

## Introduction.

Shared Space is an idea that, formed to a concept and applied in the built and non built environment, leans on human behavior.

Until now field studies<sup>1</sup> revealed that the concept looks promising and it looks as if it works. But the explanation, already claimed by the founder of the concept Hans Monderman, that it works because of the communication between people behaving in the built environment and on the physical and social context provided by that environment, has not yet been proved by scientific research. A third explanation was used in the way that where a situation looks dangerous / unsafe, people act save. This can be seen as the perception of the context, a mix of social and physical. Also the theory about risk homeostasis can apply, but this theory sees on the behavioral decisions and first of all we need to look at the triggers that influence the behaviour seen in shared space environments.

Very little studies have been done until now directly aimed at the concept of shared space. We can find related research in perceptual studies. Also in early studies on the relation between behaviour and the perception of the environment we see directions where to look for scientific starting points. Only field observations, based on fairly comparable Shared Space situations, have been done. Three schemes

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Het Laweiplein Drachten, Evaluatie van de herinrichting tot plein met rotonde. 2006  
Noordelijke Hogeschool Leeuwarden.

Het hernieuwde Vischmarktplein in Sneek, Een evaluatie van de herinrichting tot plein met rotonde  
2008  
Noordelijke Hogeschool Leeuwarden

in Fryslân (The Netherlands<sup>2</sup>) and a scheme in Sweden, Norrköping have revealed that taking the *Shared Space* process further and building upon the insights up to now will deliver good alternatives for traditional design of the built environment and traditional solutions for mobility. The observations show that road users indeed feel stronger encouraged to communicate with each other in an unregulated situation like shared space, than when behavior is regulated by signs and lines. In addition, a study about the influence of the surrounding buildings (context) shows that car drivers are significantly encouraged to bring their speed down when the buildings are more complex in their appearance, the facades, the texture of it, more stimuli are offered or when the physical situation is less clear. (D.I. Terpstra)

Research at SWOV, just published looks at the forgiveness of road users, especially in shared space schemes and compared to schemes which are traditionally designed. (Maura Houtenbos, SWOV 2009.)

In order to give better answers to those who intend to introduce this concept, to a better expectation about how it will work out and to find conditions under which it will work or not, it is necessary to provide the concept of shared space with a scientific and solid fundament.

The Shared Space Institute is now developing a program for research, to gather relevant studies on adjacent fields and to stimulate research, in laboratory studies and in field studies.

### [Finding Hypotheses.](#)

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Drachten, de Kaden and Drachten Laweiplein. Sneek Vischmarktplein

As mentioned, the scientific base for shared space is lacking experimental evidence. Lots of questions are emerging in this early stage of the development of the concept. And as essential for a scientific approach, the questions to be put are the start and the only way to start research. And if the research has been done well, new questions will be found.

We didn't establish the influence of the context, to what degree and in which quality is it important, the relation between physical and social context?

Which characteristics of these parts of the context are relevant for the behavior in the public realm?

We don't know enough about the intensity of the traffic streams which allows a shared space design, instead of the traditional traffic solutions.

If we state that in shared space the quality of the built environment will get better, how can this be defined and measured?

What can be the economical benefit if a shared space solution is found as a preferable solution? We already saw that shops in the city of Haren, already reported more profit after the new design.

If communication is a declaration for (a part of) the behavior, what can be than found as the content of the communication? Who of the road user is taking the initiative etc.?

Is shared space as a solution limited by cultural differences, or is it a solution to be applied globally?

We don't know enough about responsibility, about the legal matters which can hinder preferred measures.

A very interesting field of research is the way people make their decisions in public space. Which psychological model for decision making applies here? Do people learn and do they develop strategies or habits in shared space?

Is it necessary to educate people how to behave in shared space?

A very actual field of research is the position of blind people in shared space schemes. Also elderly and young people are maybe categories of road users which need extra research attention. For the blind or visually impaired people research is already in action.

Lots of questions which ask for answers and from these answers we know for sure will come new questions to be researched.

The research questions at date focus at diverse knowledge levels: that of concrete questions from working practice in traffic and spatial planning; that of cross-sector domains of spatial quality, economy, social affairs, health, and sustainability; and that of organizing innovation processes in policy, politics and society.

These questions in our view are relevant, as at the Shared Space knowledge Institute in the Netherlands we are not only interested in the role of the concept of shared space in public realm, but also in the possibility to transfer the concept to all the other domains where people deal with each other and where at the present rules and regulations give the main directions for the behaviour. We could look at law, economy, policy and many other fields where promising possibilities are eminent.

[Relevant research.](#)

## Orientation

From early psychologists we know that experiencing and curiosity are the most fundamental drives for learning. (Berlyne, 1960) The well known behaviorist **Pavlov** (Pavlov, 1927), already started about 100 years ago, with asking himself how the learning process was triggered. He called it the “orienting reflex”. The slightest changes in the world around man and animal leads to responses and the organism immediately orientates the receptor organ to the stimulus. All organisms are always looking for new stimuli. Our senses need to be stimulated. In research the smaller changes which occur during normal wakefulness, and which are of two kinds - *tonic* and *phasic* - are mediated by different brain systems. (Lloyd, 1984). Changes in *phasic alertness* involve short-term, temporary variations in arousal, over a period of seconds, initiated by novel and important events. (Gross, 2005) In other words, the organism is awake, reacts on stimuli, internal and external, and selects what is important.

The organism reacts on these events with the orienting response. In Shared Space situations it is claimed that when a scheme is not clear at first sight, when there are novel and uncertain events to happen, the person will be alerted. And as a reaction, the behaviour will adapt, slow his/her speed, looking around and watching other people. This idea looks to fit in the more theoretical notions mentioned from Berlyne and Gross.

## New stimuli

Sensory stimulation is rewarding. Learning experiments revealed that organisms learned the desired behaviour simply and quick when the reward was just a stimulus. Food or punishment were not necessary; this stimulus could be just being in a more exciting place with more variation, more new things etc. Butler and Harlow experimented a lot on the manipulative and investigative drives. (Harlow, 1956 ) Many of their experiments were done with monkeys. It was known, that they

always desired to move into a more exciting case; however, their food was presented in a dull cage. . Harlow reports: *“Monkeys will also learn to open a door with the possibility of looking out of the box in which they are confined as the sole incentive, and they will form a discrimination between colors characterizing a door that can be opened and another door that will not yield to pressure. (Butler 1953)”*

Berlyne stated that the orienting reflex is even conditional for an organism to start learning.

### **Sensory deprivation and overkill**

Studies already done in the 1950's on sensory deprivation revealed that a very low level of sensory input leads to hallucinations, pathological forms of boredom. (Heron, 1957)

The experiments were done with persons asked to stay as long as possible in tanks, where no light could be seen and no noise could be heard, with only salt water on body temperature. The people that were willingly to undergo this experiment reported hallucinations and that it began to feel as a form of torture.

Nowadays the opposite is the case. People are suffering from an overkill of sensory stimulation and the same experimental instruments can be used now for meditation, prayer, relaxation, and in alternative medicine! See further in this chapter for that overkill in information. We see that in everyday traffic situations.

### **Understandable information**

People are feeling better when they are surrounded with information, they can perceive and understand. In the public realm it is necessary

to take this into account, to look carefully at the quality and quantity of the information and other stimuli offered.

### *Crowded spaces*

People live together in modern society with growing towns and more density. Life can be harder there and is certainly more complicated. Within a society there are rules for living together. Social norms help us live together, to live and to be respected. We greet, we introduce ourselves, give way to others. It's a way of survival, for the individual and for the species. This living together asks for rules, coming from social norms. We have developed them. With "we" I mean "most animal species". I think you can say that we need rules, although we are not always aware of them. A lot of these rules became part of ourselves, we internalized them.

In civilization men started to write down these rules, which we now call laws. It's a part of our cultures. Somehow it's the frozen image of what we say that is right and should be obeyed. Without thinking you know how to "behave", certainly in the relation to other people. That's education, or required during life, as we say in dutch "met vallen en opstaan". *With falling and getting back up again.*

To give a very simple example. Once we used to rely on the words of the partners we were doing business with. We couldn't do that today, could we? We now need lots of written words laid down in a contract, signed and stamped by a notary.

Another example: The road users in former times communicated with their fellow road users in quite a simple way. Later on we saw more and more the bi-directional communication from the road users with each other diverting to a single directional communication with the road signs, lights and lines. With slow and almost equal speeds the

communication was from face to face. Later the road users started to communicate with the road signs, they get their “right of way” from lights and signs instead of getting it from other road users. The communication became mono directional. Shared Space reactivates this (social) communication, because speeds are slow. Signs are no longer necessary.

This social behaviour is for the greatest part acquired in childhood, it's the education, that teaches a child not only how to behave, but also to survive in a social world.

Harmonizing of speeds makes social behaviour possible in traffic. The different categories of road users will move on approximately the same speed. This means that speeds are reduced in such a way that people can communicate. Not only in the old days but also in Shared Space. It looks as if in this picture people are hiding for any communication.

Blinded car windows prevent any communication. But a car is a person.

The choice of mode of transport doesn't make people superior to others.

All persons are equal (art. 1 *All human beings are born free and equal in dignity and rights.* ) so also in their movements.

### *Surroundings*

Until now there is very little scientific evidence to prove the relationship between high quality public space and more social and safe behavior, as it is presupposed in the Shared Space concept. Nevertheless, the context, that is to say the surroundings, can influence our behavior.

People see and observe the context. In real life situations people's observations are influenced by the context, like in cities by buildings and architecture. As seen in the experiments from Berlyne, Harlow and Butler, organisms are more attracted to a more exciting surrounding than a boring environment. Architecture can contribute to this drives and needs.

Social context is also a very important influence on driver behaviour. Crowding of people, or vehicles or other confusing, chaotic or unsafe (in the meaning of giving an unsafe feeling) looking situations leads to adaptive behaviour. In this adaptive behaviour, we see people slowing down, looking for contact with others and communication.

Not always can this be influenced, but the circumstances can be created in the design of the locations. In that case people are entering a location where the different functions, not only the transport function are mingled and speeds go down. Communication is better possible, social control takes over the role of the communication with the road signs.

#### *Understanding and Explaining.*

We're only at the beginning of finding answers to the questions regarding shared space and behaviour. Having an answer will give us the opportunity to select localities and to predict if it's worth investing money in restructuring traffic areas in living spaces.

Till now, two theoretical explanations are in use: The context (physical and social) and communication. For the first, is some preliminary support to find in experiments with perception, (see slide) and in a research done by **Dirk Iede Terpstra** (Terpstra, 2004) from Amsterdam. He exposed in an experimental situation car drivers to modifications of the road sides. The buildings along the road were varied in height, distance to the road side, attractiveness and

texture of the facades. The car drivers had to respond with their supposed speed they were intended to drive in that situation. The more complex, the shorter to the road and the more attractive

The context is always important in perception. From lots of perception experiments it is clear that many influences result in a (distortion of) perception. Most of these influences are necessary to have a good perception, they support the perception. Others lead to misperception and wrong decisions about what is seen or heard. And so may be leading to undesired or inappropriate behaviour. It's going too much in depth to discuss here the different forms of illusions, but we all know that when driving a bend in the road the following parts of that bend can also be seen when we look at the trees aside of the road. They show the bend in advance.

### *Personal Space*

It was **Hall** (Hall, 1966) who already described the concept of personal space. Everyone knows the feeling, when walking in the park; a bench seems full, when only one person is sitting there. It's a bit frustrating to intrude in his personal space which looks to extend over the whole bench.

People are surrounded by a sort of invisible bubble. Hall's idea is that we learn *proxemic rules*, rules which tell us how much distance we should keep to others. They describe the physical distance that's appropriate in daily relationships. They also teach us in which situations either closeness or distance are suitable. The feeling of what is 'proper' throughout Europe differs. The more towards the south, the closer strangers tend to come next to each other. In a personal space others are kept out. This space is differing in dimension. When there are more people nearby, the "circle" shrinks. The personal space is determined by the circle around a person, but also by the direction of the movement.

We try to prevent intrusions. We avoid them by going our “own” way and give way to others. It’s the behaviour we can see when people are in crowded places. They keep the distance, not only in (centi-) meters, also in a psychological way. We use for instance the habit not to communicate, not to make eye contact. When we are enclosed in an elevator we see people looking at their feet or the changing numbers of the floors.

To deal with others in the same place we use a variety of communication means. Body language, signing when on a bike, stressing on the route we want to take, look at each other etc. In shared space this is better possible, where functions and traffic modes are mixed. Speeds are low and the environment is attractive.

There are two opposing tendencies: to approach other people and seek company with them on the one hand, and to remain separate and independent on the other hand. According to **Argyle** (Argyle, 1983) people interact, communicate and understand each other if the interaction is on an equal footing.

This theory can lead to a hypothesis about how shared space works.

*Shared Space* underscores to give all road users equal rights in a shared space location. On that basis interaction is possible. Equal in rights, but also of course in speed notwithstanding the mode of transport, walking or driving. No communication with road signs, just the influence of the environment and the social and physical.

#### *Decision-making.*

It’s not the whole explanation, because apart from the perception and the attitude, the behaviour and the following behavioural decisions are not less important.

People, whether walking or driving, make every second decisions about where and how to walk, how to continue the way. They walk (and drive and cycle) with a goal to their destiny, but on the way they stop, continue, go right or left, speed up or slow down. Most times without thinking, but as a routine. These, sometimes not so important but many times very important decisions, should be subject to research. In this field of psychology, research has been done on the heuristics people use to make decisions or choices. (Gerd Gigerenzer, 1999)

In situations of limited time and space, decisions have to be made very quickly, and this idea looks promising to be researched in shared space behaviour. It seems promising to carry out research on the clues that can trigger certain decisions.

### *Finally*

So as an explanation of the behaviour in Shared Space locations, two hypotheses promise to be viable: firstly, the physical aspects of the surrounding, and secondly and for sure in combination with the first one, the idea from the social psychology that a person has a personal space that is always tried to be maintained. As a third string, we are attracted by the question that we do not exactly know how decisions are made in traffic. Which cues are important for a road user, to decide upon his next 'step'? Most road user behaviour looks as if it is on routine, not aware of all the little choices that are made during a trip.

New research in social psychology by Keizer, Lindenberg and Steg reveals that signs of (dis-)respect of others for norms serve as norm-support cues which can weaken or strengthen the influence of norms. Applied to prohibition traffic signs placed in a setting with

corresponding negative norm-support cues induces rather than reduces violations of the very same norm (i.e. same-norm reversal effect) and other norms (cross-norm reversal effect). This means that (again) the surrounding in this case the consisting of people with their (negative) norm support leads to violating traffic signs. So it's very important to assess the possible influence of the public space to be able to say which behaviour can be expected.

But the field- and experimental research done until now is still not enough to state that the concept of Shared Space has a strong scientific fundament.

Once we have established the conditions under which shared space design can be successful, we can predict the possible outcomes of schemes to be realised with this concept. Then we can offer safe and liveable places for all those who want to use this space in the way they want.

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