

# Assessing Pedestrians' quality Needs – progress

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## 1. Introduction

At present policy development regarding pedestrian needs is generally problem oriented, ad hoc and rather fragmented. Following transport, urban planning and safety management, where a quality oriented systems approach is now State-of-the-Art, it is expected that pedestrian quality can also be improved substantially by a dedicated systems approach.

In 2006 the COST 358 Pedestrians' Quality Needs (PQN) project was started for developing and substantiating such an approach. The project networks 20 European countries, 49 research organisations and over 70 researchers supporting yours truly as PhD student and chair of the Action. The aims of the PQN project are to identify what people need for their safe and agreeable mobility in public space, to relate those needs to structural and functional interventions and policy making, and to show the added value of a proactive systems approach compared to the usual reactive and sectoral approaches (Methorst, 2006).

In the view of the PQN project fulfilment of needs and wants can be examined from complementary 3 perspectives: functionality (first order needs), perception (second order needs) and durability and future prospects (third order needs). The cumulated knowledge will be integrated into a 'template' for policy development for all stakeholders.

The project started with the compilation of Country Reports on the current pedestrians' situation, publications, research projects and the general atmosphere. At the same time steps were taken to develop a conceptual framework and an outline for further work. At the ICTCT-Workshop 2007 in Valencia and WALK21 in Toronto 2007 an introduction to the study was presented. In the current paper progress with regard to the conceptualization and substantiating of a systems approach to the issue will be presented. An outline for the output of the project is now available. This paper summarises the thinking behind that outline.

## 2. Maturity of pedestrian quality policy

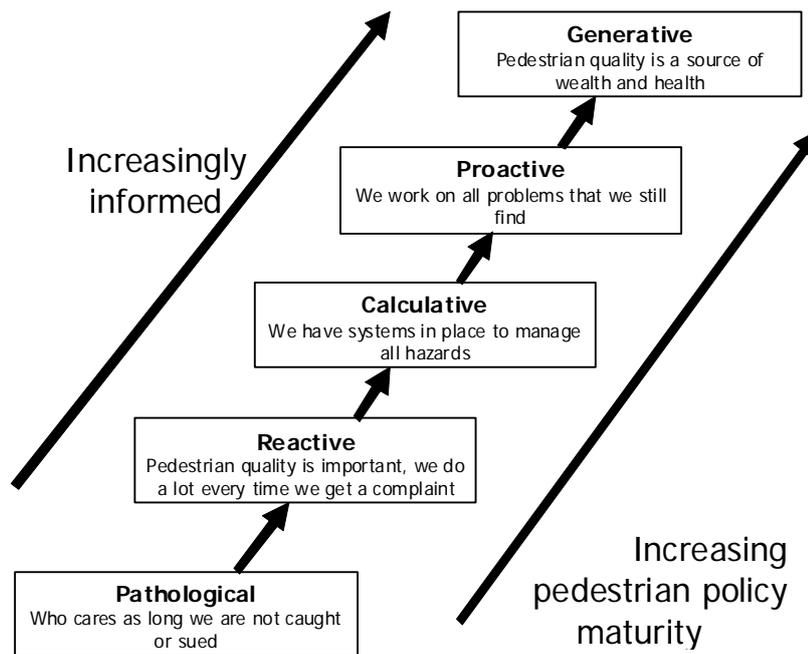
Although individual pedestrians clearly benefit from a high quality pedestrian environment, creating and improving quality is mostly outside their span of control. Policy is made and implemented by organisations. For most people walking is not (much of) a problem on the individual level, but it can be argued that it *is* a collective problem. On the city, region and national level there are substantial numbers of people with limited mobility and accident victims. In this respect the pedestrian issue is comparable to road safety, environmental problems, security, health and social issues.

Within organisations, policies are developed and implemented by 'common' individuals. The majority of policy makers and politicians are males between 25 and 60 years of age, having higher than average education and income, better than average fitness and health, and use a car for daily transportation. They themselves do not need to walk much and when they walk, most of the times they experience hardly any serious problems. As this is also true for

research programmers, research coordinators and top researchers in the relevant transport and urban development fields, this to a large extent explains why the pedestrian issue is not (yet) high on the policy agenda and that real pedestrian quality policy culture is a rare phenomenon.

With regard to Safety Culture Flemming (1999) and Hudson (2001) made some interesting observations that are relevant for the pedestrian issue as well. They identify a number of levels of maturity in Safety Culture and they conclude that it still is a long way to the top. In Figure 1 Hudson's and Flemming's ideas on the evolution of safety culture are combined and adapted to the pedestrian issue.

Figure 1: Pedestrian quality policy maturity (adapted from Hudson and Flemming)



Based on Hudson's typology (Hudson, 2001; Gordon & Kirwan, 2004), the stakeholders' pedestrian policy quality can be distinguished along a line from pathological to generative :

- **Pathological:**  
The organisation cares less about pedestrian quality than about being caught, crucified by the media or sued for malpractice. At this maturity level the organisation is not interested what others (the media) think about the organisation's attitude and does not feel the need for acquiring information and information management.
- **Reactive:**  
The organisation looks for fixes to problems that were reported by citizens or in the media after they have arisen. Administrators pay lip service to the importance of the issue but do not formulate targets. They do what they feel is as good as can be done. At this maturity level the organisation is sensitive to outside signals that something is wrong and files those signals, but no action is taken to acquire additional knowledge about pedestrian problems and deficiencies of the system .
- **Calculative:**  
The stakeholder has systems in place to manage hazards, which are supported by the administrators and politicians: 'we have the solution'. Staff and management focus on involving stakeholders and try to get them to take up their responsibility and help solving the problem. Staff and management take care that they are educated and informed on

the current state of affairs and common methods for tackling problems that arise. Long term efficiency is not taken into account. Evaluation of interventions is only undertaken when there apparently was something wrong. Calculative organisations are hard to move because they are comfortable, even if they know that improvement is possible.

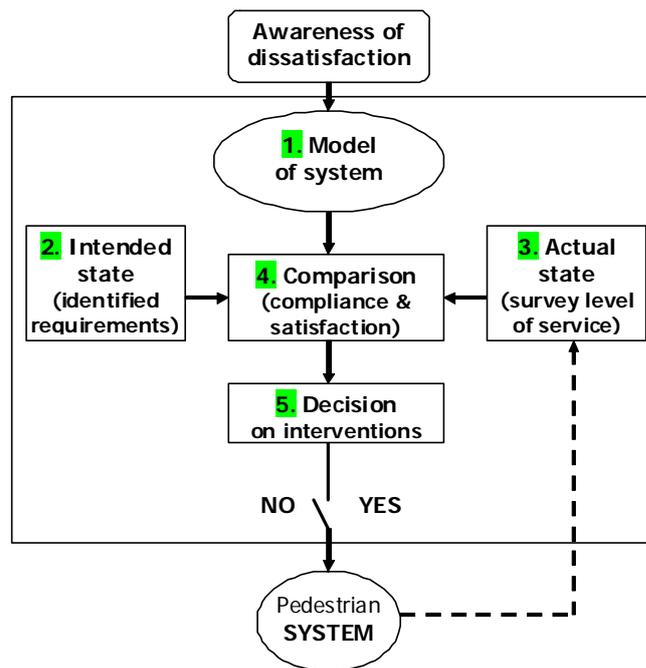
- **Proactive:**  
The organisation has systems in place, including procedures, resources, technical means and staff, to manage hazards, vigorously supported by administrators and politicians. Pedestrian quality targets and strategies are laid down in a dedicated policy plan. Staff and management have begun to acquire beliefs that pedestrian quality is genuinely worthwhile and is obsessed by obtaining figures. The aim is to learn and deal with the issue on a State-of-the-Art level. Policy robustness is a serious consideration and management and maintenance are fully integrated in the policy program. The policy program's results are monitored and evaluated on a regular basis. Communication with the outside world comes natural and is not restricted to successes.
- **Generative:**  
There is a chronic anxiousness regarding quality deficits. Pedestrian Quality is fully integrated into everything the organisation does. The value system associated with pedestrian quality is fully internalised as beliefs, almost to the point of invisibility. The organisations' activities are directed at continuous improvement of pedestrian quality. The idea is that quality brings money; it pays to invest in quality for pedestrians. For this they initiate or undertake scientific research and development. New ideas are very welcome.

A science based systematic (generative) approach to pedestrian quality is expected to make a real difference to the citizen's quality of life as a pedestrian. Contrary to safety, however, the benefits of such a systematic approach to pedestrian quality are not yet obvious to most stakeholders, apart from special cases like shopping malls. Stakeholders can have several reasons for not adopting such an approach: they are not aware of its existence, the approach is not considered relevant for the issue or the approach is not adopted because of its perceived complexity. In this context the current PQN study can contribute by documenting and substantiating what a fully matured pedestrian quality policy approach looks like and by demonstrating its benefits.

### **3. Systems approach process**

In his classic book on Urban and Regional Planning' McLoughlin (1969) presented a basic model for the systems approach policy development process. For the PQN study this (simple) model is adapted to the pedestrian issue. In figure 2 this dedicated process model is visualized. The numbers in the figure relate to the basic steps to be taken in a generative pedestrians quality policy process.

Figure 2: Steps in a generative pedestrian quality policy process (after McLoughlin, 1969)



With regard to pedestrian quality, a generative change process can be initiated when there is sufficient awareness of dissatisfaction and general goals with regard to pedestrian quality, which can be assumed to be at hand at the generative policy maturity level, as at this level there is a chronic anxiousness regarding pedestrian quality. In the model 5 policy development steps are identified:

1. Modelling the system
2. Specification of intended state
3. Assessment of the actual state
4. Comparison of the actual state with the intended state - identification of deficits and remedies
5. Decisions on interventions.

In the context of the PQN project the above identified steps are currently being documented and substantiated. They will be itemized for relevant stakeholder groups. For this work specific research questions are formulated. Currently literature and other available sources are being scanned to find out what the state of the art is. In the following text some insight is given in current thinking.

In reality generative policy processes steps will not be so clearly defined, particularly because on that policy maturity level actions are taken continuously and they will not directly depend on a master plan or clearly defined policy processes. Also, in answering later-stage-questions with regard to the above identified policy development steps, there will probably be 'discoveries' of missed items regarding lower question 'levels'. This phenomenon may be caused by assumptions based on 'best professional judgement', which, although not always based on empirical research, can help fill gaps in knowledge, that are not (yet) properly covered by empirical research. It can also point to clues to validated research findings in adjacent fields. Therefore an iterative process will be sensible practise.

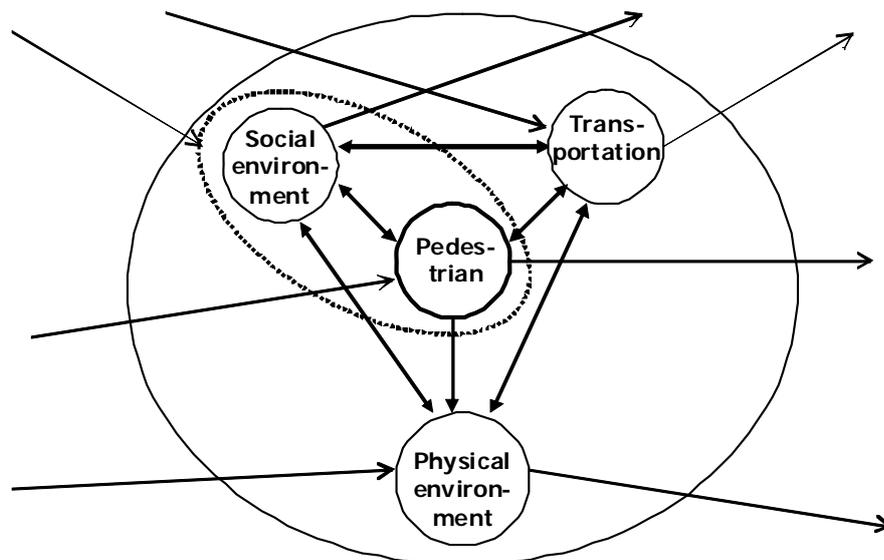
## Step 1 Modelling the system

The ideal policy development process starts with evolving a model of the system. In most cases policy developers can fall back on available insights and modelling that was done elsewhere. The actual knowledge on pedestrian quality needs however is rather fragmented and imperfect due to limited attention to the issue (Methorst, 2003). Therefore it is no surprise that a suitable comprehensive model is not found. Modelling the system includes identifying components, the nature of relations between the components as well as the identification of major categories of influences on the functioning of the system. The assessments are to result in a conceptual framework, giving overview and insight in relevant relations within the system.

In the context of this paper it is not possible to go into detail, but a (draft) report on the conceptual framework is available. In this paper only the outlines can be sketched.

The PQN Conceptual framework consists of several layers: a very global one, imaging the pedestrian travel and sojourn system and its in- and output to the 'environment'. The second layer of the modelling zooms in on the pedestrian travel and sojourn system itself. That system contains a collection of interacting subsystems (the pedestrian, the social environment, the physical environment and transportation).

Figure 3: A pedestrian travel & sojourn system as a collection of interacting subsystems



In Figure 3 the pedestrian is intentionally put in the centre. This study aims at improving the situation and the position of the pedestrian. Existing inherent characteristics of pedestrians, like his physical and mental condition, knowledge, insight, skills and attitudes, are taken as a starting point; improving these are not primary targets, it is however clear that this may also improve the pedestrians' quality of life.

Around the pedestrian and the social environment a dotted ellipse is drawn. This ellipse stands for the Human Factor and expresses that the same individual can be a pedestrian at one time and assume an other role at other times and become part of the pedestrians' social environment.

The third layer of modelling addresses quality determinants. Following the NOA model for consumer behaviour (Steg & Vlek, 2008) **n**eeds, **a**bilities and **o**pportunities for behaviour set the scene for quality valuation. Following Michon (1979) and Hattaka c.s (1999) four behavioural levels are distinguished and described (existential, strategic, tactical, operational) that will relate to different (types of) needs, abilities and opportunities. Pedestrian quality relates to needs, wants, abilities and particularly opportunities.

## Step 2 Specification of the intended state

A second step in the change process is defining the Intended State of the pedestrian quality system. This includes the identification of quality 'needs' and 'wants', assessment of their relative importance and the identification of (functional) requirements regarding the components and relations between the components included in the conceptual framework. It provides answers to the question what facilities and opportunities are needed to satisfy the identified 'needs' and 'wants' in relation to the pedestrian's abilities. These answers are to be summarised in a statement on general end goals and targets or visions regarding pedestrian quality needs and wants. The analysis of the requirements and assessments of what preconditions are presumed, can be captured in an Audit Checklist. Currently this and the next steps are being substantiated and documented.

Needs and wants can only be satisfied if requirements on several levels are met. Following Rumar's ideas on the orders of problems (Rumar, 2002) three orders of requirements are distinguished:

- first order requirements  
These are visible, tangible, concrete requirements with regard to the equipment of pedestrians, contact options of the social environment, design and equipment of public space and the availability, design and equipment of the transportation system. These requirement specifications concern pedestrians, vehicles, the physical environments and elementary operational behaviour of other people (including other road users) in the environment as well as concrete opportunities for pedestrians to perform intended activities.
- second order requirements  
These requirements are derived from first order requirements and relate to tactical level facilities and services, like network characteristics, traffic rules and enforcement, vehicle regulation and traffic management
- third order requirements  
Requirements of this order are preconditions for second and first order requirements. The form the fundament, to make sure that the first and second order requirements can be met. These third order requirements concern land use characteristics, modal split, pedestrian quality culture, competences, abilities, education, training, adequate organisational structures, data availability, research and development, strategic planning etc.

## Step 3 Assessment of the actual state

The third step in the process is assessment of the current situation and the level of service offered. This implies a survey on what facilities and opportunities, in the widest sense, there currently are. The items to be dealt with in such a survey follow from the list of identified requirements. Analysis of the actual state and reconstructions of the history of developments can be laid down in a reference document on the current level of service.

The aim is to get a comprehensive image of the current state of affairs regarding pedestrian facilities and relations between stakeholders or social environment, the physical environment and transportation.

The level of service regarding identified needs, abilities and opportunities will be assessed on three important aspects:

- *comprehensiveness*: the measure to which all options with regard to facilities, services and the fundamnet are exploited
- *structure*: the measure to which there are interrelations between the existing pedestrian quality culture and the various facilities and services provided
- *quality*: the measure to which there is attention to the quality of the facilities and services.

#### **Step 4 Identification of deficits and remedies**

The fourth step is to compare the *actual state* with the *intended state* and explain the deviations and deficits. This comprises assessment of compliance and satisfaction as well as the identification of mechanisms that lead to compliance and satisfaction. Questions to be answered are: How adequate are the current facilities? What concrete 'needs' and 'wants' require attention? What processes cause discontent? What kinds of process changes can remedy this? The gathered insights aims to lead to the identification of mechanisms with regard to compliance and satisfaction, to be recorded in a Targets and Cues for interventions document. In such a document attention can be given to insight in Best Practises.

Sub-steps (or tasks) are the assessment of compliance and satisfaction and the identification of mechanisms and the identification of potentially effective measures. Under this heading also indications regarding Best Practises and gaps in knowledge will be given.

#### **Step 5 Decisions of interventions**

The fifth step is to prepare and decide on interventions. This step covers the identification of advisable interventions, assessment of potential system output, formulation of recommendations for making it happen and lastly, the formulation of an action plan. Products of this step can be a list of promising interventions, insight in preconditions for making it happen, including insight in gaps in knowledge to be researched, cues for tuning interventions within an (general) action plan and ultimately long term, medium term and short turn action plan plans.

If a decision is taken to take measures, this will in time affect the actual state of the system.

The fifth step in the policy development process includes the preparation of a decision on interventions and will subsequently deal with assessment of the potential output of individual interventions will be discussed and the formulation of recommendations or plans for making it happen will be substantiated.

### **4. The added value of a systems approach**

The ultimate question of the study is what the added value is of a system approach, compared to reactive approaches. Apart from theoretical deliberations, as yet no steps have been taken to substantiate this issue and prove the case.

## Towards a Handbook or Experts System?

The aim of the project is to make a difference in pedestrian policy making. The outcome of the research must be communicated properly. The main product of the project will be a 'handbook', in which all research findings will be integrated. Of course, such a handbook will not be easy reading material and for individual stakeholders it will be quite difficult and laborious to find exactly what they need. In an old-fashioned handbook they will have to sift through a lot of text that is not relevant for others, but not for them. A modern web-based interactive expert system, that shows only that what they really need after functional selection questions, would be a much better option. Currently the practical options and feasibility for providing such a system are explored. It is however clear that it cannot be ready in 2010. It will be difficult enough to complete the basic paper version before that time.

## 5. Some preliminary findings and conclusions

- Proactive and generative systems approaches differ fundamentally from the traditional pathological, reactive or calculative problem oriented approaches. The insights sketched above were used to enhance the argumentation for developing a systems approach and to structure the research work. The process insights support the work already done on modelling pedestrian behaviour and the quest for improvement of pedestrian qualities and opportunities, but they also make it clear that fundamental improvements will only be feasible when they are embedded in a proactive or even generative policy *culture*.
- Data availability is a problem and scientific research does not yet cover the issue properly. There appear to be some critical lags in knowledge that need to be filled.
- Synergy with other (international) projects is improving and helps boosting a positive trend regarding the knowledge and policy making situation.
- The success of the project will depend as much on quality of the academic work with regard to concrete pedestrian quality system interventions, as it will depend on creative ideas to guide and support stakeholders, particularly providers and policy makers, to quickly advance through the policy maturity stages. From experiences with Safety Culture progress (i.e. the Shell Hearts and Minds program and currently the Dutch infrastructure authority Rijkswaterstaat attempts to implement Safety Management) it is known that it takes decennia, even when internal needs and external pressure to improve are very much in favour. There are many obstacle to be taken: lack of financial means, complexity of the issue, the time it takes before results show themselves and many other contextual factors slow down the maturity process, even when the benefits of an approach are (theoretically) obvious and substantial.
- Within the context of this paper it is not possible to display the content results of the modelling process and the many building stones for advisable intervention programs for the improvement of pedestrian quality. For the interested more information on the project, including the draft Country Reports, is available on the PQN website [www.walkeurope.org](http://www.walkeurope.org).

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