

## Shared terms for spatial quality of strategic projects

### Introduction

The question 'how can spatial quality be brought about in strategic spatial projects?' is the subject of my research under the 'Spatial Planning to Strategic Projects IWT/SBO Project'. In the course of this research I hope, among other things by analysing prominent strategic projects in Belgium and abroad, to gain a better understanding of the various views as to how spatial quality can be developed and monitored.

### 1. Basic proposition

Strategic spatial projects presuppose cooperation agreements between the government and other players including private-sector partners. The basic condition in order to be able to cooperate with a view to achieving the intended spatial quality is that the players understand each other: '... they have to develop a set of shared terms that all parties concerned will use when formulating a plan and establishing the quality of that plan.' (Hajer and Sijmons 2006). In this connection, Antwerp City Council architect (Stadsbouwmeester) Kristiaan Borret comments as follows in his policy note:

'Rules and regulations ensure a minimum level of spatial quality, but they do not suffice. The discussion about quality remains necessary. Underpinning and argumentation will give that discussion its legitimacy and authority.' (Borret 2007).

Both quotes very clearly articulate the basic proposition of this research.

Bringing about spatial quality in strategic spatial projects requires good communication regarding that spatial quality.

In practice, designers and urban planners appear to have a hard time explaining to laypersons, and even to each other, what spatial quality, not only for existing spaces, but also - and mainly - for spatial projects, actually means.

The research will raise two main research questions:

- what are the terms for defining spatial quality?
- how can these terms eventually be shared? (Hajer and Sijmons 2006).

Although the answers to these research questions are interwoven and mutually influence each other, the focus will in the first instance be placed on the first research question.

### 2. Definition of spatial quality in this research and aim of the research

Judging the quality of completed spatial interventions is a difficult task, but judging proposals to carry out such interventions is even more difficult. Judgments must be made about proposals without knowing all the quality requirements that may later be imposed on their realisation. Spatial quality is then situated in the field of tension between concepts devised by designers and their appreciation by 'future' users. Yet, we can only make time- and place-specific judgments regarding the quality of spatial interventions or proposals therefor. For the purposes of this research spatial quality will be defined as follows:

The quality of a space is the extent to which that space satisfies the expectations of a community (Van den Broeck, Geens in Knops (ed.), 1987: 351). These expectations are determined by the values pursued by the community for its development, more specifically its spatial development. They are expressed both in very general terms, the values pursued by the community, and in very specific configuration principles (or reference images, models) for that space.

I regard both the specific configuration principles and the general terms with which a group of persons express their expectations regarding the space as terms for defining the quality of that space. For this purpose I base myself on Verbart's definition of spatial configuration

concepts. Although spatial developments also include changes in the management and use of space, very often physical interventions are also carried out: buildings are demolished and erected, public spaces are created, motorways are constructed, etc..

According to Verbart spatial configuration concepts are proposals for physical restructuring and the underlying concepts. (Verbart 2004: 71). A configuration concept consists of a configuration proposal and the underlying concepts concerning quality, the spatial situation and feasibility.

In what follows I will call the spatial configuration concepts defined by Verbart terms for defining quality.

In the series of theories on urban design principles (e.g. Camillo Sitte, Gordon Cullen, Christopher Alexander, Kevin Lynch) the objectives to be pursued for good environment are expressed not only in terms of proposals for new urban structures, urban fabrics, the design of public spaces, accessibility, ... but also in more general terms and checklists for good urban design. Whereas Cullen and Sitte place the main emphasis on the visual perception of space, 'A Theory of Good City Form' (Lynch 1981) approaches the perception of space from different angles (disciplines). In so doing, this theory connects best with Sternberg's description of perception (SP2SP Second Annual Report 2007: 54). He interprets perception more broadly than purely sensory and aesthetic perception. Perception is also a matter of experiencing how the space functions and is appreciated on the basis of a cultural value pattern.

More recent theories concerning the definition of the quality of space (Oswald & Bacini 2003, Carmona 2004) likewise approach space from different angles. In contrast to Lynch's approach, these more recent theories are based on a specific urban model or urban paradigm. Carmona sets out from models for sustainable urban design, Oswald & Bacini from the modern network city or 'Netzstadt'.

Lynch's theory can be applied to various urban models. Although his 'dimensions of performance' are directly related to space, they do not impose any specific design solutions. One of these 'dimension of performance', 'Sense', is particularly well developed. Using a number of subdimensions for 'Sense', Lynch attempts to find out why people feel good in a particular space, and why a space can release emotions and be inspiring. Whether these subdimensions can describe the task of the designer, will be one of the subjects of investigation in what follows.

Dimensions of performance <i>Lynch 1982</i>	Sustainable urban design principles <i>Carmona 2004</i>	Criteria for evaluating urban quality in urban systems <i>Oswald and Bacini 2003</i>
1. Vitality	1. Stewardship	1. Identification
2. Sense	2. Resource efficiency	2. Diversity
3. Fit	3. Diversity and choice	3. Flexibility
4. Access	4. Human needs	4. Degree of self-sufficiency
5. Control	5. Resilience	5. Resource efficiency
	6. Pollution reduction	
	7. Concentration	
	8. Distinctiveness	
	9. Biotic support	
	10. Self-sufficiency	

Fig.1: theories for defining spatial quality

### **3. 'Good City Form' by Lynch: performance and models**

#### **3.1. Normative theory**

Lynch opts for a normative theory, the city as reflection of human values and needs, in order to explain the emergence, form and functioning of the city. Within these normative theories organic thinking, and thus holistic thinking, takes his preference. The city is considered here as 'a living organism with different functions, with permanent mutually supporting and exchanging elements, with diversity and connectedness and form and process as an indivisible given.' (Cassiers 1987: 311).

Lynch says that a settlement is good if the pursuit of the following values is possible:

- the survival of the human race and its culture (and all other living species) is ensured (continuity)
- the sense of belonging in time and place is strengthened (connectedness)
- individual development is made possible or stimulated (development and openness) (Lynch 1981, Cassiers 1987).

To a certain extent, these value statements are each other's opposites. This indicates that the realisation of spatial quality is always a matter of weighing up against each other a number of main expectations with regard to space, namely developing and at the same time preserving, maintaining the link with history whilst creating the present-day heritage for tomorrow, providing space for housing or industry while working towards the restoration and expansion of our wealth of ecological species. Various mutually conflicting objectives will frequently have to be achieved at the same time. The designers of the Oosterweel link, for example, a controversial project for closing Antwerp's circular road, are expected to design the infrastructures meant to enhance the access and the livability in the city in such a way as not to cause any damage to the city (Vermeulen 2006). They are expected to turn lead into gold (Van Synghel 2007).

Lynch sets off in search of the expectations that a community pursuing spatial quality with the above motto as a starting criterion should in fact have of space. He formulates these expectations in the guise of 'dimensions of performance'. These 'dimensions' are closely related to the spatial form of the city, but are kept as general as possible. They do not impose any specific physical solutions, but their realisation can be detected in and linked to physical solutions.

In order to arrive at that set of dimensions of performance Lynch draws up a list of possible expectations and appreciations that people may have as regards space. He analyses descriptions of spaces, objectives of urban projects, objectives in 'urban utopia', interviews with spatial planning students, motives of city builders in a distant past, motives of planners and designers, lawyers, ...

By pruning and grafting Lynch reduces these extensive enumerations of assessments to a set of five 'dimensions of performance': 'Vitality', 'Sense', 'Fit', 'Access', 'Control'. According to Lynch, these are the characteristics of a space that play the most important roles in the positive assessment of a space. Lynch also suggests possible analysis techniques for each 'dimension' or for each 'subdimension of performance'.

#### **3.2. Performances**

The overview below of the five 'dimensions of performance' was compiled on the basis of excerpts from Lynch 1981 and Cassiers 1987. Moreover, these authors delineate two 'meta-criteria' as well.

## Five 'dimensions of performance'

### 1. Vitality:

The degree to which the form of the settlement supports the health and survival of the human race and the entire ecosystem.

#### Subdimensions of Vitality:

##### *Sustenance:*

The form of the settlement must allow sufficient supply of food, energy, water and healthy air as well as the effective disposal and processing of waste.

##### *Safety:*

The environment must guarantee the absence of toxins, pathogens, risks of accidents, assaults and disasters. The design of an environment can discourage criminality and make road traffic safer.

##### *Consonance:*

The degree to which our environment supports human needs, such as temperature, sensory perception, natural rhythms. Lynch also calls attention in this respect to the suitability of the environment for the raising of children. This is of course also an important aspect for the survival of our species. The environment must allow children gradually to increase their radius of action in public space and reduce control by their parents, by providing sufficient diversity in the supply of playgrounds, from strictly controlled to only loosely controlled.

### 2. Sense:

The degree to which the form of the settlement influences its perception in a positive way.

Perception at the same time means sensory observation and understanding. The inhabitants or users will identify more readily with an environment that supports observation well.

The understanding and appreciation of an environment is strongly determined by a person's knowledge or framework of reference with regard to spaces. Education, culture and social class thus play an important part in the perception of a particular space. This means that the significance of a given place may be different for each individual person. However, the biological basis of our powers of perception is such that there are some fundamental constants in the experience of one and the same place by different persons.

In order to increase the 'sensibility' of an environment it is not always necessary for that environment to be adapted. Conversely, man himself can adapt to his environment.

'Environmental education', too, can increase sensitivity to the meanings of space with the observer. Artists and writers can give a new meaning to the environment by teaching us new ways of looking at that environment. It is argued, for example, that photos of peripheral landscapes, airports, infrastructure landscapes, ... by Andreas Gursky and Jef Wall have changed our ideas about what picturesque environments really are (Jacobs 2000).

#### 2.1. Subdimensions of Sense:

*2.1.1. Formal aspects of Sense. They render space and time recognisable and comprehensible.*

##### *Identity:*

The extent to which a person is able to recognise or remember a place as being different from other places.

##### *Structure:*

The extent to which insight is gained into how a space is built up and how different spaces relate to each other. This may vary from the description of a series of sequential images along a road, to a structure map of a city on which concepts name the main districts of a city (e.g. affluent green suburbs surrounding a poor inner city district).

Difficulties in orientating oneself in a city may cause loss of time, which can either be appreciated as pleasant or, conversely, induce feelings of fear and confusion.

There is also orientation in time. This may go from enabling people to experience the rhythm of the day, for instance, by observing the activities in the public space, to sensing the past of

a place. The presence of historical buildings on a square makes the history of the place and its society visible.

#### *2.1.2. Aspects that connect our environment with other aspects of our life.*

##### *Congruence:*

The degree to which the abstract form of a place matches the abstract form of its functions or the characteristics of the community living there. This is a matter of the formal coincidence of a local structure with a non-formal structure, for instance, a more intense form of the settlement in places where activities are also more intense.

##### *Transparency:*

The degree to which functions such as working, technique, social and natural processes which take place in a settlement can be observed. Can one see people at work, can one hear the waves breaking against the seawall?

The possibility of observing basic processes gives satisfaction: the actions and movements of people, production processes, the drainage of rainwater, the raising of children, the change of seasons in plants, the movement of the sun, birth and death, ...

##### *Legibility:*

The degree to which the form of settlement allows the inhabitants of a settlement to communicate with each other through physical symbols (signboards, gates, flags, crosses, towers, etc....). These elements inform us about culture, social status of the inhabitants, the supply of goods and services, property, ...

#### *2.1.3. This aspect makes symbolic links between the environment and a person's central values possible.*

##### *Significance:*

The degree to which a setting allows a person to create symbolic links between a setting or an element of a setting and his/her basic values, feelings, memories, events, social structures or the essence of the world. These symbolic associations enrich the life of an individual.

### 3. Fit

The suitability of a settlement indicates the degree to which its temporal and spatial patterns correspond with the usual behaviour of its inhabitants. Does the spatial form of a square, for instance, correspond with its use: bringing people together, café terraces?

'Fit' has to do not only with physical aspects, but also (through the relation with behaviour patterns) with cultural expectations, norms and habits. It can be determined quantitatively and qualitatively.

Over the longer term also adaptability is important. People adapt their activities to the space, or they adapt the space to the use they make of it.

### 4. Access

The degree to which a settlement offers its inhabitants the possibility of mutual contacts, access to activities (living, working, services) and facilities (food, water, energy), access to other places (centres, symbolic places, natural environments) and information.

Accessibility is not the same as mobility: maximum mobility leads to congestion and reduces accessibility.

### 5. Control

The degree to which the creation, restoration, alteration and management of the space and the activities is controlled by the users of that space.

For a 'good' environment there must be a congruence between the form of management and the use (participation of the parties concerned may help in this respect).

## **Two 'meta-criteria'**

### 1. Efficiency

Efficiency is necessary to balance the five dimensions against each other. 'Sense' (e.g. a clearly legible, historically unimpaired city) could conflict with 'fit' (e.g. an adaptable city, welcoming new developments). Here we should compare the costs and benefits of each 'dimension'.

### 2. Justice

Justice is a weighing criterion between the different interests of parties. The problem is that costs and benefits are determined in economic terms, which can lead to inequality.

That 'Efficiency' (to be understood as economical feasibility) and 'Justice' (to be understood as a political weighing of interests against another) are called 'meta-criteria', means that they overrule and confine the dimensions of quality. The realization of spatial quality implies choices about how the limited means will be spent and about who is to benefit. Inasmuch as perfect economical efficiency and perfect political justice are unavailable, spatial policies can only be partly successful.

According to Lynch these five 'dimensions' and two 'meta-criteria' must put a group of persons in a position to form judgments about space. Different groups will accord different priorities to these dimensions. Once the space has been analysed and judged using these dimensions, guidelines may be laid down for the redevelopment of existing spaces, or guidelines that make sure that a required spatial intervention results in the maintenance or enhancement of spatial quality.

This statement by Lynch can lead us to conclude that these five 'dimensions of performance' enable us to describe what the desired spatial quality of a strategic project should be. Lynch raises this problem again a few chapters later.

## **3.3. Performances and models**

Lynch sets the prescription of the desired quality of a spatial project by means of a series of performance dimensions against the drawing up of rules based on models.

By 'model' Lynch means neither a scale model nor an abstract theory of how something functions, some kind of diagram in which the elements of a system and the relations between those elements are described in clear terms, preferably quantitatively. Lynch uses the notion of model in the sense of the adjective 'worthy of emulation'. A model is an image of how the environment should be made, a description of a form or of a process that is a prototype to be emulated. 'Design decisions are largely based on models in the head of the designer' (Lynch 1981: 277).

These models may be highly detailed, such as a street profile, or they may be more extensive, developed for carefully considered reasons, for instance the idea of a satellite town.

Statements about performances are more general and more abstract than models. They are interesting tools to help writing rules and regulations and guidelines for space because they are clear as to the intended effect while leaving the means to be used to that end open. In this way innovation also remains possible.

In reality, however, statements about intended performance appear to be long-winded. Because how are you supposed, for example, to prove whether a design will satisfy the desired value of perception?

Lynch advocates the use of models in laying down guidelines and regulations, on the condition that rational use is made of this kind of model.

'The most useful model is one in which the dependence on the situation in which it is to be applied is carefully stated, and in which the expected performance of the model is also specified.' (Lynch 1981: 277).

Without the models they already have in their minds designers would be unable to solve a complex spatial problem. Although there are some occasional cases whereby talented

designers create new models, recombine existing models in a surprising manner, or adapt their application (Lynch 1981: 277). The question on the origin of fundamentally new city models is outside the scope of this paper. Lynch mentions talented designers, but there is no doubt that technological innovation (elevators, public transport, the automobile, the internet,...) and the changes they bring about in society play a major role.

Working with models that have already proven their value in other situations can more or less indicate the future attainment of the intended performance for a project. However, there are still many unknown parameters. The creation process remains of major importance in the translation and recombination of (a) model(s) in a new spatial and social situation. In his book Lynch gives a list of 'city models'. That list is not exhaustive, but it does cover most of the ideas that people have when discussing the urban structure. The models from history form the vocabulary the modern designer continues to build on.

Yet the list is too limited. One important task for spatial designers should consist of a systematic analysis of existing models and of creating and analysing new prototypes. 'Indeed, we should be engaged in anticipatory design, creating prototypes which will be useful for those new situations and motives which are only unfolding today.' (Lynch 1981: 277)

These models are of course not neutral. They are closely associated with values. The assumptions of normative theories about the city (space) and the pursuit of sustainable development will restrict the possible choices from the list of elementary models or necessitate the creation of new models.

There are, therefore, no rules as how best to interpret the terms for the definition of spatial quality in project briefs. For project briefs various gradations are possible. One can use general statements regarding desired performances, or rules that are based on selected models, or models that are specifically designed for the situation, or else a combination of these.

## **4. Analysis framework and method**

### **4.1 Case analysis**

My research question is "Which are the terms for defining spatial quality?" (Hajer and Sijmons 2006). In this research the basic proposition is "Bringing about spatial quality in strategic spatial projects requires good communication regarding that spatial quality." I will test this proposition by analysing cases that are regarded as being exemplary or innovative on account of the manner in which they (aim to) bring about spatial quality.

### **4.2 Analysis framework**

How are we to analyze the cases? The literature review that I did leads to the conclusion that terms for defining spatial quality can equally well be developed on the basis of a specific urban model and on the basis of rather general expectations that people have of space. Lynch's framework of analysis offers the most inclusive view on spatial quality. This framework is not confined to one singular city model. It is suited to examine multiple models. With the use of a list of Lynch's performances, one can find out whether written documents relating to the cases under analysis (such as project briefs, designer notes, criticism, jury reports) also unravel the required quality in separate performances, and whether Lynch's subdivision in performances can be recognized in it.

Furthermore Lynch offers me two important assets:

- The meta-criteria 'Efficiency' and 'Justice' enable to weigh Lynch's dimensions of spatial quality against forces that define space, but without a conscious intention of creating spatial quality. (E.g. building is considered not only as creating a good dwelling environment, but also as an investment, as maximizing the profit, as improving the well-being or as contributing to emancipation.) The covering of meta-criteria provides the possibility to relate

spatial intentions to more global social intentions, such as democracy and pluralism. Thus, the notion that a society is simply focused on the creation of good space is hereby avoided.

- Of all authors, Lynch offers the most elaborate analysis of the spatial perception. Authors such as Carmona and Oswald & Bacini only do with 'distinctiveness' or 'identification'. But the dimension of quality 'Sense' helps Lynch to explain why people feel good in a space, or why a space is inspirational. The detailed ramification into 'subdimensions' under 'Sense' clarifies that spatial perception comprises more than a mere aesthetic experience.

Although Lynch can be applied on many city models, not all city models are suitable from the point of view of sustainable development. Given the now undeniable climate problem, certain ideas about the city must now be discarded, or the emphasis will be placed very firmly on ecological well-being, both now and in the future. Lynch's basic terms will therefore be confronted with a set of terms for the definition of spatial quality based on models for sustainable urban design, and with a set of terms based on the network city model. The latter set of terms is considered to be in conformity with the present-day evolution of the European city.

A final confrontation will be carried out with my self-compiled catalogues of contemporary practice-related statements on quality for each type of spatial intervention. These confrontations could lead to a situation whereby the basic terms are adapted, restricted or supplemented with new models.

<p>General terms for evaluating and defining the quality of a space: the set of dimensions of performance Lynch (1981)</p> <p>in case -specifications -designer notes -juryreports -appreciation and critics in both popular and professional press -texts of action committees</p>	<p>Model oriented Terms for evaluating and defining the quality of a space: Sustainable urban design principles Carmona (2004)</p> <p>in case -specifications -designer notes -juryreports -appreciation and critics in both popular and professional press -texts of action committees</p>	<p>Model oriented Terms for evaluating and defining the quality of a space: Criteria for evaluating Urban Quality in Urban Systems (Netzstadt) Oswald &amp; Bacini (2003)</p> <p>in case -specifications -designer notes -juryreports -appreciation and critics in both popular and professional press -texts of action committees</p>	<p>current practical concerns (derived from professional literature) for 6 types of interventions: -urban transformations -open space and landscape -public space -mobility and infrastructure -working -dwelling</p>
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Fig. 2: Basic terms for defining the quality of space confronted with other sets of terms

The initial research question was reformulated according to the above definition of spatial quality and the selected theoretical framework:

1. Can Lynch's 'dimensions of performance' be recognized in the project approach of the case:

- has the existing space been analysed and assessed on the basis of the five 'dimensions of performance'?
- has the desired spatial quality of a strategic project been described using this set of expectations?
- have the costs and benefits of each term been weighed against each other ('Efficiency'), and relating to the interests present in the community ('Justice') ?



2. Has a ranking order been used in applying the terms? Has in the project approach of the case the term 'Vitality' (the condition of survival for all species) been used as a basis for the other four terms?
3. In which format do the terms for defining quality appear in the various written sources and in interviews? There are different possible gradations, from general statements regarding desired performance to rules based on selected models or models specifically designed for the situation. Or a combination of model and performance.
4. Are terms based on the 'dimensions of performance' comprehensible for laypersons? Do such terms facilitate the discussion between laypersons and specialists? Are action groups, actors and users in this way given the opportunity to enrich the terms? And do the designers actually respond to this?  
And does the use of these terms consequently make it any the easier for laypersons to understand and accept a choice made by specialists?
5. Do Lynch's dimensions suffice for achieving sustainable development?  
Will restrictions need to be imposed?
6. Do the dimensions suffice to deal with the current practice-related concerns? To this end Lynch's dimensions are confronted with catalogues of present-day practice-related quality statement regarding quality per type of spatial intervention: urban transformations, open space and landscape, public space, mobility and infrastructure, working, living.
7. Has the use of explicit terms for quality definition in specifications and designer notes enhanced the importance of spatial quality dimensions in the social, economical and political balance? Did the terms used to describe non-numerical assessments stand firm against numerical parameters?

To explore the above research questions it was checked whether the 'dimensions of performance' can be found in a number of written sources, and in which format. To that end the necessary interpretations of the written sources are made. The dimensions are sometimes quoted literally, and sometimes they have to be derived from configuration concepts (Verbart 2004). Attention is primarily devoted to the dimension of 'sense'. This aspect of the assessment of space is quite often overlooked by non-designers. Quality requirements with regard to space made by action groups or various urban organisations mostly come under Lynch's other dimensions (with the exception of the cultural organisations, ...). However, designers, too, frequently have difficulty underpinning this aspect of perception. The strength of Lynch's theory precisely lies in the fact that the appreciation of the perception of a space is thrashed out very clearly. Moreover, Lynch even goes as far as to state that 'Sense' is the determinant dimension for the individual appreciation of space.

The choice of a set of written sources, project brief (including the spatial analyses on which the project brief was based), design note (including the spatial analyses used by the designer), jury report, project appreciation and criticism in both the professional and popular press, websites and articles of action groups in the various phases of the process, make a comparison between the different sources possible. This enables us to verify whether Lynch's dimension lends itself to be used as a framework for the drafting of project definitions, but also whether that framework can also be used and understood by outsiders, both laypersons and professionals. If terms appear in different written sources it might indeed indicate as much. It can also be established whether designers, in their project, react to the formulated criticism by making the design acceptable to its opponents and thereby obtain a better-quality project.

The spatial analyses applied both in the project brief and in the Noriant design note are also described.

the set of dimensions of performance of Lynch Vitality <b>Sense</b> Fit Access Control in specifications /project-definition -evaluation framework	the set of dimensions of performance of Lynch Vitality <b>Sense</b> Fit Access Control in design note (Noriant) on architecture and urbanism	the set of dimensions of performance of Lynch Vitality <b>Sense</b> Fit Access Control in Jury report	the set of dimensions of performance of Lynch Vitality <b>Sense</b> Fit Access Control in Critics and appreciation of the project in the popular press (newspapers)	the set of dimensions of performance of Lynch Vitality <b>Sense</b> Fit Access Control in Critics and appreciation of the project in professional literature	the set of dimensions of performance of Lynch Vitality <b>Sense</b> Fit Access Control in websites / letters of action committees in different phases of the project
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Fig. 3: The set of 'dimensions of performance' of Lynch in written sources of a project

Following through on the analysis of the written sources a series of interviews will be held with key figures: members of the quality chamber, designers, commissioning authority, court of law, lawyers, action groups, ...

These interviews will try to sound out:

- the personal essential characteristics for spatial quality;
- a personal evaluation of the specifications and the specifications as assessment framework. How was the assessment made on the basis of the quality objectives set out in the Architecture and Urban Development manual? Were quotes given for each objective, or was the assessment instrument treated more as a basis for discussion?;
- a personal evaluation of the jury report, the procedure;
- the use of models for the assessment;
- a personal evaluation of Lynch's 'dimensions of performance'.

The analysis can then be performed again with the model-oriented sets of terms for defining spatial quality.

### 5. Pilot case: Oosterweel link

The project for the Oosterweel link, the completion of the Antwerp circular road, was chosen as a pilot case for a variety of reasons. The initiator is the Flemish Government, mobility sector. Aiming at spatial quality of infrastructure projects is new in Flanders and was initiated by the Flemish government architects Bob Van Reeth and Marcel Smets . This makes this infrastructure project different from the project for the High Velocity Train lines between Antwerp and Roosendaal and between Leuven and Liège, realised only few years earlier, but clearly without a concern for spatial quality. For the Oosterweel link a design competition was organised, which is a novelty in this sector and requires consultation and argumentation about design proposals. Prior to the competition, extensive specifications describing quality terms were drafted. Furthermore, the selected formula, Design Build Finance Maintenance,

presupposed that within one single team people with various professional goals engaged a discussion in order to obtain a common result.

Hence, the issue of shared terms is prominent in this case. As a matter of fact, on this very moment a press campaign questioning the importance of spatial quality is ongoing.

One particular reason for the selection of this case is that use could be made of the participative research method, since I was actively involved, as project leader for architects Robbrecht-Daem, in drawing up the draft tender on behalf of the Noriant consortium. This consortium has in the meantime been admitted to the Best and Final Offer phase as sole candidate with a sufficient level of ambition in the matter of spatial quality.

Roughly speaking, two phases can be distinguished in this project. In the preparatory phase the mapped-out route for the completion of the circular road was determined on the basis of spatial analyses and reports on ecological and environmental impact. The route consisting of a tunnel under the river Schelde from Blokkersdijk to Noordkasteel and a double-deck viaduct on the Northern edge of the district Eilandje, connecting with the existing Merksem viaduct was proposed as the best choice. Since this route was considered the most successful in reconciling goals relating to economy, traffic technique and ecology, the Flemish government decided in September 2005 to build it. A reference design for roads, tunnels and bridges was drawn up. With this reference design the zoning was established both for the horizontal and the vertical plane for the regional spatial implementation plan (*gewestelijk ruimtelijk uitvoeringsplan* - GRUP).

The next phase is the DBFM negotiation. For this negotiation the reference design stipulates the minimum quality level that must be reached by the candidates. A quality chamber is founded in order to assess the ambition level of the various projects. This jury is composed of national and international experts in various disciplines, that is architecture, landscape design, urban design and civil engineering. Incorporating this tool of assessment in the project approach encouraged the consortiums to strengthen their teams with renowned engineers and designers.

The awarding of the contract happens in two steps. After submitting the tenders the quality chamber, without having knowledge of the price ticket, will decide which projects obtain a sufficient level of ambition to be admitted to the Best and Final Offer negotiation. Admitted candidates can adjust their project and their financial bid. After this, the adjusted tenders are assessed again by the quality chamber. The cheapest bid will be granted the realization of the project. The candidate whose Best and Final Offer is appointed by the quality chamber as the project with the highest quality, is granted a 100 million € bonus in this ranking.

The case analysis thus far discusses only the second phase.

## **5.1 Excerpts from the case analysis**

### **5.1.1 The project brief/specifications of the DBFM negotiation**

#### *Representation of 'dimensions of performance' and 'meta-criteria'*

Eight design manuals and nine annexes discuss topics that can be described with the five 'dimensions of performance'.

'Vitality' is treated in 'Integral Water Management' and in 'Nature and Environment'.

'Sense' and the qualitative aspects of 'Fit' are treated in 'Architecture and Urban Planning'.

'Fit' is treated in 'Infrastructure', 'Civil Engineering Structures', 'Electromechanical Engineering' and 'Geotechnology'.

'Access' and 'Control' are treated in the annexes 'Mobility and Traffic' and 'Risk Analysis' and in 'Architecture and Urban Development'.

The Flemish government has made a balancing of the various quality goals and of the interests in our society ('Efficiency' and 'Justice'). The government is prepared to pursue

spatial quality when realizing this infrastructural project and is willing to spend 100 million € for this, that is 1/16 of the then estimated cost of 1600 million €.

*Format of the project brief / degree of freedom / Design Manual Architecture and Urban Planning*

Most of the design manuals of the specifications make use of norms, tolerance limits and standards to describe the performance of project elements. Technical construction, biological and ecological aspects of 'vitality', 'fit', 'control', 'access', such as supporting structure, scattering of sound, air quality, fauna and flora requirements, ... are perfectly, or at least very accurately calculable and predictable. This is less straightforward for the 'sense' aspects and for the qualitative aspects of 'fit', or for the aspects relating to the future suitability which are treated in the design manual Architecture and Urban Development. The manual Architecture and Urban Development ('*Sustainable and Integral Approach to the Oosterweel Link*' - '*Duurzame en Integrale Aanpak Oosterweelverbinding*') is a spatial quality management tool aimed at preventing any unwanted proposals as regards integration in the urban fabric and architectural appearance. It combines the level of ambition required by the Commissioning Authority with the specific contextual requirements of the main parties involved (City of Antwerp, Gemeentelijk Havenbedrijf Antwerpen (Antwerp Municipal Port Installations), AROHM Monuments and Landscapes Department, ...).

The design manual Architecture and Urban Development either makes statements regarding desired performances or lays down specific design principles. These design principles were derived from the reference design. This design manual also functioned as the assessment framework for the quality chamber. Only projects that met the level of ambition in the area of spatial quality described in the design manual Architecture and Urban Development were admitted to the Best and Final Offer phase.

The reference design serves as a minimum model. The designers of the various consortia were expected further to test the variants of the reference design. Departures from the reference design could be proposed on the condition that it could be demonstrated that the set performances remained achievable and provided that these alternatives were still within the limits set by the GRUP. These departures were discussed in bilateral talks with the Commissioning Authority. This *modus operandi* ensured the designers a sufficient degree of freedom to optimise the reference model.

*'Dimensions of performance' in the Design Manual Architecture and Urban Development*  
(Normal: excerpts or abstracts from the design manual for A and S  
*Italics: reformulation with the dimensions of performance*)

- Spatial integration:

The infrastructural intervention must enter into a dialogue with the existing context by valorising or structuring the context: reinforcing the qualitative elements from the context, or operating on and changing the spatial cohesion in a lower-quality context. This objective therefore goes beyond the requirement of the judicious fit of the spatial intervention in the spatial context. The intervention should also be able to play an active part in the further development of the area in which it is projected.

- *The infrastructural intervention must be designed in such a way that the identity of the traversed parts of the city is shown to best advantage or even heightened.*

- *The infrastructural intervention must be designed in such a way as to support or even improve the existing and desired spatial structure (concise information from the spatial structure plan for Antwerp is included in the specifications) and the congruence of this structure with present and future activities.*

- Economical and efficient use of space:

The spatial consumption must be minimal, without undermining the functional requirements of the infrastructure.

- *The infrastructural intervention must be designed in such a way that the capacity of the space to be life-supporting (Vitality) endangers as few species as possible. The infrastructure must at the same time be suitable (Fit) for its intended use..*

- Suitable visual amenity value:

The visual impact of the completion of the ring road will be considerable. A well thought-out planting and a good-quality design will be needed to communicate the intervention to the public in a positive way.

- *The infrastructural intervention should be designed in such a way that the Identity of the entire city is enriched by an infrastructure that has the potential to acquire symbolic value (Significance).*

- High future value:

The infrastructure and its civil engineering structures must be designed to last for a minimum of one hundred years. Flexibility, adaptability, durability and continuity are important areas for concern.

- *The infrastructural intervention must be designed in such a way as to be suitable (Fit) here and now and to remain suitable for use in the future.*

- Clear road layout:

Demands are made of the infrastructure from the standpoint of the infrastructure user. Safety, orientation, clear traffic situation and high perception value contribute to a positive perception of the distance covered.

- *The infrastructural intervention must be designed in such a way as to be life-supporting (Vitality) and to give the driver sufficient instructions, in the form of both road signs and design, for correct driving behaviour ('Legibilit'y, 'Congruenc'e). It must enable the driver to find his way around the space (Structure) and to experience the surroundings through which he is driving (Transparency).*

- High-performance structure:

The project must be an illustration of modern engineering practice, constructionally honest, aspiring to an efficient use of energy and material and be a homogeneous and coherent whole.

- *The infrastructural intervention must be designed in such a way as to be distinguishable from all other infrastructures because of its own homogeneous character (Identity). Being efficient as regards use of material and energy it will support the life-supporting capacity of the space (Vitality).*

Over and above these objectives the specifications also stipulate the components that must be designed and with which the objectives can be reached. A number of these components (e.g. the acoustic fencing) have already been developed in the reference design and are now imposed as obligatory design principles.

### 3. DOELSTELLINGEN EN COMPONENTEN

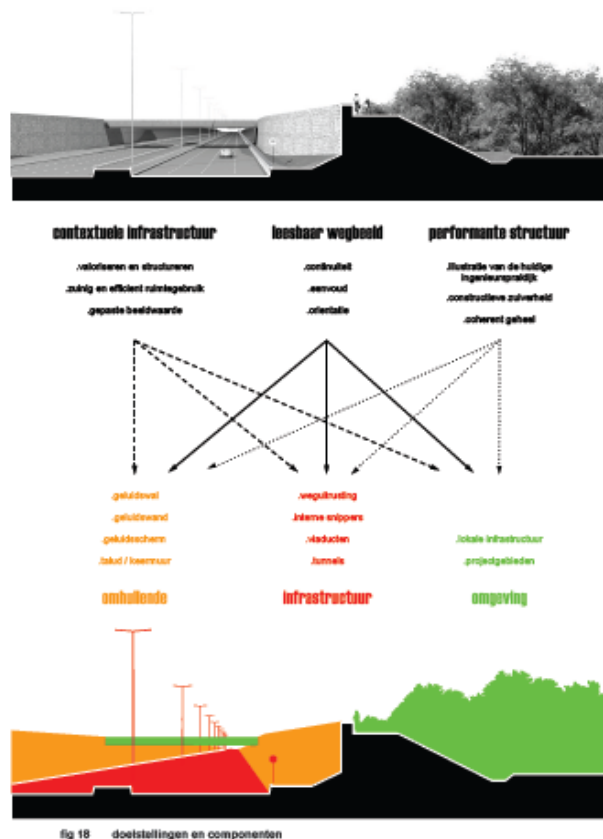


fig 18 doelstellingen en componenten

Fig. 4: Goals and components in the design manual on Architecture and Urban Planning of the Oosterweelverbinding

#### 5.2. Noriant design note

This design note shows that the designed infrastructure and civil engineering structures will meet the objectives set forth in the specifications. This is achieved by means of:

- analysis of the urban districts that will be affected by the ring road infrastructure,
- analysis and interpretations of the desired spatial structure for Antwerp,
- urban designs for possible development scenarios for those urban districts,
- images of the designed civil engineering structures,
- images of the designed infrastructure and landscape.

On the basis of a number of elements of the designed infrastructure it will become evident in what follows how the design of the infrastructure in the Noriant project and the descriptive texts address the three groups of subdimensions of Lynch's dimension of performance 'Sense'.

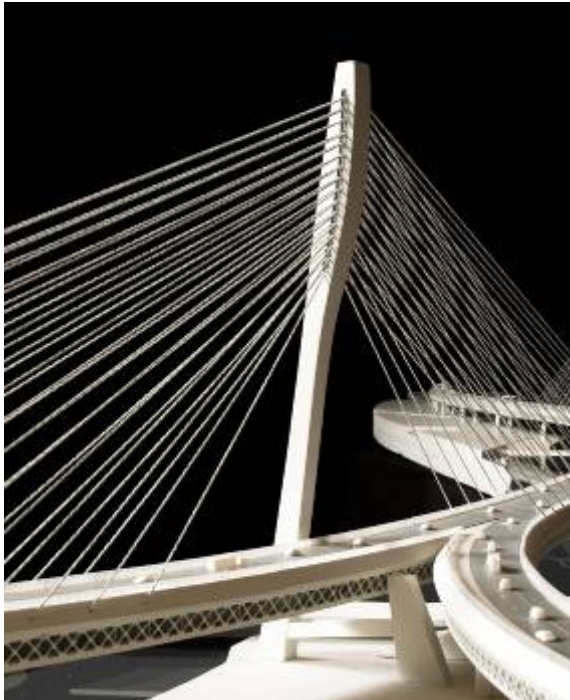
The formal components of sense:

- 'Identity' is the extent to which a person can recognize or recall a place as being distinct from other places – as having a particular character.
- 'Structure' is at the scale of a small place the sense of how it parts fit together, and in a large settlement the sense of orientation.

*How is the design of the project contributing to the enhancement of 'Identity' and 'structure' in the city?*

The whole project is designed within two registers of design:

1. register of smooth, light and floating forms for the higher infrastructure



2. register of earthy, tactile and angular forms for the lower infrastructure and the public space underneath and next to the higher infrastructure





The contrast between the earthly and the infrastructure register gives a sense of orientation in the city. 'We're driving through a natural zone of Antwerp 'Scheldepark'.'

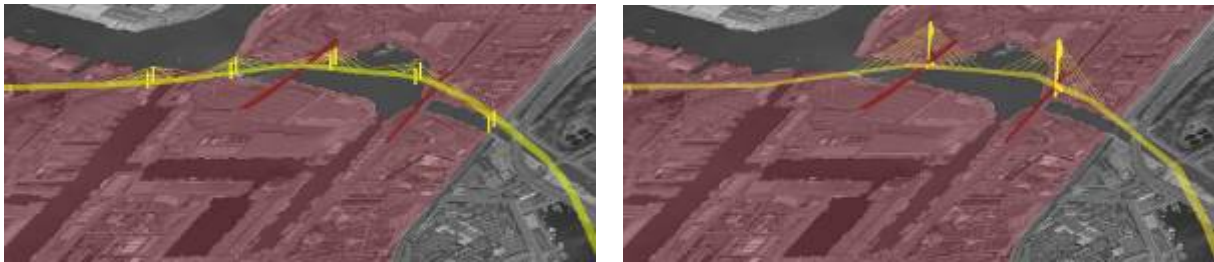




A strong figure of plane-tree alleys, which is now interrupted by the infrastructure will be reconnected by a wooden eco- and bike connection. The closing of the alley-figure will enhance the sense of orientation of the inhabitant and holiday-maker in this part of the city.



A set of two pillars instead of a trail of five pillars (as suggested in the specification) marks the two bridges between the existing parts of the hard backbone of the city and the part where the hard backbone will develop in the future. In the same way as the cathedral points the heart of the city, the pillars will point the growing axes of the city.





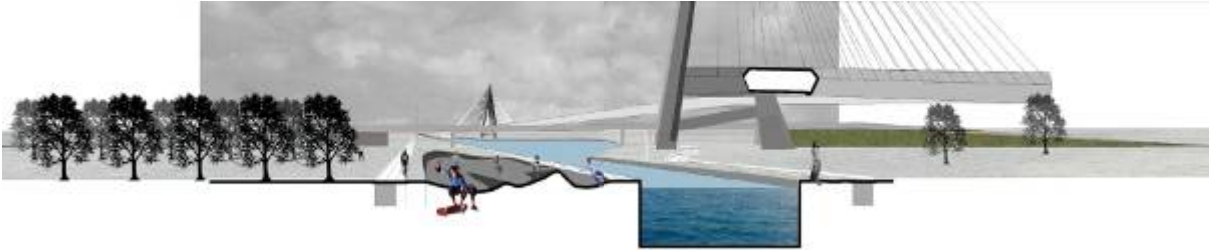
Components which connect environment to other aspects of our lives:

- 'Congruence' is the formal match between place and function.
- 'Transparency' is the degree to which one can directly perceive the operation of the various technical functions, activities, and social and natural processes that are occurring within the settlement
- 'Legibility' is the degree to which inhabitants of a settlement are able to communicate accurately to each other via its symbolic physical features: flags, crosses, towers, fences,....

*How is the design of the project contributing to the enhancement of 'Congruence', 'Transparency' and 'Legibility' in the city?*

In suggestions for the spatial design of the neighbourhoods underneath and next to the infrastructure the designers emphasize that these parts of the city can be used for appropriate functions.





Appropriate functions: jogging, walking, bridge spotting, sport infrastructure, blind boxes for dancings and furniture storage

Component which makes symbolic connections between the environment and the central values of a person

- 'Significance': to what degree, in the mind of its users, is the form of any settlement a complex symbol of basic values, life processes, historic events, fundamental social structure, or the nature of the universe?

*How is the design of the project contributing to the enhancement of 'Significance' in the city?*

The viaduct is likely to be perceived (news paper, action groups websites) as a symbol of conflict between harbour and city, and therefore for failing policy and as an obstacle for the Northern expansion of the city.

The Noriant design however sets out to restate the symbolic significance in positive terms:

- The position and the shape of the pillars can be read as the very symbol of the Northern expansion of the city
- the viaduct spanning the dock glorifies the harbour
- the pair of pillars claiming Antwerp's skyline celebrates the city. They deal on equal terms with Antwerp's major symbolic towers.
- the viaduct can transfer the meaning of technological bravoury.





## 7. Provisional conclusions for the Oosterweel link case

The case analysis has not yet been fully completed. The search for basic terms (Lynch's 'dimensions of performance') in the written sources - specifications, the Noriant design note, the popular press, the specialist press and the texts of action groups – has been finished. The interviews with key figures are in the pipeline. The analysis of the design notes of the other two consortia cannot be conducted because the projects have not yet been released. The jury reports are also not available yet. The confrontations with other sets of terms are yet to begin. Based on this analysis, incomplete as it is, the following conclusions may already be drawn:

- We can confirm that all of Lynch's performances, including 'Sense', can be found in numerous written sources. Only the 'Sense' performance (and the perception aspects of the other dimensions) is called into question in the popular press. The assessment of the quality chamber regarding the architectural and urban planning quality of the different projects is dismissed as being subjective and therefore not relevant. One possible explanation might reside in the fact that the other dimensions are expressed in standards, norms and rules. This is more difficult for 'Sense', unless we conform to one specific model or indeed several specific models. The designers of the Oosterweel link had one such model at their disposal: the reference design. However, all three tendered designs differ from the reference plan on essential points. The specifications provide the necessary terms to balance these divergences against each other: 'Valorisation and structuring', 'Economical and efficient use of space', 'Appropriate visual value', 'Continuity', 'Simplicity', 'Orientation', 'Illustration of the current engineering practice', 'Constructive purity' and 'Coherent whole'. Up till now these terms have still not found their way into the general press. A clear communication from the quality chamber regarding its decision and a complete overview of its arguments are still absent from the press. One or two arguments in favour of the Noriant offer did happen to find their way into the newspapers, but scarcely any mention was made as to why the other candidates failed to qualify.

- The analysis methods for the 'Sense' dimension suggested by Lynch in his book only allow us to gain an understanding of the existing condition of a space. They provide no certainty as to the satisfaction of the inhabitants and users after the realisation of a project. Technical construction, biological and ecological aspects such as 'Vitality, Fit, Control, Access', such as supporting construction, scattering of sound, air quality, flora and fauna requirements, ... are relatively easily calculable and predictable. Regarding the aspects of 'Sense' many decisive parameters are unknown, given that we are dealing with a non-existing situation. These are 'open' spatial performance dimensions.

However, they are not entirely unpredictable.

At this point a designer must rely on his own personal spatial experiences in order to estimate the perception and satisfaction of future users of the space as well as possible.

Designers who can fall back on an extensive framework of reference and a good systematic knowledge of the models developed throughout history can draw upon this in order to gauge the future perception of the area as closely as possible.

Similarly, the jury of a design competition will be guided by their understanding of an extensive repertoire of models in order to make a judgment and adduce arguments for their choice.

In architecture and urban planning designer's notes for design competitions frequent use is made of reference images. These images must give the jury and other readers an idea of the models used by the designer. The decision of the jury will show whether the presented models will develop into shared terms.

- Arguments relating to the quality of a project can be exchanged through the use of shared terms. But these arguments are not easy to understand without sufficient knowledge of the planning context. In order to assess the projects for the Oosterweel link awareness of the Structure Plan Flanders, the Structure Plan of the Antwerp province, the Structure Plans of

Zwijndrecht and Antwerp, reports on ecological and environmental impact and the project specifications is required. For non-professional interested citizens this is not a simple task. The complexity of this kind of projects urges for competent citizen organizations such as 'StRaten Generaal' (an organization of citizens contributing through participation to sustainable development). Furthermore, providing insight in complex, multi-faceted problems is a pre-eminent task of the press. In the case of the Oosterweel link, at the present time such insight is impeded since not all information has been released.

- The designers of the Noriant consortium were sensitive to the objections to the reference plan raised by actions groups.

By designing a bridge on two pillars implanted next to the two north-facing bridges the design reacts to the following objections: the viaduct of the Oosterweel link will render the northward growth of the city impossible (Strategic space Hard Backbone of the spatial structure plan for the City of Antwerp). The row of five double pillars will disfigure the Antwerp skyline.

By paying attention in development plans for the northern part of the 'green belt' strategic space to the activities that might develop under and along the Oosterweel viaduct an attempt is made to take on board the criticism formulated by an action group, namely that it would result in social insecurity in the neighbourhood of the viaduct.

– The specifications and Noriant's design note pay a great deal of attention to the description and underpinning of the desired spatial quality for the infrastructure to be designed (how the design notes of the other consortia deal with this cannot yet be examined). The expectations for the quality of the project are unravelled in different aspects. However, these arguments in favour of the objectives of the project appear to have had little effect on the public opinion thus far. One simple explanation for this is that they have not yet received full public exposure because the adjudication procedure is not yet completed.

However, this indicates that the development of terms for defining the spatial quality does not suffice also to implement the desired quality. The process conducted to that end also plays an important part.

The newspaper articles about the Oosterweel link project mainly criticise the procedure followed. The quality chamber, as it so happens, prematurely eliminated the second candidate for the design, implementation, financing and maintenance of this project. Further competition between the two consortia to make their project less expensive and to increase the quality of their project is no longer possible.

- In the terms of Lynch it could be said that the criticism of the project, in the Flemish Parliament and in the newspapers, directs itself against the meta-criteria 'Efficiency' and 'Justice'. Weighing up the spatial quality against other social values, such as control of the cost price for the government and equal treatment of all bidders, is criticised. The parliamentary opposition fears that the high cost price of the construction will be to the detriment of other mobility requirements of the Antwerp mobility plan: again a criticism in the area of 'Efficiency' and 'Justice', whereby the spatial quality of the infrastructure is weighed up against other social interests.

That these other interests also determine the spatial appreciation of the infrastructure work in the public opinion is consistent with Lynch's theory. The case of the Oosterweel link thus supports Lynch's theory as a comprehensive and realistic approach to spatial quality.

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