

Marjanne Sevenant
 Marc Antrop

MAPPING CULTURAL DIMENSIONS OF THE URBANISED LANDSCAPE FOR A STRATIFIED SURVEY OF LANDSCAPE PREFERENCE. A CASE STUDY OF GHENT, BELGIUM.

INTRODUCTION

Landscape perception and preference to assess 'the aspirations [of the public] with regard to the landscape'

The word 'landscape' has complex and multiple meanings which alter depending on the context they are used in and the background of the users (Brandt, 1998). For most people, landscape is an everyday experience and not an academic construct. It is also about sense of place: landscape is a visual concept, an image, whereas place is a context of experience (Soini, 2004). Language plays an important role in shaping perceptions of the landscape and local people should be approached through their own language (Claval, 2004; Soini, 2004). This involves a structural and a scenic approach to the landscape as well as the study of the landscape as a mental construct (Muir, 1999). Apart from these rather theoretical considerations, there is a growing awareness that the feasibility of landscape policy will also depend on the support from the general public. Illustrative for this concern is the European Landscape Convention (Council of Europe, 2000). Perception gets a prominent position already in its definition of landscape as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (Chap. 1; Art. 1, A). It further shows up in the description of landscape quality objective as "the formulation [for a specific landscape] by the competent public authorities of the aspirations of the public with regard to the landscape features of their surroundings" (Chap. 1; Art. 1, C). Public participation is also mentioned in the general measures, "to establish procedures for the participation of the general public, local and regional authorities, and other parties with an interest in the definition and implementation of the landscape policies [...]" (Chap. 2, Art. 5, C). Public consultation is further recommended in the chapter on specific measures to define the landscape quality objectives (Chap. 2; Art. 6, D).

From this point of view, research on landscape perception and preference is more than justified. Landscape perception research is however complex and has engaged the interest from various disciplines. The paradigms have been adapted primarily from the field of environmental psychology with little input from sociologists and human geographers. A first consequence of this approach is that much of the early work aimed to identify 'landscape beauty' to be included in environmental management, planning and design, decision and policy-

making. Hence, in most of the early literature, overall preference judgement has been used, ignoring the possibility that respondents were combining different criteria relating to the scene as a setting for different types of activities (Purcell et al., 1994). Some studies e.g. support the hypothesis regarding the use of the restorative value of a scene as an implicit frame of reference for preference judgments (e.g. Purcell et al., 2001; Ulrich, 1981). Purcell et al. (1994) find evidence for differences in preference instead of a unitary measure of environmental preference, arising from people cognitively coding the scenes differently, according to their expectations for what the place could offer. In the same study, they suggest that it is possible that the basis for the judgement might shift as a function of the particular attributes of the scene being judged. This methodology is in contrast to previous studies, that were based on a post hoc inspection of the characteristics of landscapes of high or low preference (see e.g. Brown and Daniel, 1987; Kaplan et al., 1972; Ulrich, 1981) or on the basis of a definition of what is man-made or natural (see e.g. Zube and Pitt, 1981).

A second consequence of the environmental psychological approach is that most landscape preference research has focused on finding an empirical basis for public consensus (Brush et al., 2000; van den Berg et al., 1998). The consensus assumption was also supported by the functionalist-evolutionary approach, which recognizes cross-cultural, universal patterns in visual preference (e.g. Appleton, 1975; Kaplan, 1987; Kaplan and Kaplan, 1989; Ulrich, 1977). This has been used as an argument for the development of general models for predicting and explaining landscape preferences (van den Berg et al., 1998). The consensus assumption was opposed to the constructivist assumption, of which the adherents tried to find evidence for cultural variability in landscape preferences (e.g. Moore 1979; Lyons 1983). Many studies combining more heterogeneous samples of respondents and landscapes give arguments for important individual differences in perceived landscape quality in general (for an overview, see e.g. van den Berg et al., 1998). Neisser (1976) e.g. argues that the process of selection of important attributes in our environment is not individually but culturally determined and most people consider the same attributes as relevant. Bourassa (1990) attempted to reconcile both functionalist-evolutionary and constructivist theories, arguing that both biological and cultural factors determine human-nature interactions. In their attempt to figure out what lies behind a preference judgment and how human information processing work,

Kaplan and Kaplan (1989) summarized these factors into three themes: (1) familiarity or experience (e.g. geographical circumstances of residence); (2) (sub-)cultural and ethnic variation (e.g. gender, religion); and (3) the effects of formal knowledge and expertise (e.g. profession). Many studies since have found evidence for familiarity, subculture, gender, membership in environmental groups, and expertise to influence landscape preferences (for an overview, see e.g. Strumse 1996). Other studies have focused upon preference differences between a priori groups instead of accounting for several socio-demographic characteristics of individuals. Van den Berg et al. (1998) e.g. demonstrated statistically reliable differences in beauty-ratings between user-groups, evaluating different nature development plans. Palmer and Hoffman (2001) however emphasize the individual character of landscape ratings instead of one similar landscape perception shared by one group, which is to be added to the physical reality of the landscape. They propose procedures to evaluate the reliability of landscape ratings and the validity of landscape representations (see e.g. Sevenant and Antrop, in prep.).

Bearing in mind this summary theoretical overview, it is clear that few studies examined the differences in landscape preference between social groups as well as the reasons for such differences. However, the emphasis in Western countries on multiculturalism and ethnicity with emergence of new ethnic-cultural identities makes it necessary to study more deeply the different environmental views and behavior held by various social groups (Johnson et al., 2004). The latter is triggered as well by the call for greater public participation in landscape policy.

Sample design to assess 'the public'

The high degree of consensus reported in the preceding literature overview, Lyons (1983) suggests, may be an artefact of sampling persons of similar backgrounds and experiences, such as 'college students, local residents, foresters or park visitors'. This runs the risk of a severe bias in the respondents' sample and hence in the research results. Therefore, a well-considered sample design is an integral part of the research design, defining the overall quality of the research (Kent, 2001). As simple random samples are difficult to construct, stratification can be applied. This procedure utilises information already contained in sampling frames to construct a sample that is guaranteed to be representative in respect of that information. The population is divided into subsets, being natural or purposive non-natural strata, with separate samples drawn from each (Robinson, 1998). As samples will form the basis of inferences about the population, they should represent the characteristics of that population as closely as possible. Accordingly, a well-considered sampling process should start with defining the population and the sampling frames from which the sample will be drawn. These sampling frames can be both aspatial and spatial (Harvey, 1969 in: Robinson, 1998).

This paper reports on the first phase of a case study that aims to investigate how social groups with different backgrounds (studies, culture/ethnicity, gender, age, urban/rural background, etc.) experience and behave in different urbanised and rural landscapes. The study area is the city of Ghent and its surroundings, situated in the northern part of Flanders Region (Belgium) (see figure 1). The objective is to define the spatial sampling frame that contains the factors which are needed for stratification in further research. The result is aimed to be illustrative for the problem as stated above, rather than providing a sound and accurate sampling frame, ready for instant use in the further survey design process. In the following sections, the information frame of Ghent will be presented, consisting of two parts, which are spatially linked: (1) a morphological typology of the landscape character types within the study area, and (2) a socio-demographical typology.

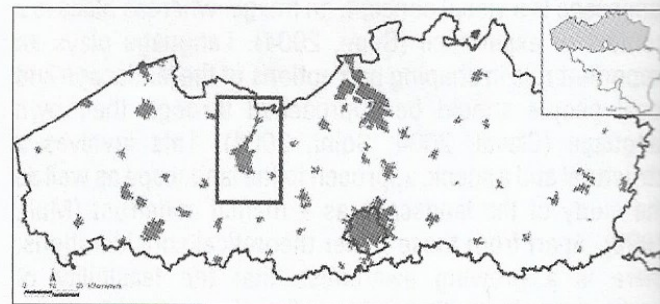


Figure 1: Localisation of the study area (box) in Flanders Region (Belgium).

METHODS AND MATERIALS

Towards a stratified sampling frame

Two sources were combined to define the information frame of Ghent. The morphological typology of the city of Ghent was mainly based upon the municipal spatial structure plan as presented in N.N (2000a, 2000b). The latter describe the historical evolution of the city to end up in a landscape typology. The socio-demographical typology relied on the atlas of social exclusion as described in N.N. (2002). This typology encompasses many aspects of demography, socio-economics, education, and housing. For this stratification, a synthesis was made, including population dispersion, rejuvenation, not-EU foreigners and deprived inhabitants. Both typologies consist of different layers related to different landscape types and socio-demographic groups. These were synthesised and combined in a preliminary overlay using ArcView GIS 3.2. This resulted in a map of spatial units, forming the strata within which the sample of respondents for questioning on landscape preference should be recruited for.



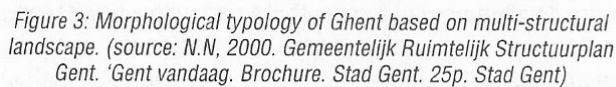
Figure 2: Historical development of Ghent from 18th till 20th century.
(source: N.N, 2000. Gemeentelijk Ruimtelijk Structuurplan Gent. 'Gent gisteren'. Brochure. Stad Gent. 21p. Stad Gent)

Morphological typology of Ghent

A brief overview of the historical development of the city is necessary for a better understanding of the actual multi-structural morphology of the landscape (see figure 2). The original name of the city 'Ganda', Celtic for 'confluence', refers to the localisation of the earliest settlement at the junction of two meandering rivers Lys and Scheldt. The site was located in marshland with some sandy ridges up to 29m altitude, where two abbeys started to cultivate the area. A harbour developed soon, inducing the enlargement of the settlement from the 11th century onwards. A ring of canals enclosed an area of 80 hectares, coinciding with the actual historical city centre. Both the spontaneous and planned development of the medieval city can still be noticed today. In the surroundings, some settlements developed on the sandy ridges but the city did not expand substantially and the urbanisation did not cross the ramparts until the 18th century. During the Industrial Revolution, textile production became important, which induced a considerable population increase from 61.000 in 1800 to 108.000 in 1854. Nevertheless, the expansion still remained intra muros. Factories were set up in existing buildings such as abandoned abbeys, churches, and castles whereas working-class houses were organised in interior court yards. The development of new infrastructures, such as the canal and railways, caused the industrial activities to move away from the centre. A significant horizontal expansion of the city took place between 1854 and 1933, bringing about a chaotic development towards the north, west and east. Thus, the 19th century periphery formed, which nowadays remains an important structuring element, both morphologically and socio-economically. Conversely, the city centre was submitted to a redevelopment, stimulated by the

awareness of its old buildings' heritage. Here, the World Exhibition of 1913 was an influential happening for the entire development of the southern part with a new railway station, a large city park and adjacent wealthy neighbourhoods. During the 1960s, early suburbanisation occurred towards the surrounding village centres, following a star-shaped pattern (Antrop, 2000). The architecture however was no longer urban. Instead, larger detached houses and some high rise blocks were built. With the canal's capacity to accommodate sea-going vessels now, large industrial areas developed to the north. A ring canal, a ring way, and internationally important highways were constructed. The administrative amalgamation of the city with ten neighbouring municipalities in 1977 accelerated the development of the Ghent agglomeration. The open space became fragmented, which was even stimulated by the establishment of the regional zoning plan in 1977. This chaotic suburbanisation gave rise to fuzzy borders between the city and a highly heterogeneous and multifunctional countryside (Antrop and Van Eetvelde, 2000; Antrop, 2004). Nowadays, the Ghent agglomeration stretches north-south, bordered by nature areas towards the west and the east.

Today, different landscapes can be found in Ghent as a result of the historical interaction between relief, soil, natural structures and human influence. The landscape character is determined by many aspects such as vast or closed vistas, salient lines of sight, building density and altitude, landmarks, and vegetation masses. By and large, three landscape types can be distinguished: (1) the open and half-open landscape, (2) the large-scale industrial landscape, and (3) the closed (sub-) urban landscape (see figure 3). The boundaries between them can either be sharp or fuzzy.



many axes along water courses, railroads, or highways. They are historical or architectural landmarks. The building density progressively decreases towards the boundaries of the city, except for the sharp edge between the city and the open space along the western side. Since the 1960s, many dispersed buildings were constructed here, disconnected from the traditionally closed building pattern. Ribbon building hides the vast open space behind the houses. This resulted in fuzzy borders of the urban landscape, threatening the intact traditional landscapes.

The socio-demographical typology of Ghent as presented in N.N (2002) is related to the statistical sectors as spatial census units. This spatial division has been used since 1970, based upon existing morphological and socio-economic structures. Although this generates more detailed statistical information beyond the municipal level, a disadvantage is that the sectors can have a varying surface and population number. In the overview below, more attention will be given to the spatial dimension rather than to facts and figures. In a general way, population dispersion, rejuvenation, foreigners, and deprived inhabitants will be described successively (see figure 4). If not explicitly mentioned, all figures refer to the census of 2001. The dispersion P on the maps is calculated from the ratio of the statistical sector mean against the city mean of the variable. Accordingly, an increasing P signifies concentration of the respective variable.



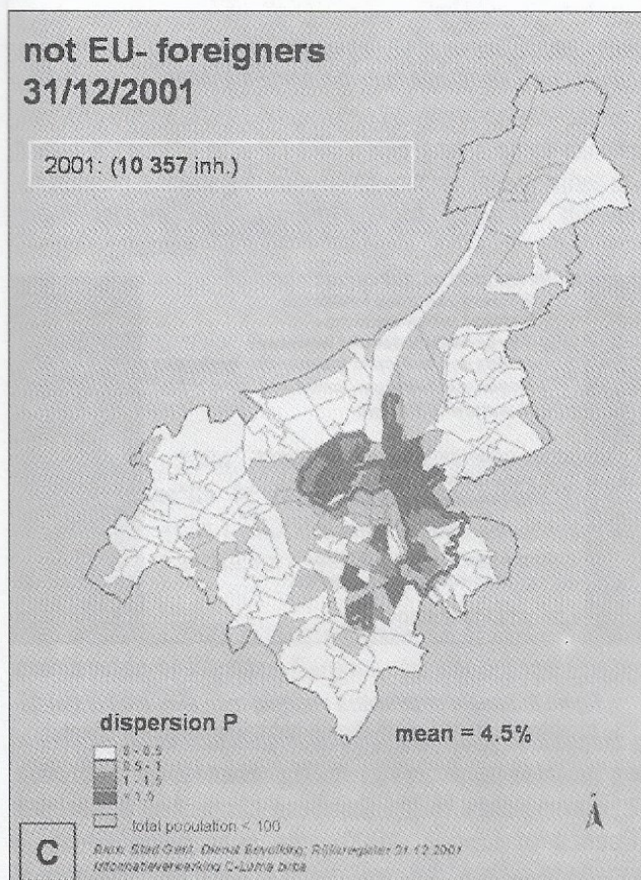
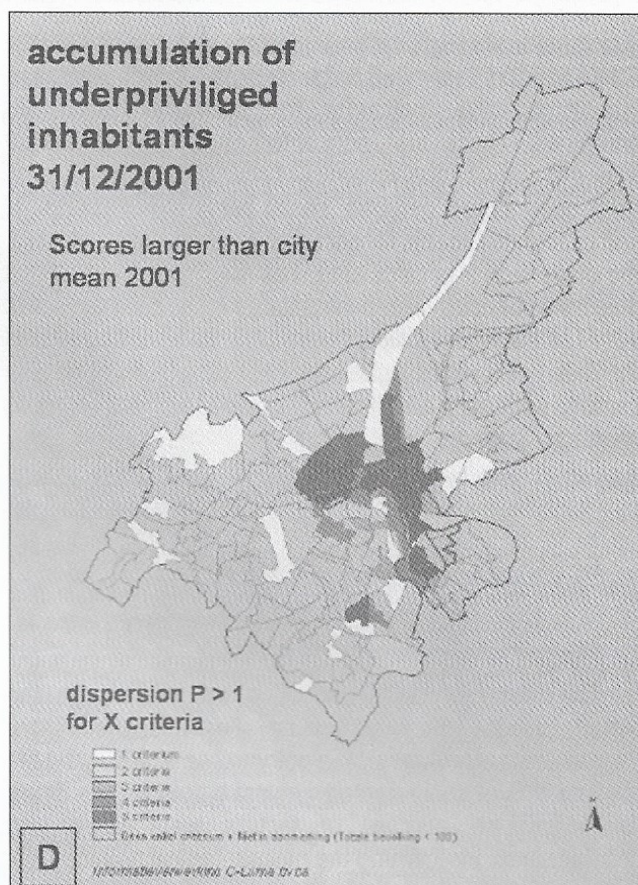


Figure 4: Socio-demographical typology of Ghent based on census data in statistical sectors. (source: N.N, 2002: Kansarmoedeatlas Editie 2002. Sociaal Impulsfonds, Dienst Informatietechnologie en GIS – Stad Gent i.s.m. C-Luma bvba)

In 2005, the city of Ghent counts over 232.000 inhabitants. The population dispersion can be considered star-shaped: the centre is most densely populated, decreasing towards the former municipal centres (see figure 4A). Internal migration streams are directed from the centre towards the peripheral communities, whereas the city centre remains attractive for external migrants. There is a tendency towards ageing of the population, with 8.5% being older than 65 years and 21.0% being younger than 19 years. Older people live in the centre, whereas younger people inhabit the periphery, due to young families leaving the city centre (see figure 4B). As relates to nationality, 6.4% has a foreign nationality, of which 28.6% are EU-foreigners. Almost half of the not-EU foreigners are Turkish and northern-African (Tunisian, Algerian, Moroccan) migrants (45.4%). Other groups come from Eastern Europe and former USSR (8.4%), other African countries (6.1%), Asia (1.1%), USA, Central America, Canada, and New Zealand (2.1%), Southern America (1.1%), and some other regions (1.8%). This distinction between EU- and not-EU foreigners is also spatially significant: the latter live in the 19th century periphery, whereas EU-foreigners mostly live in the city centre (see figure 4C). This pattern remained despite the recent decrease of foreign population

due to naturalisation of the migrants, who hence became EU-foreigners as well. As relates to deprived inhabitants, five indicators for social exclusion are combined. These are: concentration of ethnic-cultural minorities, low annual income (<12.500 EUR) groups, long term unemployed persons, social security paid persons, and candidate-tenants for social housing. For each of them, the dispersion P is calculated. The map shows the spatial dispersion of deprived inhabitants in the city (see figure 4D). The darker the colour the more criteria of five exceed the mean of the city. Again, the concentration in the 19th century periphery and to a lesser extent in the centre is obvious.

RESULTS AND DISCUSSION

The spatial sampling frame of Ghent

The overviews as described above summarize the factors needed for stratification. For this preliminary overlay of the morphological typology (see figure 3) and the four aspects of socio-demographical typology (see figure 4), a selected number of factors were taken into consideration. Concerning the morphological typology, six factors were distinguished between: closed (1) suburban and (2) urban landscapes, (3) large-scale industrial landscape, (half-) open landscape (4) with and (5) without greenhouses, and (6) peripheral villages. With regard to the socio-demographical typology, five factors were taken into consideration: statistical sectors (a) with more than 500 inhabitants, (b) with population rejuvenation, (c) with concentration of not-EU foreigners, (d) with underprivileged inhabitants for 1 indicator, and (e) for 2 or more indicators. These factors can be found in the legend categories of the overlay (see figure 5).

Spatially overlaying these factors generates the spatial sampling frame of the study area of Ghent, consisting of 51 strata already. These strata are the spatial subsets, from which the sample data should be drawn. They are very varying, ranging from e.g. densely populated areas with a lot of not-EU foreigners in closed urban landscape to e.g. less densely populated areas counting many youngsters in (half-) open landscape. More combinations can be read from the map (see figure 5).

The public and their aspirations towards the landscape of their surroundings

The above described stratification of the sampling frame for the study area of Ghent generated 51 strata already. This demonstrates the need to be aware of a range of factors when preparing to question a population about their landscape preferences. However, this was only the result of a preliminary exercise, combining but some aspects of morphological and socio-demographical typologies. Still, from literature (e.g. Kaplan and Kaplan,

1989) it appears that more background factors of the respondents lie behind a preference judgement. Previous experiences and knowledge is only one example. Over 60 per cent of the world's population already live in urban contexts (Castells and Ince, 2003), whereas the socio-cultural background of most of the citizens is one of a village life on the countryside. Furthermore, the opposition in life experiences and expectations in rural and in urban areas is increasingly fading, since the physical and the informational boundaries between both are blurring (Smart and Smart, 2003).

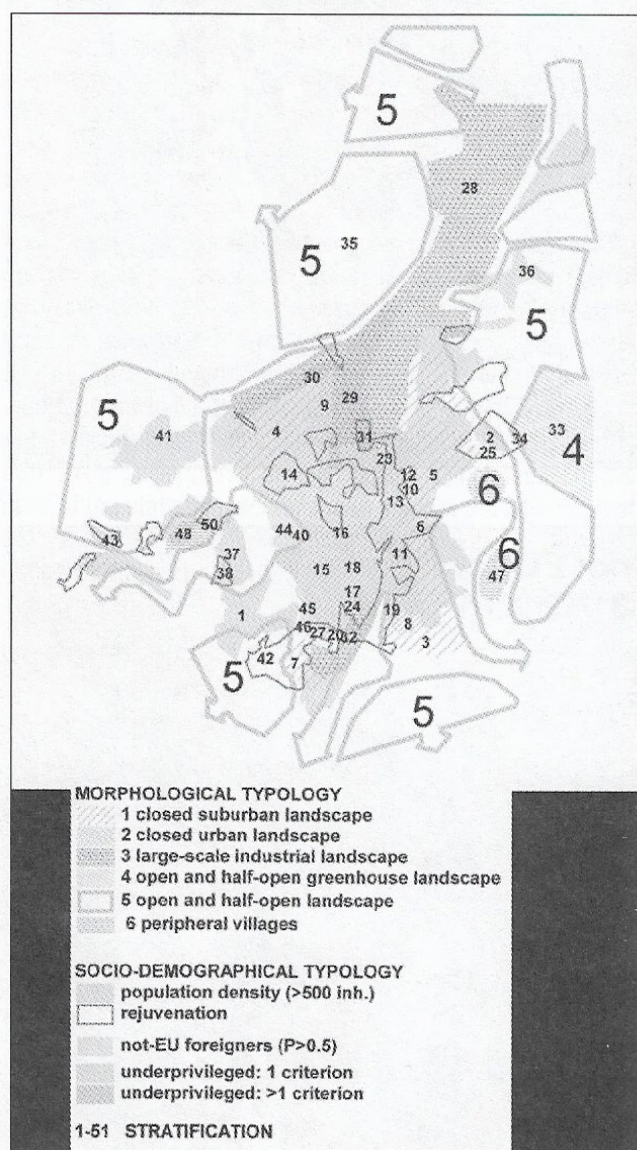


Figure 5: Sample stratification resulting from an overlay of the morphological and socio-demographical typologies of Ghent.

Coming back to the European Landscape Convention (Council of Europe, 2000), the subscribing countries engage to assess 'the aspirations of the public with regard to the landscape features of their surroundings' (Chap. 1; Art. 1, C). Yet, what are the surroundings of the public and hence, what landscapes should they be questioned about?

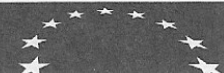
The most obvious context could be the (sub-) urban landscape within the study area as presented in figure 3. However, respondents could also be questioned about other contexts, such as the landscape character areas adjacent to the study area, as defined by Van Eetvelde et al. (2005). Even landscape experiences on a larger scale level, such as European landscape character areas (see e.g. Mûcher et al., 2003), should not be ignored as respondents' reference frames when studying mechanisms lying behind people's landscape preference assessment.

CONCLUSION

In landscape policy context, there is a growing awareness that the feasibility of measures for landscape management and development will depend on the support of the public. Exemplary for this, the European Landscape Convention demands participation of the general public in issues on landscape policy. This shifting focus towards more subjective aspects involves addressing more cultural aspects, both theoretically and methodologically. In this paper, an attempt was made to draw the socio-cultural and landscape dimensions in the study area of Ghent. Overlaying relevant factors of both morphological and socio-demographical typologies yielded a stratified sampling frame. This rendered 51 spatial strata, from which the samples of respondents should be drawn when carrying out a survey on landscape preference assessment. Nonetheless, the present study was only a quick exercise combining a limited number of aspects. Taking other and more factors into account might generate different sampling frames.

REFERENCES

- ANTROP, M., 2004: **Assessing multi-scale values and multifunctionality in landscapes**. In: BRANDT, J. & VEIJRE, H. (Eds.), 2004: *Multifunctional landscapes. Theory, values and history*. WIT Press, Southampton, 165-180.
- ANTROP, M., 2000: **Changing patterns in the urbanized countryside of Western Europe**. In: *Landscape Ecology* 15 (3), 257-270.
- ANTROP, M. & Van Eetvelde, V., 2000: **Holistic aspects of suburban landscapes: visual image interpretation and landscape metrics**. In: *Landscape and Urban Planning* 50 (1-3), 43-58.
- APPLETON, J., 1975: **Landscape evaluation: the theoretical vacuum**. In: *Transactions in the Institute of British Geographers* 66, 120-123.
- BOURASSA, S.C., 1990: **A paradigm for landscape aesthetics**. In: *Environment and Behavior* 22 (6), 787-812.
- BRANDT, J., 1998: **Key concepts and interdisciplinarity in Landscape Ecology: a summing-up and outlook**. In: DOVER, J.W. & BUNCE, R.G.H. (1998): *Key concepts in landscape ecology. Proc. of the 1998 European Congress of IALE, UK-IALE 3- September 1998*, 421-434.
- BROWN, T.C. & DANIEL, T.C., 1987: **Context effects in perceived environmental quality assessment: scene selection and landscape quality ratings**. In: *Journal of Environmental Psychology* 7, 233-250.
- BRUSH, R., CHENOWETH, R.E. & BARMAN, T., 2000: **Group differences in the enjoyability of driving through rural landscapes**. In: *Landscape and Urban Planning* 47, 39-45.
- CASTELLS, M. & INCE, M., 2003. **Conversations with Manuel Castells**. Polity Press, Cambridge. 174p.
- CLAVAL, P., 2004: **The languages of rural landscapes**. In: PALANG, H., SOOVÄLI, H., ANTROP, M. & SETTEN, G. (Eds.), 2004: *European Rural Landscapes. Persistence and Change in a Globalising Environment*. Kluwer Academic Publishers, Dordrecht/Boston/London. 11-40.
- JOHNSON, C.Y., BOWKER, J.M. & KEN CORDELL, H., 2004: **Ethnic variation in environmental belief and behavior: an examination of the New Ecological Paradigm in a social psychological context**. In: *Environment and Behavior* 36(2):157-186.
- KAPLAN, R. & KAPLAN, S., 1989: **The experience of nature: a psychological perspective**. Cambridge University Press, Cambridge. 340p.
- KAPLAN, S., 1987: **Aesthetics, affect and cognition. Environmental preference from an evolutionary perspective**. In: *Environment and Behavior* 19, 3-32.
- KAPLAN, S., KAPLAN, R. & WENDT, J.S., 1972: **Rated preference and complexity for natural and urban visual material**. In: *Perception and Psychophysics* 12, 354-356.
- KENT, R., 2001: **Data construction and data analysis for survey research**. Palgrave Macmillan, Houndmills. 251p.
- LYONS, E., 1983: **Demographic correlates of landscape preference**. In: *Environment and Behavior* 15, 487-511.
- MOORE, G.T., 1979: **Knowing about environmental knowing: the current state of theory and research on environmental cognition**. In: *Environment and Behavior* 11, 33-70.
- MÛCHER, C. A., BUNCE, R. G. H., JONGMAN, R. H. G., KLIJN, J. A., KOOMEN, A. J. M., METZGER, M. J. & WASCHER, D. M., 2003: **Identification and Characterisation of Environments and Landscapes in Europe**. Alterra, Wageningen, 119p.
- MUIR, R., 1999: **Approaches to landscapes**. Mac Millan, London, 310p.



NEISSER, U., 1976: **Cognition and reality: principles and implications of cognitive psychology**. Freeman, San Francisco, CA.

N.N., 2000a. **Gemeentelijk Ruimtelijk Structuurplan Gent**. 'Gent gisteren'. Brochure. Stad Gent. 21p. Stad Gent (access Jan. 2007: www.gent.be)

N.N., 2000b. **Gemeentelijk Ruimtelijk Structuurplan Gent**. 'Gent vandaag'. Brochure. Stad Gent. 25p. Stad Gent (access Jan. 2007: www.gent.be)

N.N., 2002: **Kansarmoedeatlas Editie 2002**. Sociaal Impulsfonds, Dienst Informatietechnologie en GIS – Stad Gent i.s.m. C-Luma bvba (access Jan. 2007: www.gent.be)

PALMER, J. F. & HOFFMAN, R.E., 2000: **Reliability of rating visible landscape qualities**. In: *Landscape Journal* 19 (1-2), 166-178.

PURCELL, A.T., LAMB, R.J., PERON, E.M. & FALCHERO, S., 1994: **Preference or preferences for landscape**. In: *Journal of Environmental Psychology* 14, 195-209.

PURCELL, A.T., PERON, E. & BERTO, R., 2001: **Why do preferences differ between scene types?** In: *Environment and Behavior* 33 (1), 93-106.

ROBINSON, G.M., 1998: **Methods and techniques in human geography**. John Wiley & Sons Ltd, West Sussex (UK). 556p.

SEVENANT, M. and ANTROP, M., in prep.: **Reliability of inter-individual differences in aesthetic and cognitive landscape preference assessment on site**. *Journal of Environmental Management*

SMART, A. & SMART, J., 2003: **Urbanization and the Global Perspective**. In: *Annual Review in Anthropology* 32, 263-285. SOINI, K., 2004: Between insideness and outsideness - studying locals' perceptions of landscape. In: PALANG, H., SOOVÄLI, H., ANTROP, M. & SETTEN, G. (Eds.) (2004): *European Rural Landscapes. Persistence and Change in a Globalising Environment*. Kluwer Academic Publishers, Dordrecht/Boston/London, 83-97.

STRUMSE, E., 1996: **Demographic differences in the visual preferences for agrarian landscapes in western Norway**. In: *Journal of Environmental Psychology* 16, 17-31.

ULRICH, R.S., 1981: **Natural versus urban scenes: some psychological effects**. In: *Environment and Behavior* 13, 125-133.

ULRICH, R.S., 1977: **Visual landscape preference: A model and application**. In: *Man-Environment Systems* 7, 279-293.

VAN DEN BERG, A. E., VLEK, C. A. J. & COETERIER, J. F., 1998: **Group differences in the aesthetic evaluation of nature development plans: a multilevel approach**. In: *Journal of Environmental Psychology* 18, 141-157.

VAN EETVELDE, V., SEVENANT, M., ANTROP, M., 2006: **Trans-regional landscape characterization: the example of Belgium**. In: BUNCE, R. G. H., JONGMAN, R. H. G. (Eds.), 2006: *Landscape Ecology in the Mediterranean: inside and outside approaches*. Proceedings of the European IALE Conference, 29 March - 2 April 2005, Faro, Portugal. IALE Publication Series 3, 199-212.

ZUBE, E.H. & PITT, D.G., 1981: **Cross-cultural perceptions of scenic and heritage landscapes**. In: *Landscape Planning* 8, 69-87.