to control. The only proper way is to offer the concept of urban space arrangement responsive to people’s behaviour in space and time; as the object of continual changing and permanent corresponding (Bazik, 2004).

In contrast to interactive spaces of the past, which were largely the product of a single designer, these places are emerging through the aggregation of many actors: property owners and their architects, advertising and media companies, telecommunications service providers, urban designers, and citizens as active space users. All those enrich the multiplex-meaning of space-time framework that might successfully assure the future existence of relational space as public place.

Christian Nold is an artist and researcher with an interest in mapping the ways in which people feel about space and place9. Biomapping participants, usually gathered together by Nold at arts or community centres, are briefed and handed a special biomapping device, designed by Nold, which combines GPS and galvanic skin resistance recording. A digital camera completes the kit, and off the biomappers go, requested to take an hour’s walk around the local area, taking pictures as they go. There is a hope that this kind of participatory project and the emotion or biomap will play a strong part in the discussion of physical and social change in the area (Figure 4).

---

9 http://www.emotionmap.net/ (accessed 30 May 2010)
It will be useful to realize biomapping of the specific and innovative urban space of international character in Copenhagen, when it will be completed. The idea is that place will incorporate the wishes and needs from 57 cultures and thousand of individuals. This would not be a complete and finished work of art. On the contrary, it needs to be an open art work, which will gain content and take form in a dialogue with the users and citizens of the area. There was a competition by invitation and the first prize went to Bjarke Ingels team10. The different surfaces and colours of the area are integrated in such a way that either together or alone they establish a setting for the diverse objects, which are chosen by citizens. The fundamental basis for the choice of colours for materials and names is that they should be neutral in relation to culture, nationality and language, but over time they can adopt meaning and identity as they are used in urban spaces and populated by city life.

There is another technological contribution that supports a multiplex-meaning of the space-time framework and the relational concept of urban space and place. In a recent project, a team led by Space Syntax has identified themes in which the impact of urban layout has been scientifically proven, and where tangible spatial design, social and economic indicators for the performance of layout can be found11. A new layout value tool calculates these indicators on the basis of simple Ordnance Survey maps. A set of GIS-based computer tools has been programmed by Space Syntax to calculate the indicators using available spatial and statistical datasets (Ordnance Survey, Office of National Statistics). The tools can quantify and commercialize the socio-economic benefits of urban layout (Schwander, 2008).

Five key themes were identified for further analysis in the development of the indicators:

- **The value of urban centres__Paved with Gold** (CABE/Buchanan 2007) showed that the impact of street design on the economic impact of 10 London high streets was complemented by a strategic layout component. It shows that successful urban centres have particular spatial features, for example significantly smaller urban blocks and more accessible streets that distinguish them from their context. Importantly, this enables us to distinguish spatial effects and compositional effects.

11 http://www.rudi.net/node/20612 (accessed 30 May 2010)
The value of public realm design. Based on the recently completed public realm improvements in the Walworth Road in Southwark, a before and after assessment of the detailed public realm has been carried out comparing the results of the Pedestrian Environment Review System (PERS2) with the spatial layout analysis. The case study also suggests a way to capture the health impact of a more pedestrian-friendly street layout through higher physical activity rates.

The value of property security. Based on the analysis of burglary patterns over five years in a London borough, Professor Bill Hillier and Oezlem Shabaz at UCL identified four major layout factors that contribute to safer places. One of the factors reducing burglary risk is the existence of a residential culture, which can be measured by the number of dwellings per street segment.

The value of residential property. The Analysis carried out by UCL and Savills Research on more than 100,000 dwellings in a London borough showed that the I-VALUL has developed a layout value map of the greater south east to be used as spatial context for the layout valuation process, either to assess the value of urban layout in existing places or to test the impact of new development on the surrounding area distribution of residential property values, measured by council tax band data, follows a clear spatial pattern. A concentration of higher value properties is found at globally integrated places, where locally integrated places tend to have lower property values. Savills Research showed that tax band trends are in line with property sales.

The value of personal security. The same research shows that several spatial factors reduce the risk of street robbery, including the relationship between sufficient movement rates resulting from an integrated spatial layout and residential culture measured by dwellings per street segment. Real time data from existing city networks is creating an interface between people, technology and the urban environment.

Environmental monitoring is a critical process in cities to ensure public safety including the state of the national infrastructure, to set up continuous information services and to provide input for spatial decision support systems (Resch, 2009). Statistical data could be replaced with real-time data considered through the new Live Geography approach that seeks to tackle these challenges with an open sensing infrastructure for monitoring applications, and 'making the average real' for city and its inhabitants.

Meanwhile, there are new Internet possibilities for getting approximate information about people’s reactions to the attractiveness of the urban spaces such as famous squares. The presentation of images and videos on different hosting websites that could be web service suite and online communities becomes very popular, especially for young people who were born in the ICT age. They grow up with computers and smart mobile phones and create a new youth culture with its own language, based on texting and multimodal communication, and its own set of values. How distinctive is this youth culture vis à vis the culture of society at large? And is this an age-specific state of mind or the indication of new patterns of behaviour? In any event, young people today are the users of contemporary and future urban spaces and their preferences are relevant for further relational urban space consideration.

There are illustrations of research possibilities offered by image and video hosting websites. They have all been created around 2005 as the open source Web 2.0 concept. The following websites are selected:

- Google Earth for the counting of 360 panoramas on chosen public places;
- Flickr image and video hosting website for counting the number of shared images of the chosen public places during year 2009; and
- YouTube as a video sharing website for counting the number of shared videos of the chosen public place during the year 2009.
Urban spaces that are chosen for the short illustration of research possibilities are:

- The principal square of Venice in Italy St Mark’s Square (Piazza San Marco) with the present size and shape since 1177;
- St. Peter's Square in Rome (Piazza San Pietro) with the present open space which lies before the basilica redesigned in 1667;
- Trafalgar Square in central London with the present architecture of the square since 1845;
- The pedestrian plaza at La Defense in Paris that is in public use since 1989;
- The Millennium Park/Square which since its opening in July 2004 represents one of the most popular destinations in Chicago; and
- The Water mirror (Miroir d’eau) as an ingenious 21st century creation located in front of Place de la Bourse and along the riverbank in Bordeaux, and opened in October 2006.

These selected examples of public places are different in their historical layer and time of creation, as well as in the degree of user-space interactivity and relationship. There are different results of images, videos and 360 panoramas counting (30. May 2010), which interpret the intensity of motivations and inspirations to share one’s own urban space experience with online community and strangers worldwide (Table 1).

<table>
<thead>
<tr>
<th>Urban square / key words</th>
<th>Fickr.com number of images</th>
<th>YouTube.com number of videos for category ‘travel &amp; events’</th>
<th>views counter</th>
<th>Google Earth number of 360 panorama</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trafalgar Square, London, 2009</td>
<td>9,755</td>
<td>707</td>
<td>314,962</td>
<td>11</td>
</tr>
<tr>
<td>Millennium Park, Chicago, 2009</td>
<td>3,362</td>
<td>717</td>
<td>110,559</td>
<td>13</td>
</tr>
<tr>
<td>La Defense, Paris, 2009</td>
<td>2,859</td>
<td>214</td>
<td>11,716</td>
<td>4</td>
</tr>
<tr>
<td>Piazza San Marco, Venice, 2009</td>
<td>2,032</td>
<td>431</td>
<td>6,716</td>
<td>20</td>
</tr>
<tr>
<td>Piazza san Pietro, Roma, 2009</td>
<td>506</td>
<td>100</td>
<td>5,939</td>
<td>12</td>
</tr>
<tr>
<td>Miroir d’eau, Bordeaux, 2009</td>
<td>136</td>
<td>65</td>
<td>5,148</td>
<td>5</td>
</tr>
</tbody>
</table>

This paper will not delve into in-depth analysis of the results presented in the table above. Instead, the intention is to point out that the ICT age offers some new possibilities and tools to recognize individual preferences and relations in considering different public space. This issue merits much further research and detailed analyses, but for the domain of this paper, the most significant highlighter is that the Millennium Park in Chicago, as a 21st century park creation with a lot of interactive public art and urban equipment, is surprisingly highly ranked in the above table, given its short longevity and that the new spaces need time to gain popularity and acceptability. A new way of creating public place as relational urban space with multiplex-meaning inspires and animates user-space dialog. Consequently, it accelerates people’s identification with public place and the enforcement of its personalization and liveability. And yet, the position of the Trafalgar Square is not exclusively the product of its durability, but predominantly the result of its transformability and adaptability through different happenings, art installations and ephemeral equipment, for example, the May 2007 Trafalgar Square event when the square was covered with approximately 2,000 square feet of grass.\(^\text{12}\)

\(^{12}\) http://www.flickr.com/photos/blahflowers/513598511/ (accessed 31 August 2010); Typing key words ‘green Trafalgar Square’, Flickr.com instantaneously provided 1606 images, while, for example, searching Piazza san Pietro, Rome, 2009 has 506 images for entire year of 2009.
The transformable concept of urban space based on the surprise effect, the new green place for relaxation in the city core and the multiplex-meaning with a huge set of possible spacet ime-user relationships might create the key objectives of a vision of public place as the relational urban space.

4. Conclusion remarks

This relational approach to the urban design process shifts attention from urban forms to urban issues; from appearances to urban operations and from a bounded to a relational concept of an urban site. The concept of urban/spatial configuration means relations which take account of other relations in urban context. Accordingly, new techniques have been developed and applied to a wide range of architectural and urban problems. The communication and information functions of urban space are considered through the quality of connectivity and hybridization in multiplex-layered urban relational space. The cognitive function of urban space is explored through the quality of public place user’s suitability in multiplex-meaning track and framework, and the city is no longer conceived as the lifeless inert structure that supports life, as does the sum of buildings, technologies and distinct isolated elements. On the contrary, it is an evolutionary organism that constantly interacts with people; it is customized by people and it customizes human behaviour as well. In the circumstances of free property market, citizens' preferences have priority in shaping supply and demand. The preferences of urban space users are the result of communication between the citizen and his or her living environment that is the object of consideration by different disciplines (psychology, anthropology, sociology, urban design, architecture, ecology). The urban design process promotes urban space and public place that will be attractive with high aesthetic qualities. But it also represents qualities and relations:

- **safe** – the place that makes fear and injure possibilities minimal;
- **accessible** – the place that is an element of communication and flow network, that includes different transportation modalities and accepts the mobility degree of all citizens, including person with special needs;
- **legible** – the place with potential for adequate space orientation, physical and visual clarities, and with recognized identity;
- **comfortable** – the public place with a lot of greenery, water and sound effects, with wind and rain shelters, sunny in the winter and with pleasant shadow in the summer;
- **inspirational** – the urban space which animates, stimulates and educates with emitting messages;
- **liveable** – the urban space that is usable because of its urban equipment and urban furniture, and adaptability to social, technological and financial change.

All adjectives used above explain urban relational space; in fact, the relationships and interaction between people and the built environment are defined by the communication process of negotiation and cognition.

The future development of urban space will continue if the urban design process is comprehensive in its integration of non-verbal communication between people and place. Multiplex-meaning became the option to explain professional creation and changes it from the author’s monologue to a dialogue between user and place by establishing relations and recognized meanings. Multiplex-meaning represents the argumentation set for the negotiation process in the decisions domain, as well as for citizen education in the place usability domain.
And last but not least important, the 21st century context offers the new way of network communication through picture, sound and text. Public place is no longer a source of analogy messages only. It becomes a source of digital signal that connects people and space-time framework, and creates new multiplex-meaning in relational urban space of contemporary and future town and cities.

References


Visions for a walking and cycling focussed urban transport system

Miles Tight
Institute for Transport Studies, University of Leeds, United Kingdom
m.r.tight@its.leeds.ac.uk

‘If the spectator is mired in realistic narrations and offered no utopic visions, what will produce a disposition for social change, an inclination to draw affinities across all the spaces and peoples of the city?’
M.C. Boyer

Summary

This chapter presents three alternative visions for the role of walking in urban areas to the year 2030. Each of these visions is based on the UK and represents a substantial change to the current situation and to what might be expected to happen if things continue as normal over the next 20 years. Each of the visions presents a view of a society where walking (and cycling) are considerably more important than is currently the case and where these modes cater for a much higher proportion of urban transport needs than now. The visions show a picture of an urban environment where provision for walking (and cycling) has been substantially enhanced and where dependence on motor vehicles has been reduced (in two of the visions to very low levels).

The visions are based on work which has been undertaken as part of a UK based research project funded by the UK Engineering and Physical Sciences Research Council under grant EP/G000468/1. This work has involved input from colleagues at the University of Leeds and from the 4 other universities involved: Oxford, Salford, East Anglia and Manchester. Tight et al (2009) provides a fuller report of this project.

1. Background

This work starts from the premise that in the UK (and many other countries) the current walking environment, perceptions of walking, provision for walking and the status and role that this mode plays in society and individual’s lives could be substantially enhanced and improved. The discussion here is UK focussed and the examples given are based on a typical UK urban environment. Despite this, the kinds of changes suggested in the visions presented here are felt to provide a useful basis for discussion about similar step changes in other countries. The focus of this discussion addresses the questions what could an urban transport system, which is very much more orientated towards walking and cycling as key modes of travel than currently, look like and how would it function?

Walking is such a ubiquitous activity that it is often not regarded as a transport mode at all. However, even in highly motorised societies, it is an important component of almost all trips and in most places it still remains an important mode in its own right. Encouraging more walking could have a number of benefits including improvements in public health (Cavill, 2003) and greater public engagement with their local environment and use of public space.

B.3. The future of walking

(Gehl and Gemzoe, 2003). If a mode shift away from motorised modes could be achieved then the additional benefits may include reductions in congestion, vehicle operating costs and pollution. More widely, Litman (2006) suggests that improvements in “walkability” (the quality of walking conditions) could additionally improve basic mobility, community livability, economic development and equity and lead to more efficient patterns of land use.

Despite the benefits of walking to society and the individual, walking has been in decline for many years in many developed countries. In the UK walking accounted for 35% of all trips in 1975/76, but this fell to 24% in 2006 (DfT, 2007a). This decline is mirrored in the USA where between 1975 and 1995 walking’s share of urban trips fell from 9.3% to only 5.5% (Pucher and Dijkstra, 2000). While the proportion of trips in both cases has fallen, walking is still an important mode of transport and in the UK it accounts for 80% of all trips under 1 mile (DfT, 2003). By its very nature walking is something that virtually everyone does though households without a car walk on average 65% further than those with a car. Nearly 30 years ago Hillman and Whalley (1979) concluded that: “in both transport policy and practice, it [walking] has been overlooked or at the least, has been inadequately recognised”. This may in part have been due to a feeling that walking “will take care of itself” (Litman, 2003) and that walking is a benign mode of transport in the sense of having few adverse impacts. Pucher and Dijkstra (2000) report that transport and land use policies have made walking “less feasible, less convenient, and more dangerous”. Formidable obstacles to walking remain such as low density sprawl generating long trip distances, narrow or non-existent footways, inadequate crossing facilities and the growth of motorised traffic. Funding for walking provision in the UK is a negligible percentage of total transport funding by government, though added to by the work of independent organisations such as Sustrans. There are positive signs with a number of recent Government initiatives to develop and promote walking (DfT 2005a; 2005b; 2007b; 2007c; DETR 2005) and at a more local level in some cities such as London (TfL, 2004b, 2005). However, it is not yet clear that there is any long term vision and consistent strategy to promote a step change in the way in which walking is perceived and the role it plays.

There is a strong case to increase the amount of walking in the UK to improve health and wellbeing and reduce the impact of emissions on the environment, as well as reduce the levels of local congestion. The potential is substantial as nearly two thirds of trips are under 8kms in length (42% under 3kms), and as 25% of car trips are under 1.6 kms, where their efficiency is at its lowest. In many European countries there is a better record on walking and cycling than in the UK. Recent work by Bassett et al (2008) makes a comparison of proportions of walking and cycling trips between various countries – the UK population makes around a quarter of trips by walk or cycle, compared to just over 30% in Denmark, Finland, Germany and Sweden and close to 50% in the Netherlands. In many European cities, walking and cycling account for over 50% of all trips, and most recently in the UK the Sustainable Travel Demonstration Towns have already recorded substantial increases in walking and cycling. The time is now right for considering the role that walking should play in the future and seeking ways in which this might be significantly enhanced.

Visioning as an approach to bringing about change is being used more frequently in the transport area, though very little of this has so far focussed on transport modes such as walking and cycling. Visioning involves describing an end point or a future, often very different from the present (and which presumably in most cases has some desirable attributes, at least from the perspective of the person(s) doing the visioning, though not necessarily so). Most such visions have tended to focus on the transport system as a whole, mostly using various forecasting techniques to examine how future states might appear. More recently and rarely a few studies have also used backcasting techniques to consider desirable futures. Such techniques are particularly appropriate to walking and cycling as they provide a means by which it will be possible to consider situations and futures which are fundamentally different to those which exist now and which involve significant diversions from
current trends or small scale incremental change. The role of backcasting in this context is to provide a means of examining the possible pathways to achieving visions (or end points) by working back from the visions to the present. To date there have been relatively few studies which have applied such techniques in the transport field and none which have specifically focussed on walking and cycling. Previous projects such as the Rees Jeffreys Futures project (Tight et al, 2000), the OECD Environmentally Sustainable Transport project (OECD, 2002) and the EU funded POSSUM project (Banister et al, 2000) have considered all aspects of transport, while more recent work such as VIBAT (Hickman and Banister, 2007) and VIBAT London has focussed particularly on Carbon emissions and transport, while the work of the Visions2030 project (www.transportvisions.org.uk) was most concerned with the motorway and trunk road networks and the various government Foresight reports (www.foresight.gov.uk) have tended to be very technology led. In relation to walking specifically, for example, the London vision is to become one of the world’s most walking friendly cities by 2015 – more people making walking their first choice. However, a distinct focus on specific flagship locations – the so-called “streets of gold”. Are there examples where a much wider emphasis has been put on walking or aspects of walking, e.g. waymarking in London.

Three possible visions are outlined below along with an assessment of the current situation. Note that all the visions require an enhanced role for cycling as well as walking – despite the differences in the modes, I find it very difficult to envisage a fundamentally different future for walking, without a key role for cycling too – I doubt that one can really take on a more fundamental role without the other. Cycling and walking have a number of similarities – both involve the human body as a power system, they are exposed to the weather, both types of user are very vulnerable if involved in a collision with a motor vehicle, both are unlicensed, and both have been somewhat peripheral to mainstream transport research funding in the UK. However, despite these similarities, the two modes are fundamentally different and have different roles and requirements, though the role they play in a sustainable transport system could be seen as complementary. Cyclists typically cover greater distances than walkers and usually require a surfaced road. Walking is almost ubiquitous, requiring little training, while cycling is a less common activity, not popular as a mode with large proportions of the population and does require a degree of learning and confidence. All the visions aim to create an environment where the quality of the experience is improved for those who already walk, but also an environment where substantially more people walk (and cycle). The context for all of these visions is the UK, though the generic ideas could be extended to other circumstances relatively easily.

2. The Visions

Three visions or future scenarios are imagined below. Two of these consider future circumstances where change from the present has been generated through choice and a desire on the part of society for alternatives to the current situation in our urban areas (perhaps driven in part by a recognition of the unsustainability of the current situation); the third has in part been forced upon society by external constraints, in this case a fuel crisis, so the vision represents one way in which society might chose to adapt to this circumstance. All the visions aim to create an environment where the quality of the experience is improved for those who already walk, but also an environment where substantially more people will walk and cycle.

The visions have been developed by a process of review, discussion amongst the members of the research team and extensive discussion with (largely UK) stakeholders and experts through a series of workshops, project meetings and presentations. The visions have
developed substantially from their initial form as a result of these inputs, though inevitably they do not represent a complete consensus amongst all those involved. The visions are intended not as definitive statements of how the future should be, rather as a stimulus to debate about what could be possible if there were desire or other good reasons for change. Without recognition of what it might be possible to achieve and a consideration of substantially different futures to now, it seems likely that future change will remain predominantly incremental.

The visions are all based around an imaginary urban area, which is illustrated in Figure 1. This area has characteristics which are easily recognisable and apparent in many UK urban areas and we have chosen to assume that it has a population equivalent to a medium sized city of around 250,000 people.

![Figure 1 Mock-up of hypothetical urban area (coloured circles show locations of different sections of the area).](image)

Each of the visions are presented partly in the form of a narrative which describes the more general features of these future urban areas and partly through a series of visualisations of how parts of the urban areas might look and how they might function in 2030. Five areas of the city have been chosen and are shown as they are in 2010 in Figure 2 and in each of the three visions for 2030 in Figures 3 to 5.

- An older **Victorian Street** which would have been built initially for very different traffic requirements than is now the case and which has over the years adapted slowly to changing circumstance, not always successfully. It is very much constrained for space by the building line. On road parking is the norm as the houses were designed before the need for parking was considered. The streetscape is cluttered and the mixed uses are difficult to accommodate. It is not an overly pleasant place to travel or live and noise, safety and local air pollution are all issues.
• An **edge of town** location where the urban fabric meets open space. The city is bounded by a ring road, though beyond this there is now some development such as business parks and out of town shopping centres. Traffic on the ring road is heavy and pedestrian and bicycle access between the residential zones of the city and the facilities outside the ring road is difficult – most such access is by car for which the facilities have really been designed.

• A **suburban shopping area** containing mid-range shops and perhaps a small supermarket. An area with many competing uses – in part a through route for both traffic and pedestrians, in part a destination in its own right. It is an area which has many problems, in particular safety issues for pedestrians, problems of parking and a complicated traffic mix, with public service vehicles and freight deliveries common.

• A more modern estate towards the edge of town (described here as a **60s/70s estate**). This is essentially a residential estate, perhaps slightly run down and with the range of social problems which characterise such areas. On the positive side there is a lot of space, as the estate was designed on a low density model, and hence, unlike the Victorian street, there is more room to construct a more pedestrian friendly environment. The streetscene shown has a large primary school on the left hand side of the road and hence some very time-constrained pedestrian issues at certain times of the day.

• A **suburban interchange**, in this case a rail station. This is an important link between the outer neighbourhoods of the city and the city centre and one where currently the facilities for access on foot and by bicycle are limited.

Each of these locations in the imaginary city of 2010 are not intended to be the best (in terms of their walkability and cyclability) – indeed there are many examples of such locations in UK urban areas where facilities for walking and cycling exist which are much better than those portrayed here. However, nor are these representations the worst of their kind in UK urban areas – indeed many might argue that there are many worse examples. If anything the examples shown perhaps fall just to the worst side of average.
Table 1 shows current mode split (trip stages) for the UK and a proposed mode split for 2030 in each of 3 alternative futures. These latter figures are not real, though the figures for Vision 1 are based on the kinds of mode split currently experienced in some European urban areas where ‘best practice’ is currently applied. The figures for Visions 2 and 3 are part of the vision and are the desired levels to achieve those visions.

Table 1 Approximate mode split (trip stages) for the current situation and the 3 2030 visions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>28%</td>
<td>32%</td>
<td>37%</td>
<td>40%</td>
</tr>
<tr>
<td>Cycle</td>
<td>1%</td>
<td>13%</td>
<td>23%</td>
<td>40%</td>
</tr>
<tr>
<td>Public Transport</td>
<td>12%</td>
<td>25%</td>
<td>35%</td>
<td>15%</td>
</tr>
<tr>
<td>Car</td>
<td>59%</td>
<td>30%</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>


2.1. Vision One – European Best Practice

This vision of the future represents a widespread implementation of current best practice towards more sustainable travel behaviour. Examples of elements of this vision already exist in many urban areas around the world. Cities such as Delft, Groningen, Copenhagen and Munster in Europe all display aspects on this vision, as do cities such as Portland in Oregon. This vision also reflects the best practice as proposed by documents such as the UK Manual for Streets (DfT, 2007b).
In this vision we foresee moderate increase in walking and considerable increases in cycling relative to the current low base. Public transport usage has also increased, whilst car use within the urban area has substantially declined (see Table 1). One of the principal controls on car use is through adjustments to the amount and price of parking for cars, though congestion remains a problem and the permeability of the urban areas for car travel is reduced. Controls on driver behaviour such as Intelligent Speed Adaptation (ISA) are generally in place resulting in slower traffic speeds and greater conformity to speed limits. Much of the restricted level of car travel is for trips which remain impractical for either walking, cycling or public transport and for those for which use of such modes would be difficult or impossible. Figure 3 shows the locations from Figure 2 as they may look in 2030 in the Vision 1 scenario (note that the buildings and physical dimensions of the streets remain essentially as in 2010).

Figure 3 The urban locations as they may look in Vision 1.
The fundamental difference in Vision 1 from the current day is that best practices in terms of infrastructure and supporting measures for walking and cycling have been widely implemented making these modes attractive choices to a much wider range of people than is currently the case. Safer bicycle paths and more pleasant pedestrian environments have meant that a higher proportion of trips are now made by these modes. Attention has also been given to a stricter land use policy to prevent further sprawl; with a real benefit that many people are within a short cycle ride of shops and other daily needs, though the fundamental structure of the urban area has remained largely the same as now. Walking and cycling are considered more important and central to good transport planning by those responsible for developing the urban transport system than at present, though not yet perceived as such universally by all sectors of society. There is increasing widespread recognition and understanding of the wider benefits of a greater focus on walking and cycling, including potential benefits in terms of reduced carbon emissions, improved local air pollution, reductions in noise, increased sociability of the urban environment and improvements in health. Attitudes of all road users towards walking and cycling have improved.

In this vision public transport links more effectively with walking and cycling (see Figure 3c and e) and provides the means for using these modes as part of longer journeys. In general public transport is substantially improved over the current situation in terms of key performance indicators such as reliability, comfort, convenience, cost and frequency. Interchange facilities between public transport and walking and cycling in improved.

The road hierarchy has become more transparent, particularly as it relates to walking and cycling. Specific spaces for these modes are the norm on all streets (see Figure 3 all images) and some differentiation has been made for fast and slow cycling. The networks for walking and cycling are more highly connected and legible than is the case at present. Online information on routes is widely available and waymarking and signposting are commonplace (see Figure 3d). Road safety has generally improved, though some accidents still occur. Legislation regulates between the different classes of road users in favour of non-motorized road users. Instinctively the notion that driving is a right, and only motor vehicles have a ‘right to the road’, has been changed by a very active public campaign targeting both safety as well as physical activity levels in the population. Park and ride (or cycle and ride) are provided on the perimeter of the urban area.

Cycling and walking have been boosted by a legal mandate for a proportion of yearly expenditure to be spent on making real improvements to each city’s ‘core network’. Local Authorities are now required to implement a ‘core network’ of cycling paths and quality walking spaces with legal minimum levels of provision (including parking) based upon density of population. To combat bicycle theft partnerships with shops and police have been expanded to provide marking and prevent selling of stolen bikes. Maintenance and enforcement of the cycle network and footpaths is also exemplary. Street clutter has been reduced to make movement through the urban area on foot as easy as possible and to ensure minimum standards for footway width.

Freight transport and deliveries are still largely undertaken by lorries and vans (though with a greater dependence within the urban area on electric vehicles). Significant advancements have taken place in home delivery systems and ‘freight windows’ for stock deliveries in city centres.

2.2. Vision Two – A car-free public transport orientated future

In this vision there has been a substantive change in transport behaviour in urban areas, going well beyond the changes experienced in Vision 1 (see Table 1). Walking, cycling and public transport have increased considerably compared to Vision 1 and to the base case. There has been a dramatic reduction in car use so that it is now a minority mode. As well as
changes in the transport system we envisage that this vision is only really achievable with major changes in other aspects of society which have lead to a willingness and acceptance of the need and desirability of the changes involved.

Figure 4 shows the same 5 locations as in Figures 2 and 3 and how they may look in 2030 under the Vision 2 scenario.

In Vision 2 car use in urban areas is curtailed through government action and through the positive appeal of alternative modes of travel. Most people do not own or use a car (see Figure 4 all images). The principal private car users are those with mobility difficulties who cannot realistically use ‘active’ modes and a small number of people whose mode of transport needs to be prompt (doctors doing home visits may be an example). Where practicable all these car users make use of car pooling and integrate car use with the
enhanced public transport network. Car design takes on board latest technological developments, for example to support automatic speed reduction and carbon emission reduction.

Walking and cycling are considerably more important modes both than in 2010 and in Vision 1 in 2030. These modes have undergone a radical change both in the volume of activity, in the enhanced way that they are perceived by society as a whole and in the level of provision. Thus, for example, most school children walk and cycle to school, whilst enhancing walking and cycling is a central concern for transport planners. Small scale technological developments have encouraged the increased take-up of walking, including: electronic navigation for people who benefit from additional support; pedometers and accelerometers available free from health centres; and careful use of surveillance. Technological developments that have increased take-up of cycling include electric bicycles and electronic navigation.

Public transport has been considerably enhanced to fulfil some of the transport needs previously fulfilled by the car (see Figure 4e). There is substantially more public transport than in Vision 1 and as in that vision there have been improvements in terms of key performance indicators such as frequency, convenience, reliability, safety, accessibility and comfort. Short trips in urban areas are undertaken on foot or bicycle with easy access to public transport interchanges. Longer trips within the urban areas are typically undertaken on public transport, although the walking and cycling enthusiast may choose these modes in lieu of public transport. Hence, public transport is taking on a role which had hitherto been fulfilled for many people by the car. Door to door public transport provides access to dial-a-ride systems (which have been significantly improved from present-day examples of dial-a-ride).

Land use patterns in urban areas have changed particularly to support the infrastructure for improved public transport, though in general this change has been slow and incremental. The road network is essentially similar to the Vision 1 although the distribution of space on the road network has changed with a greater focus on walking and cycling (see Figure 4 all images). Easily accessible transport interchanges are provided in neighbourhoods within close proximity to most residences and there is increased use of streets as social spaces for children and others.

Whilst there would inevitably be an increase in the number of public transport vehicles, it is in general expected that these would be segregated from the walking and cycling networks. However, within residential neighbourhoods smaller public transport vehicles will share road space with pedestrians and cyclists (see Figure 4a and d).

Freight is transported from distribution centres by a fleet of small electric vans which would be segregated from the walking / cycling network where possible.

The city is much more ‘civilised’, insofar as it operates on a model of greater sociability and accessibility, so for example neighbours assist with helping each other to move around, thus reducing isolation. Furthermore, there is respect for other passengers using public transport. Road safety is significantly improved – serious collisions between vehicles are extremely rare, and, when they do happen, involve vehicles travelling at relatively low speeds. Noise and pollution from traffic is reduced and levels of public health across the population are substantially greater than those in 2010.

2.3. Vision Three – A localised energy efficient future

In this vision serious constraints on energy usage have rendered the traditional car virtually obsolete. Parallel developments in ‘smart technology’ have enabled walking and cycling to become the predominant modes of urban transport. This vision of the future represents a
radical shift towards more sustainable travel behaviour. Walking and cycling (Human Powered/Assisted Vehicles (HPVs)) are the predominant modes of urban transit. Buses and trams accounting for only 15% of the modal share are restricted to segregated and direct routes to and from the urban core. The principal car users are those with mobility difficulties who cannot realistically use ‘active’ modes.

Figure 5 The urban locations as they may look in Vision 3.

In this vision supporting technological developments have enabled walking and cycling to become more convenient modes for a far greater proportion of the population than is currently the case in 2010. These technological developments exceed those in Vision 2, though their extent is somewhat limited by energy constraints where renewable sources of energy are not available. Examples include: ‘neighbourhood electric vehicles (NEVs)’; electric bicycles; ‘airport-style’ moving walkways; covered / weatherproof walking and cycling networks; electronically-assisted bicycle security; and electronic navigation technology for cyclists, pedestrians and those who are partially-sighted (see Figure 5a, d and e).
B.3. The future of walking

Road safety has significantly improved; serious collisions between vehicles are extremely rare and, when they do happen, involve vehicles travelling at relatively low speeds (~20mph). As in Vision 2 the city is also much more ‘civilised’, insofar as it operates on a model of greater sociability and accessibility; traffic noise is almost non-existent and levels of public health are substantially greater than those in 2010. Moreover, private cars are no longer the status symbol they once were.

Land use has changed considerably from 2010 patterns. Local, neighbourhood facilities predominate at the expense of ‘out of town’ shopping centres (see Figure 5d). Residents living within the urban area can easily travel as a pedestrian or by bicycle for the majority of their trips. Individuals entering the city from surrounding areas, where required, are able to hire bicycles from ‘mobility hubs’ situated around the city boundary (see Figure 5b) and either cycle or walk into the urban core.

Freight is transported from distribution centres at the edge of the urban area to locations in the city through a mix of bicycle transportation and electric goods vehicles, supported by online delivery-booking technology and mobility hubs at the edges of the urban area.

3. Conclusions

This paper has set out a number of visions for the year 2030 which bring about a step change in the level of walking and cycling in UK urban areas. The visions are intended as a basis for discussion and to help promote thought about whether such futures are firstly possible (i.e. how would society have to change to make them happen and what kinds of activities which are currently possible would no longer be so) and desirable. Vision 1 is probably largely achievable without major changes to the way in which society works (indeed, the vision is based on circumstances which largely exist already in a number of continental European urban areas). Visions 2 and 3, if they were to happen, will require changes to society and to the attitudes and behaviour of people within society – there would need to be a willingness (or perhaps a need) to make such changes in order to bring the visions about. The benefits of such changes are potentially extensive – reduced local noise and air pollution, decrease in emissions of greenhouse gases, improved safety, better fitness levels of the population, as well as changes which are more difficult to quantify such as greater sociability of the urban environment, increased freedoms for children to use the environment and an overall improvement in urban quality of life. The urban areas described in visions 2 and 3 and the way in which those urban environments work will be very different to what exists now in 2010.

It is interesting to speculate on what the chances are for such radical changes and shifts in urban transportation (and more generally, particularly for Visions 2 and 3, in society as a whole) over what is a relatively short period of time into the future. Clearly such changes would involve a considerable degree of consensus that such futures are desirable and possible to achieve and also a concerted effort across a range of different scales to bring about. However, it is probably true to say that if we do not think about the possibilities for such radically different futures and consider the pathways by which we might achieve them (and the implications of such pathways for lifestyles, social and economic functioning and society), then we have almost no hope of achieving such substantive change and gaining the potential benefits it could bring – we will instead be constrained to incremental changes.
Acknowledgements

This chapter has developed from work bring undertaken in the UK funded by the Engineering and Physical Sciences Research Council under grant EP/G000468/1. Due acknowledgement is made to the inputs of colleagues at the University of Leeds and in the partner Universities involved in that project who have contributed to the development of these ideas.

References


The future of walking: summary, conclusions & recommendations

Daniel Sauter
Urban Mobility Research, Zurich, Switzerland
daniel.sauter@urban-mobility.ch

Mário J. Alves
Associação de Cidadãos Automobilizados, Lisbon, Portugal
mariojalves@gmail.com

1. Introduction

“The future belongs to walking and cycling.” This enthusiastic claim by a research report written in Switzerland in 1999¹ is not yet mainstream policy. In fact, the future of walking is not much of a topic at all, neither in research, policy, nor in public debates. Also “future of transport” reports rarely contain information about active modes, such as walking and cycling. This may come as no surprise given the fact that walking has been neglected by state institutions for decades.

The authors of Working Group 3 deal with walking trends and visions from many different perspectives. The report assembles 13 contributions written by 17 authors with many different professional backgrounds, living in 10 different European countries. Based on literature, inspired speculation and their own assessments, the authors lay a foundation of knowledge on which the debate can be built. They look at evidence from the past that may inform the future; they describe today’s trends and explore probabilities of change; they develop visions and investigate opportunities and threats.

2. Methodological approach

The participants of Work Group 3 adopted a format in which the individual members analysed different topics chosen according to personal interest and background expertise and the group then discussed their insights during the meetings. The time horizon agreed was 2030, i.e. 20 years into the future; the geographic scope of all the articles is Europe.

The publication is divided into three main parts: perspectives, trends and visions – each comprising several chapters. Perspectives relate to the double meaning of putting issues into a broader and longer-term context and at the same time providing personal views about some of the crucial issues for the future. This section comprises contributions by Mário J. Alves and Nicole Muhlrad about the role of energy prices, peak oil, climate change and their impacts on society; by Manuel João Ramos and Daniel Sauter about public spaces: the positive sides of improvements and their caveats; and of Rodney Tolley, Les Lumsdon and Karen Bickerstaff about experts' opinions on the future of walking.

The section on trends deals with specific issues and developments relevant for walking sometimes combined with a specific geographical focus. This includes papers on: the impacts

of an aging society by Iris Mühlenbruch and Barbro Rönsch-Hasselhorn; health benefits of walking by Hans and Kati Orru; leisure and tourism by Thérèse Steenberghen; and land-use, urban sprawl and urban regeneration by Emil Drápela and Karel Schmeidler.

The papers in the last section provide visions of what the future might be like and what we could learn from the past to create a (more) pleasant future for pedestrians. Lucia Martincigh describes the rich cultural and architectural heritage that contains a wealth of ideas for the future; Dragana Bazik pictures a vision of the future of public space as multiplex relational environments; and Miles Tight conceptualises the potential of reduced car traffic for walking-friendly cities.

The results of the discussions and papers are summarised in the following chapters under four main headings: A walking city is imaginable (chapter 3); Planning for people in a changing society (chapter 4); Creating inclusive public spaces in urban and suburban areas (chapter 5) and, The crucial role of energy prices for the future of walking (chapter 6). These presentations will be followed by Conclusions and recommendations for policy and research (chapter 7).

3. A walking city is imaginable

Artists, philosophers, urban planners and architects have been dreaming, writing about and drawing “ideal cities” for hundreds of years (Martincigh). In most of these visions the pedestrian is the measure of ideal urban spaces. Even after passing the mid-twentieth century, at the height of love for the automobile, visions returned to cities crowded with pedestrians and bicycles. Recent high-tech visions of relational spaces use the interaction of pedestrians as the basis for highly connected information environments (Bazik).

Ideals are at odds with reality and seem impossible to be attained. This is exactly why they are ideals. Visions guide and push us to make the current state of affairs live up to our ideals. They might also be the only way to help policy makers break with current paradigms. In the near future it seems more likely that we will have to change our consumption patterns drastically: not only does our current life-style put us in danger but it will be impossible to continue once consumption in all countries reaches the same level as the developed world (Muhlrad, Alves). Some reversal of past trends and the discontinuation of past paradigms will be necessary. Most authors agree that gradual changes might not be enough to face the enormous challenges such as the ecological and energy crises.

A basic exercise in imagining urban environments that are responsive to different mobility patterns is proposed by Miles Tight2. This constructs three visions for 2030 from archetypal urban environments common in the United Kingdom. All three visions are based on substantial improvements in the conditions for walking and cycling. Proposed modal splits are significantly different from the reference year 2010 and shown in Table 1. Vision 1 takes best practice from Northern European cities as the model where modal split is more favourable to cycling and walking, though car usage still represents one third of the trips. For visions 2 and 3, urban environments are imagined in ways that accommodate radical changes in the present modal split. In both these visions cars will be the mode of choice in only 5% of the trips.

---

Table 1  Approximate mode split (trip stages) for the current situation in the UK and three 2030 visions (source: Tight et al, 2009)

<table>
<thead>
<tr>
<th></th>
<th>Current situation</th>
<th>2030 Vision 1</th>
<th>2030 Vision 2</th>
<th>2030 Vision 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>28%</td>
<td>32%</td>
<td>37%</td>
<td>40%</td>
</tr>
<tr>
<td>Cycle</td>
<td>1%</td>
<td>13%</td>
<td>23%</td>
<td>40%</td>
</tr>
<tr>
<td>Public Transport</td>
<td>12%</td>
<td>25%</td>
<td>35%</td>
<td>15%</td>
</tr>
<tr>
<td>Car</td>
<td>59%</td>
<td>30%</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

1 Data from U.K. National Travel Survey, 2006.

The first vision is based on European best practice with examples already existing in many urban areas, such as Copenhagen, Delft or Zurich. It assumes a moderate increase in walking and considerable increases in cycling relative to the current low base. Public transport usage would also be up, whilst car use within the urban area would have substantially declined, mainly achieved through adjustments to the amount of space available to private vehicles and the price of parking. Technical devices in the car increase conformity with speed limits and, thus, result in higher road safety. Mode segregation prevails in this vision based on a network of separate bicycle and walking paths. The third of trips done in cars still consume, however, substantial urban space and energy. Since the vision is based on best practice it follows the current trend, improving comfort and liveability but falling short of any drastic changes. The vision does not address what might happen if peak oil arrived within the next ten years as some leading experts predict and climate change phenomena became a bigger problem (Alves, Muhlrad). If this were the case, more drastic changes may occur and more severe interventions may be necessary.
B.3. The future of walking

Vision 2 depicts a more radical situation: Walking, cycling and public transport have increased considerably compared to Vision 1 and there has been a dramatic reduction in car use. In urban areas it is curtailed through government action and through the positive appeal of alternative modes of travel. Longer trips within the urban areas are typically undertaken on public transport. Walking and cycling increase substantially – for example most children walk or cycle to school. Land use patterns in urban areas have to change to support the infrastructure for improved public transport. To achieve the vision probably also moves towards a real-cost economy with green taxation to internalize environmental impacts are necessary (Alves, Muhlrad). For this, strong political will as well as public participation and debate are essential. The implementation of the vision may, however, benefit from increasing oil prices. This may or may not make the transfer of large funds towards public transport, walking and cycling easier.

Vision 3 – a localised energy efficient future – attains the same almost car-free future as Vision 2 but with less help of investment in public transport. In this vision serious constraints on energy usage have rendered the traditional car virtually obsolete. Parallel developments in ‘smart technology’ have enabled walking and cycling to become the predominant modes of urban transport. Buses and trams accounting for only 15% of the modal share are restricted to segregated and direct routes to and from the urban core. Land use has changed considerably from 2010 patterns in this vision, making the cities more compact. Local, neighbourhood facilities predominate at the expense of ‘out of town’ shopping centres. Residents living within the urban area can easily travel as a pedestrian or by bicycle for the majority of their trips. Technology is the basis of this vision with proliferation of small personal mobility devices such as Human Powered/Assisted Vehicles (HPVs) and infrastructures to help pedestrians, such as moving-walkways and elevators. In a fast aging society (Mühlenbruch & Rönsch-Hasselhorn) this vision needs to be carefully laid-out in order not to leave behind substantial parts of the population that might have difficulties using active modes.

The first vision is probably largely achievable without major changes to the way in which society works (indeed, the vision is based on circumstances which largely exist already in a number of continental European urban areas). However, it will not prepare our cities for the drastic changes in resource availability that might be necessary in the next 20 years. Visions 2 and 3, if they were to happen, will require changes to society and to the attitudes and behaviour of people within society – there would need to be a willingness (or perhaps a need) to make such changes in order to bring the visions about. It is important to point out that to achieve these kinds of changes the exercise of envisioning becomes an essential part of the planning process. This suggests that the only way to face the challenges of climate change and peak oil, as well as thinking of a different society is by envisioning walking and cycling cities – this is not only possible but might become the most vital step in future urban policy processes.

4. Planning for people in a changing society

If we look at current trends in European societies we can make out three developments, among others, relevant for walking in the future: first, the percentage of elderly people will increase, second, health issues will become more important; and, third, leisure and tourism will continue to grow. All three fields require an adaptation of policy, planning and promotion that will favour people on foot and provide attractive facilities for spending time outdoors.
4.1 Provisions for the aging of society
Societies across Europe are getting older in absolute and relative terms. The long-term impact of this demographic change on walking is hard to predict because of conflicting trends. The elderly of tomorrow will be, on the one hand, fitter, healthier and, partly, wealthier. So there is the potential that more elderly people will walk more for more years. But, compared to the present, a higher proportion will have a driving license and own a car. On the other hand, the extended age also implies that many elderly will be frail and vulnerable. Creating a walking-friendly environment is important for their independent mobility. Measures should address the fields of the built-up environment, planning processes, services and information/awareness. It is important to provide basic local services such as food stores, medical services and recreation facilities within walking distance. Traffic systems and information have to be kept as uncomplicated and as clear as possible. More shelter, seating, public toilets, hand-railings and improved lighting in public spaces will be needed, particularly in the suburban areas. To achieve all this, participation of elderly people in the planning process is essential and should start now (Mühlenbruch & Rönsch-Hasselhorn).

4.2 Benefits of walking for health
Active lifestyles have received increasing attention over the last decade and it can be assumed that this trend will continue, especially because of the contribution to personal well-being, the societal benefits and health cost savings. Based on the evidence that physical inactivity leads to overweight and chronic diseases resulting in rising health costs, there are strong arguments in favour of walking and increased measures to reduce car use. Political awareness and action will be crucial – now and in the future: gaining politicians’ support is necessary to help make neighbourhoods more walkable and to increase accessibility to parks and natural areas. Creating better conditions will clear the way for more health-related walks. This has a positive effect on fitness and physical health as well as on lowering stress levels and improving the overall well-being (Hans & Kati Orru).

4.3 Walking friendly environments for leisure and tourism
Tourism and recreation are both increasingly important in our society, a trend expected to continue. Walking is part of the tourism experience and, thus, the tourism industry increasingly helps authorities to understand pedestrians’ needs and influences the travel and walking patterns of tourists. However, these positive impacts also have a down-side – the commercialisation of public space being one of them. Therefore, it is crucial to find a balance between tourist needs and the characteristics of the place and its society. Aside from tourism, leisure time and recreation will remain important parts of people’s everyday lives. Walking is part of this leisure time for many reasons: exercise, being outdoors, enjoying the environment, relaxation, meeting people et cetera. Environmental qualities are particularly important for leisure walking. This implies that, on top of the basic pedestrian requirements, additional qualities are needed to help people free their minds and make their walk enjoyable and relaxing. In the future, we will need more spaces that meet these conditions and are easily accessible from homes (Steenberghen).

5. Creating inclusive public spaces in urban and suburban areas
Three main space-related developments have been identified that will affect walking in the future: First, the concurrent trends of urban regeneration and continued urban sprawl; second, the upgrading of public spaces with some adverse effects of gentrification and social exclusion; and, third, the need for public space design to include insights from the past and analyses of current societal characteristics.
5.1 Land-use development

Two simultaneous trends in land-use are taking place: a continued suburbanisation and the urban renewal of many city centres. The degrees of both differ across the European regions depending on economic and demographic developments. Besides economic pressures, urban development is shaped by three lifestyle-related trends: (1) the continued increase of living, working and leisure space per person, (2) the decrease in average household size, and (3) the desire to live half-way between country and city (Drápela, Schmeidler). This urban development is characterised by a social divide. On the one hand, there are high density suburban areas, usually made up of large apartment buildings for lower class populations where car ownership is below average and people are often dependent on public-transport and/or forced to walk in everyday life (so called ‘captive walkers’). On the other hand, there are low density peri-urban settlements with mostly detached housing, often several cars per household and occupied by middle and upper class persons. Walking here is mostly done for leisure purposes. Special attention is needed for the first group in the future. Given the usually poor walking conditions, an aging society, and the likely rise of fuel prices in the long-term, these people will be highly vulnerable. The lowering of distances to amenities plus the improved supply of goods and services will be as necessary as better walking facilities and public transport (Muhlrad).

The trend of re-urbanisation has been triggered by middle class people and well-to-do professionals moving (back) to the city, often to upgraded old neighbourhoods or to newly developed former industrial sites in the centre or along river-, lake- or sea shores. Public spaces are often upgraded as well, making these neighbourhoods inviting for people to walk and spend more time outdoors – a trend likely to increase (Sauter). However, the upgrade of neighbourhoods also leads to higher rents for shops and apartments, forcing lower-income people out of central areas into the suburbs with bad walking conditions. With the city administration’s one-eyed focus on the centre – often supported by pro walking activists – these pedestrians and their fate are forgotten (Ramos).

Both suburbanisation and urban renewal have one factor in common: the growth of car ownership, car use, road network expansions and the number of parking facilities. In the centre these infrastructures are built underground, in the suburbs they are above ground, segregating communities for people on foot. The reason for this development is that politicians, in trying to pursue sustainability yet retain the support of motorists, have been routinely peddling the mixed messages that car ownership should increase but car use should decrease. A consequence of this is that though there are many splendid examples of revitalised, pedestrianised town centres where walking is attractive and popular, these ‘green’ gains are set in a sea of ‘red’ losses elsewhere (Tolley & Lumsdon & Bickerstaff).

5.2 Use of public spaces

The use of public space is changing based, among other things, on the sustained increase in the popularity to stay outdoors, a recently acquired tradition in Northern Europe. There are a number of reasons for this, three are mentioned here: (1) Good quality public spaces have been discovered as economic assets. Pleasant walking atmospheres attract shoppers, tourists and investors, thus, creating business opportunities (Sauter). (2) The authenticity and atmosphere of public spaces counter-balance the isolating living conditions and virtual worlds of people’s everyday lives. With the flexibility of working hours and the introduction of mobile phones and other devices, public space becomes a place of multi-purpose activities (Bazik). (3) For tourist destinations, the economic revenue generated by pedestrian visitors is a stimulus for improving public space (Steenberghen).
Changes towards better design in public spaces and attractive conditions for walking are welcome. But there are also dangers looming such as creating monotonous streets, over-commercialising the city, socially excluding disadvantaged people and gradually pushing low and middle-class residents out to the suburbs. Social conflicts can be the result of these processes of gentrification, privatisation and commercialisation. The high density of use leads to an accumulation of waste, noise problems and vandalism. Surveillance with video cameras and private security firms is usually the response by the administration. Together with the commercial interests to keep the city clean, surveillance often leads to the displacement of so called “undesired” people, such as homeless or begging people.

These social conflicts can be expected to increase in the future with the rising popularity of public spaces. New policies are needed to strike a balance between the positive and negative aspects to guarantee that every person can use the space freely. It is also important that the specific qualities of suburban public spaces be developed so that local residents can spend their leisure time there instead of having to migrate to the city centre. Public space should be seen not only for its economic but also for its social integration potential.

While the role of the car in the city centre will be further moderated in the future, there are new conflicts for space appearing. The expected increase in the use of motorcycles and mopeds may adversely affect pedestrians. Similarly, faster electro-bicycles (‘pedelecs’) and other devices, such as segways and scooters, may create new problems in terms of safety and space allocation. Finally, high speed public transport corridors (e.g. Light Rail or Bus Rapid Transit systems) may cut pedestrian networks apart, after traffic calming had just re-connected them. The challenge will be to manage the limits of space by moderating speeds, re-conquering more space from cars, and achieving a space allocation that allows for safe, unobstructed mobility for pedestrians (Alves).

5.3 Design of urban spaces

Design and planning paradigms for urban public spaces appear to have changed in a number of cities. While the “predict and provide” paradigm as a self-fulfilling prophecy for more car traffic is still used on the national level and in many suburban regions, there is a shift towards providing more spaces for people in the city centres. Accessibility becomes as important as mobility, and area-wide planning is being introduced in addition to single interventions. To accommodate pedestrians’ needs, route-planning (borrowed from the car paradigm) is combined with place-making, meaning that provisions for linear movements (‘links’) are just as important as places for people to stay (‘place’) (Alves, Sauter).

For centuries, urban planners and architects have developed visions of ideal urban environments. One common thread is the pedestrian as the measure of the quality of the space. Squares and streets were always imagined bustling with people walking, trading or talking with each other (Martincigh). It is necessary to learn from these visions for interventions in the future. The adaptation into adequate forms for the suburban context will be one of our major challenges.

Successful design builds on the present societal context. The still-expanding information society creates new perceptions of and conditions for the design of space, with the effect that operational issues become just as important as physical aspects. The relationships and interaction between people and the built environment will be increasingly defined by communication and negotiation. The spaces themselves become relational. This means they are hybrid, multiplex-layered, with several activities happening in parallel, where work and pleasure mix (Bazik). In the future these elements will have to be considered in depth and amalgamated with the ingredients known to make great public spaces.
6. The crucial role of energy prices for the future of walking

Energy prices have always played a crucial role in human mobility and the shape of settlements. Eras of cheaper energy have usually been the forerunner to the fast increase of car ownership, desertification of urban centres and lower density suburbanisation (Drápela). Phenomena such as urban sprawl increased during certain periods of the last century when oil prices declined (Sauter) showing that transport demand changes, albeit slowly, in response to the price of energy.

Two contrasting short-to-mid-term scenarios are introduced by Alves: **Scenario 1** describes a business-as-usual approach, with cheap, private motorised mobility, a lack of political courage to implement real-price economics, and a reliance on techno-efficiency. In this scenario, there would be a continuing trend of increased urban-sprawl and motorised trips (with either fossil fuels or alternative energy vehicles) and a resulting decrease in walking. **Scenario 2** describes the consequences of a sharp increase in the price of motorized transportation. This may result from peak-oil, carbon taxes, sharp increase of carbon in emission trading prices, and/or generalised road pricing. In this scenario, the increasing cost of private mobility would lead to a gradual trend to more compact cities, decreased growth of individual motorised trips and consequently, more, walking.

Real price of individual motorised mobility compared with today’s prices (in city centers and outside of city centers):

- = reduction or remaining approximately the same
- + increase
- ++ sharp increase

change in the amount of walking

**Figure 2 Medium Term Scenarios: price of individual motorised mobility (source: Mário J. Alves)**

Petrol prices are crucial to the future of transport systems. High prices during the next decade will accelerate the conversion to smaller conventional, hybrids and full-electric cars or, in the long term, maybe hydrogen cars. The proliferation of full or partially electric cars will be a mixed blessing for pedestrians. There will also be tremendous legislative pressure to allow Personal Electric Vehicles (like Segways) to be used in all forms of public space – on roads, pavements, indoors (transport interfaces, university campus, hospitals, airports, and so on). There will also be pressure for legislative changes for their usage by young people. The ubiquity of these devices will mean an acute decline in walking. The competition of these devices for space with the pedestrian, their short range and low speeds will be more attractive to pedestrians than to car drivers, especially in a context of increasing urban sprawl (Alves).
For the long-term (2050 and beyond) three possible post-car outcomes will impact walking in different degrees: the ‘local sustainability’ scenario, ‘regional warlordism’ and ‘digital networks of control’. In the first scenario more equitable and environmentally responsible societies are conceivable, if the right policies are implemented now. Regional Warlordism, the second scenario, would see the breakdown of the state as we know it. More subtle forms of Regional Warlordism can be imagined in western societies due to the proliferation of organized crime, high security closed condominiums, deep social inequalities with flares of violence. However, the third and most likely scenario will be different forms of Digital Networks of Control, where highly technological societies are regulated by more or less authoritarian regimes, depending on energy availability. Pedestrians will clearly be the losers in the last scenarios, having to face an undemocratic society or the aggressive use of public space by some groups. Back-casting, sustainable communities and healthier walking are more likely to be attained if the right policy decisions are taken now (Alves).

Two more contrasting scenarios similar to the two of Alves are presented by Muhlrad: the “doom scenario” and the “optimistic scenario”. The promotion of walking for Muhlrad is an essential policy element to avoid the “doom scenario”. In her view this scenario will bring with it increased social inequalities, poorer life quality, economic slump, deteriorating health and rising violence as a result of higher petrol prices and climate change. It is crucial that policies to promote walking be implemented now, since the current trends suggest that negative impacts will arise in the short-term rather than in the long-term.

The "optimistic scenario" implies that walking will be performed on a daily basis, as an independent transport mode or combined with public transport, by a larger share of the population, for longer trips and a longer time than now, with ample possibilities for stopping on the way and sojourning in the public space. To bring this situation about, walking has to be perceived by the citizens as desirable, useful, practical, safe, comfortable, interesting, and compatible with other activities and daily chores (Muhlrad).

Both authors point out that to avoid the worst case scenarios, taxpayers' money will have to be invested in re-developing parts of urban areas, expanding public transport and redesigning streets for safe and comfortable bicycle and pedestrian traffic. It will also be crucial to internalise the impacts of private transport by increasing its price. It is, therefore, easy to conclude that the public money essential for the “optimist scenario” can be obtained from the taxation of private mobility.

This obvious strategy might face strong opposition from car drivers and road transport business. Direct transfer from road or fuel tax to alternative modes of transportation could make this policy easier to implement and more acceptable to taxpayers. Fuel prices will most probably increase in the next few years; if this increase is due to tax collection it will be possible to prepare the ground for the necessary modal shifts. If, on the other hand, the price increases result from peak oil, the shift to cheaper transport modes will be painfully forced on people.

However, the path to real-price economics applied to transport systems will be difficult and therefore slow. Excluding urban road pricing, real-price economics will be controlled by central governments. Hence, for local governments and city political managers, it will become more acceptable to increase the efficiency of demand for modes that the policy vision wants and reduce the efficiency of the supply that induces the demand that the policy vision does not want. This shows that for policy making to attain these long-term objectives, a shared vision of the future will be increasingly important - hence, the importance of the involvement of politics in transport and mobility planning and management. It will become clearer that the phenomena of induced demand not only affect car usage but also work in favour of modes the policy maker wants to encourage. The same way pedestrians “evaporated” throughout the Twentieth Century by the reduction of their space, favouring safety and comfort of public space will be increasingly understood as a possibility to reverse this trend and induce pedestrian demand.
7. Walking is the solution: conclusion and recommendations

Over the past 100 years, walking has been erroneously defined as a problem standing in the way of progress. However, walking is the solution to many transport-related problems and, thus, represents progress. The benefits to the individual and to society are obvious when considering the challenges of climate change, health problems, peak oil and raising energy costs, the impact of financial crises and the survival of the local economies.

The crucial element is that we have to act fast – act now. The sooner walking and public space improvements are implemented and established at the core of national and local transport, environment, health and social inclusion strategies, the greater the benefits to be reaped in the future. Measures for improvement must be an essential part of the overall framework of urban development, so that unsustainable trends are not concealed by a few cosmetic measures taken for walking. The future will demand even better management of the limits, be they environmental, economic-, resource- or space related. Walking provides the answer.

7.1 Requirements and opportunities for professionals and policy makers

To create a walkable city, it is helpful to have bold visions. It is both imaginable and possible to achieve a high modal share of walking and a low share (e.g. 5%) of car use. Once this vision is set, the necessary steps have to be defined to reach this objective. The following elements are important requirements for professionals and policy makers on all levels – from small communities, to larger cities right to the national and international government levels:

- Put pedestrians at the centre of your vision and at the top of the hierarchy of transport modes. Think beyond the myths and traditional arguments. Political will and choice are crucial to create a positive public atmosphere for debate in which good walking policies and an appropriate institutional framework can be established.

- Be clear about your vision. Advocating reductions in car-use while still supporting the increase in car-ownership, the building of new roads and parking (often termed as ‘relief’ or ‘pro-economic’ measures) is not compatible with the vision to support more walking and sojourning. Creating conditions which enables people to reduce their car-dependency has to be closely linked to pro-walking policies.

- Get the prices right: the internalisation of externalities of all transport modes, such as pollution and accident costs, by introducing a true-cost approach is one of the best supporters of walking since the latter is the most cost-effective, low resource-using, non-polluting, efficient and equitable means of transport.

- Create awareness and recognition of walking within the administration, among professionals, and the wider public: look at pedestrians and their characteristics, their needs, abilities and longings as a basis for the promotion of walking.

- Collect good data about walking and public space: data is one of the most important pre-requisites in order to make the right choices for the future.

- Provide for ‘link’ and ‘place’: Pedestrians require not only high quality linear connections between origin and destination but also attractive public spaces where they can linger, play, interact and enjoy their surroundings.

- Adopt an area-wide approach. Do not limit interventions to single locations but plan comprehensively across neighbourhoods and across the city and its conurbation.

- Look at the best examples from the past and today. For centuries good solutions have been implemented in many places all over the world. Integrate the insights from the past into today’s societal context. It's not technical problems but often the lack of awareness, openness and political will that stand in the way of improvements.
Upgrade urban spaces but be alert to its social implications. Public space is the centre of opportunity but also of potential conflict. While positive economic effects are welcome, measures are needed to avoid over-commercialisation and subtle privatisations with their gentrification and social exclusion effects.

Focus on the suburban areas as much as the historic centre. Due to urban sprawl the most dismal walking conditions are found in the outskirts. With the looming increase in energy prices and the aging of our societies, special attention has to be given to the walkability and creation of meeting places on the periphery. Distances to provisions have to be shortened and accessibility improved. The measures that work in the city centre have to be fundamentally adapted and implemented in the car-oriented suburbs.

Provide for all, the minority as well as the mainstream, the ‘average’ as well as the ‘extremes’. Walking, by its inherent character as human transport mode, requires facilities for a broad spectrum of users and uses: for the disabled as well as the fit, for the old as well as the young, for the poor as well as the rich, for the healthy as well as those wanting to improve their health, for long-distance as well as short walking trips, for long-term residents as well as newcomers, for locals as well as tourists.

Be aware of new challenges in terms of space allocation. While car-traffic will tend to be further moderated in most cities, new challenges are arising from ‘friendly’ transport modes, such as electric bicycles, electro-scooters and high speed public transport systems. New safety challenges may also arise from the wide-spread introduction of electric cars.

Build on the most promising arguments to promote walking: the economic, health and social benefits of walking. They have been widely documented. Cultural approaches may still be an untapped resource. Support is needed by creating the right conditions, so that these initiatives can unfold.

7.2 Recommendations for further research

The Pedestrian Quality Needs (PQN) project allowed for exploring some future trails. Many questions remain unanswered, however, and a more systematic analysis of the aspects already discussed is necessary. It is recommended, thus, that the following issues are followed-up in some suitable way in the future:

- To develop and apply appropriate methodologies to look at the future of walking and living space, e.g. based on Delphi surveys, forecasting and/or back-casting techniques.
- To analyse systematically the impact of social, economic, technological and ideological changes in walking policies based on interdisciplinary views and cultural differences.
- To assess the impact of restricted accessibility, social inequalities and social exclusion on people’s lives in relation to their living conditions and mobility needs, particularly on foot.
- To explore the intervention possibilities in suburban areas to improve walking conditions, taking into account the different types of settlements in the periphery.
- To research and investigate how the impact of different developments can be assessed based on quantitative and qualitative indicators and methods.

A range of possible formats come into consideration, for example, the international research collaboration within the European Framework or Regional Programmes (e.g. URBACT, INTEREG); the collaboration between larger international bodies, for example with WHO, the World Bank and UNICEF or other UN-Organisations on “What walking can do for society” addressing the social inequalities and global economic effects on local walking, contributing to intercultural capacity building; or the start of a new COST Action, for example, one on “The Future of Mobility and Sojourning” which would include all transport modes but with a special focus on walking.
B.3. The future of walking