

Perceptions of Place – Evaluating Experiential Qualities of Streetscapes

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Abstract: Working with a small set of 60 images from a collection of over 1000 digital photographs, the following paper presents ongoing research into the experiential qualities of street scapes. This paper examines the initial results of a survey of 75 voluntary based perceptive studies and focusses on a sample cohort of 30 participants (20 cognate and 10 non-cognate respondents) who were asked to evaluate a streetscape experience based on favourable and unfavourable perceptive qualities. Using a spatial sequencing process, akin to the 'Serial Vision' methodology of Gordon Cullen, respondents were asked to rate a section of urban fabric based on favourable (hot or warm) and unfavourable (cold or cool) traits and to digitally capture these images. The study yields results which highlight the importance of the quality and effect of green attributes within the overall street scape experience. The implications for urban design practice (streetscape greening), are briefly explored.

Introduction and Background

The quality of the public realm and streetscapes has increasingly become an important issue for policy makers and those in charge of their management – for the most part, local governments. It is contended that high-quality public realms are beneficial to our health and well-being, and contribute to the positive economic activity of an area (Florida, Mellander & Stolarick 2009). Furthermore the importance of green elements within streets such as street trees is becoming increasingly important for place managers. This is reflected in the increasing prominence of urban design policy within our Planning Schemes, and increased budget allocations by local governments to street improvement works, place management and greening initiatives.

Whilst it would appear to be obvious that people are drawn to environments or landscapes which have natural elements such as quality street trees, appear cared for, and are active, surprisingly little empirical evidence exists to support this, in particular within the Australian context.

There are a number of theoretical underpinnings for landscape preferences. For example Wilson's (1984) biophilia hypothesis proposes that people are drawn to animals, plants and landscapes because of an innate affinity for life and life processes. Appleton (1975) devised the habitat theory and speculated that people's innate preference for savannah like environments have led to humans searching for environments where they can seek refuge or prospect, and that this is translated into contemporary preferences for landscapes.

The field of urban design has similarly developed theories in relation to how people use public spaces. For example, Whyte (2007) and Gehl (2006) both used time-lapse photography, direct observation, and mapping to develop their theories of how people use public spaces, and Lynch (1960) utilised methods in environmental perception such as cognitive mapping, spatial mapping, direct observation and interviews to develop his theory of imageability.

Within the field of environmental psychology, research has shown some evidence in relation to different aspects of people's behaviour within and reaction to different human environments. For example, *poor* quality environments with noise from traffic congestion, poor housing, or poor quality neighbourhoods as shown by poor quality retail or recreational services have been shown to illicit stress hormones or affect motivational levels (Evans & Stecker 2004). Similarly, poor quality housing and neighbourhoods have been shown to result in higher levels of stress hormones amongst school children (Gifford & Lacombe 2006), as well as adults (Dalgard & Tambs 1997)..

People's health and wellbeing is thought to benefit from access to and views of green spaces and quality environments. However, this has proven difficult to measure and quantitative research has shown some correlative evidence to support the claim that nature contributes to health. Research has examined the broad categories of "natural" or "urban" landscape with

health effects, with natural landscapes providing a stronger health benefit compared with urban landscapes. In fact, urban landscapes were shown to be less positive or even negative in terms of health effects, where health was identified by recovery rates from stress or mental fatigue, recovery from illness, or overall improvement in health and wellbeing (Velarde, Fry & Tveit 2007).

Given our primary sense of vision, health benefits derived from landscapes have been shown to be obtained simply by looking at gardens as shown by improved recovery times for hospital patients with garden views (Ulrich 2002). However, an important feature of perception is people's interpretation of their environment. The psychophysical and cognitive paradigms ((Taylor, Zube & Sell 1987) of landscape perception research importantly acknowledge that sensory functions are involved as part of the human perception process coupled with cognitive processes as people interpret what they see.

Psychophysical landscape research has focused largely on elements of the landscape which can be changed or manipulated by designers and land managers: "*these professionals need to determine just what landscape visual quality is in order to be able to manage and protect it*" (Taylor, Zube & Sell 1987: 371). Research within the cognitive paradigm is more concerned with why people value certain landscapes, acknowledging that people process visual information and make judgements based on that information. Both the psychophysical and cognitive research methods can be combined to test people's perceptions of landscapes to understand "*what is valued in landscapes, as well as the reasons for those evaluations.*" (p 373)

Within the Victorian context, Green's (2010) work utilises this combination of the psychophysical and cognitive paradigms, and explores the public's perceptions of Victorian coastal landscapes. Green's method involved asking a sample of residents to rate their preferences for images of various landscape and built form features, and followed this with focus group interviews. This method however, selected the various elements of the landscape in photos and used this as the basis for the assessment.

Methodology

Much has been written about enhancing the value of the public domain through green scape design, and while this would seem to be self-evident, it is interesting to obtain validation, if somewhat unintentionally, from locally sourced data obtained from a post graduate student exercise. The submissions form part of a sequence of exercises couched within the subject *Designing Urban Environments*, which is a fully on line unit designed for Post Graduate entry into the Planning and Urban Design courses at the School of Architecture and the Built Environment at Deakin University. The results obtained from processing over 30 of these responses clearly indicate a spontaneous preference for street scapes which contain green landscape features.

The subject is designed as the first of four major design modules for any graduate applicant, irrespective of their background or undergraduate experience. Hence the background of the cohort of students undertaking the project work ranges from not only related fields such as architecture, planning and landscape architecture, but also unrelated disciplines, such as health sciences, business and law. The unit is designed for those interested in expanding their 'designerly' thinking by increasing their awareness of the built environment through exercises which progressively introduce the rigour of quantifiable analysis. While for some students their aim is to become more effective in engaging with built environment professionals, for others it is the first step in the process of changing career path into planning, urban design or landscape architecture. The participants for this study therefore are a mix of 20 graduates who are familiar with design and planning concepts and a sense of materiality, and 10 graduates who are not.

Adopting a spatial sequencing process, akin to the 'Serial Vision' methodology of Gordon Cullen (2007), the study focusses on the responses of 30 postgraduate participants who were asked to evaluate a streetscape experience based on favourable and unfavourable perceptive qualities. Rather than priming participants to give responses based on certain street attributes, the only criteria established for the participants was to record the various aspects of the built environment which triggered either a favourable, ambivalent or unfavourable

response. The reaction could be triggered by one or a combination of sensory indications (ie sight, smell, sound, touch and taste) as well as a response which may have been more a hunch rather than something attached to a discreet indicator.

While many studies conduct surveys which attempt to evaluate preferences of place character by presenting respondents with a set of images in a predetermined format and sequence, this study requested that participants undertake a self-directed walk through an urban street scape of their choice and to take images which recorded their perceptive responses as they travelled along their chosen route. While some participants selected routes which were part of their daily pattern and routine, others allowed the route to evolve on impulse. In other words the study attempted to be less controlled in directing the participants to react in a particular way but rather to observe what the respondents selected.

Each participant was required to take along a digital camera and note pad, and to capture two sequences of images. The first sequence of images captured aspects of the streetscape which they liked, and the second sequence captured images of elements which they didn't like. They were then required to arrange these images on a series of sheets, numbering them in sequence, and to record the location of each image by tracing or marking the route which they negotiated on the relevant page(s) of a street directory. They were also asked to confirm the orientation of these maps through the location of a North point.

For each view point, the participants were requested to indicate what they liked, didn't like, or felt ambivalent to in the image. Participants were also informed that there was no right or wrong set of reactions to be provided, and were encouraged to think about the attributes which conditioned their individual responses

In order to develop some form of critical appraisal of their route experience the respondents were then asked to introduce rigour by attempting to quantify their perceptive understanding of the route by generating a table with five columns referencing the following criteria: Column 1- **Image number**; Column 2- **like**; Column 3 – **Don't like**; Column 4 – **Ambivalent**; and Column 5 – **Characteristic/Trait**. They were requested to list each image, indicate its preference, and to subsequently count up the number of negative and positive characteristics which framed this experience while writing a brief narrative which provided an informed interpretation of the experience of the route with respect to its success as a positive experience, and how it could be improved (See **Figure 2**).

Overlaying the initial route with a piece of trace (**Figure 1**), students were requested to establish a continuous metaphorical map which reflected the linear dynamics of the experience by using colour and different line weights to convey their sense of place. If the transition between favourable and unfavourable was dramatic then the graphic representation was to somehow convey this. If on the other hand change is gradual then the representation would need to present a blend of colours (NB if the perceived conditions change at different times of the day and week, then the respondents were advised to prepare a different map for each scenario).

Results

Since the project has been running, over 1000 images have been retrieved and are currently being examined to evaluate different characteristics. The first of these traits currently being measured is an assessment of the amount of green space present within the data set. For the purposes of this paper we have sampled 60 activity centre based images in order to provide a snapshot of 30 favourable and 30 unfavourable streetscape scenes from 20 cognate and 10 non-cognate participants – see **Figures 3 & 4**. All images were landscape adjusted, and were selected with the view point oriented as close as possible with the axis of the street scape and in proximity to a shopping precinct. (NB Being conscious of the risk of personal preference, the authors have attempted to minimise bias by using spot sampling of images within this study, furthermore all image submissions were received on line with no face-to-face contact between the authors and participants).

In order to see if a correlation is apparent between street scape experience and the presence of green-space, each of the 60 images, 30 favourable and 30 non-favourable were superimposed with a rectilinear grid divided into 100 cells. A simple mapping exercise was

performed where the surface area of greenery presented in the grid was measured (see **Figure 5**). While gradations of transparency in foliage and tree canopies are currently being assessed the results presented on the summary data charts in **Figure 6** presents a total coverage present in each image.

Initial Observations

1. Out of a total of 60 activity centre based images 49 or 80% presented some element of organic green space. This was either in the form of: trees, garden beds, pot plants/boxes or grassed verges.
2. From a sample of 30 images, there was an average of 19% green-space coverage for those streetscapes which were rated favourably.
3. The range of percentage area of favourable green-space coverage for the non-cognate set of images was 2.5% - 57%, and the range for the cognate set was 1%-39%.
4. For images which were rated favourably, the average green space coverage for non-cognate respondents was 16.5%, and for the cognate group was 20.5%.

Table 1 Average Percentage of Greenspace in Image for Favourable Rating

Average Percentage of Greenspace in Image (Favourable)		
NonCognate	Cognate	Overall
16.5	20.465	19.1433333

5. For images which were rated “not-favourable”, there was an average of 3.8% green-space for overall coverage sourced from a sample of 30 images.
6. The range for percentage area of green-space coverage for the not-favourable streetscape for the non-cognate set of images was 0% - 30%, and the range for the cognate set was 0%-12%.
7. The non-cognate not-favourable group of participants had average green-space coverage of 8%, and the cognate not-favourable group had an average accepted minimum of green-space coverage of 1.7%.

Table 2 Average Percentage of Greenspace in Image for Not Favourable Rating

Average Percentage of Greenspace in Image (Not Favourable)		
NonCognate	Cognate	Overall
8.05	1.7	3.81666667

Summary Observations

Preliminary observations confirm that there is an increase in the quantity of greenspace in environments which people find favourable, for both cognate and non-cognate participants, compared with environments which they rate as unfavourable.

The results also suggest that there is a difference between the way cognate people perceive the streetscapes compared with non-cognate people. For example, the non-cognate participants had a smaller range for overall greenspace coverage in the streetscape images compared with their cognate counterparts. Furthermore, the average amount of green space in favourable environments is less for non-cognate than cognate, and the average amount of green space in non-favourable environments is also less for non-cognate than cognate participants.

If it is assumed that the percentage range between favourable and not-favourable is one of ambivalence, the point where the non-cognate group shifts their perception of the streetscape experience from unfavourable to favourable lies presumably at the midpoint between the average coverage percentage range, that is between 8% and 16.5% of green-space coverage. This would imply the average of the two, that is 12.25%.

In a similar vein one may infer that for the cognate group, the point where they shift their perception of the streetscape from being unfavourable to favourable is an average coverage

percentage range of approximately 11.1% (halfway between 1.7% and 20.5% of green-space coverage).

Conclusion and further research

Working with the premise that people are drawn to environments which display natural elements, this paper examined the initial results of a survey of 75 voluntary based perceptive studies and focussed on a sample cohort of 30 participants (20 cognate and 10 non-cognate respondents) who were asked to evaluate a streetscape experience based on favourable and unfavourable perceptive qualities. Although preliminary, the results of this study concur with the growing body of knowledge that people have a preference for streetscapes with views of green spaces.

Furthermore, the results suggest that there may be a difference in the way that people engaged in the built environment professions perceive green space in streetscapes compared with non-cognate people, or extrapolating from this group, to people in the wider community more generally. This may have implications for built environment professionals, because, the initial results suggest that cognate people are less sensitive to green elements within streetscapes than non-cognate people. Conversely, the community in general appear to be more sensitive to green spaces triggering a favourable response. This proposition is suggested by the data because of the difference in the ranges of green coverage noted between the cognate and non-cognate groups, and their respective mid-points where they shift from favourable to un-favourable. This has the potential to suggest that designers or those in charge of managing streetscapes may need to consider the sensitivity of the general population to the absence or introduction of green or natural elements into streetscapes.

Further research will explore the broader data set available to the researchers and analyse other features of the built environment in the images as well verbal interpretations of the participants.

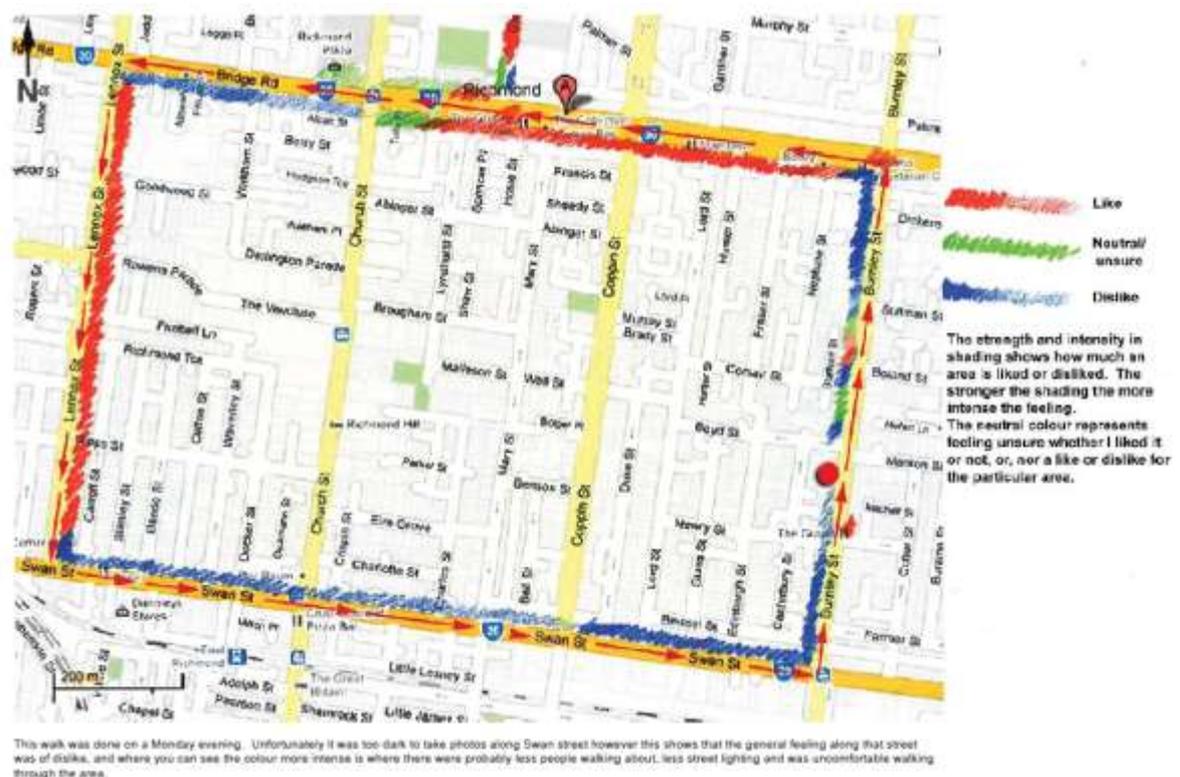


Figure 1. Mapping Awareness (Respondent No. 6) – using colour to develop a metaphorical rendering

Data Sheet: <i>Experience Oriented Route/Precinct Study</i>				
Location: <i>Geelong West</i> Day: <i>Friday</i> Time: <i>11.30 AM</i>				Date:
Image No:	Positive (Like)	Negative (Don't like)	Neutral (Ambivalent)	Characteristic/Trait
1.				<ul style="list-style-type: none"> • (N) Traffic dominant • (N) Windy exposure
2.				<ul style="list-style-type: none"> • (N) No windows to buildings • (N) Narrow footpath
3.				<ul style="list-style-type: none"> • (N) Stinky drains • (N) Rubbish on road • (N) Feeling vulnerable
4.				<ul style="list-style-type: none"> • (P) Healthy Trees • (P) Well kept park bench • (P) Maintained reserve
5.				<ul style="list-style-type: none"> • (P) Even and clean footpath • (P) Low traffic noise • (P) Feeling at ease
6.				<ul style="list-style-type: none"> • (A) repetitive building frontage • (A) feeling monotonous
7.				<ul style="list-style-type: none"> • (P) Great coffee aroma! • (P) Generous footpath
8.				<ul style="list-style-type: none"> • (P) Quality paving • (P) Sunny side of the street
9.				<ul style="list-style-type: none"> • (P) Activated outdoor dining • (P) Brilliant bike stand
10.				<ul style="list-style-type: none"> • (N) Smell rubbish bins
TOTAL	5	4	1	<p><u>12 (P) FAVOURABLE TRAITS:</u></p> <ul style="list-style-type: none"> • 2 quality green space • 3 quality footpaths • 2 street furniture • 2 people activity • 1 traffic noise attenuation • 1 atmosphere • 1 orientation <p><u>2 (A) AMBIVALENT TRAITS</u></p> <ul style="list-style-type: none"> • 1 repetition • 1 atmosphere <p><u>8 (N) NEGATIVE TRAITS</u></p> <ul style="list-style-type: none"> • 2 unpleasant odours • 1 rubbish • 1 no active frontage • 1 poor footpaths • 1 traffic • 1 atmosphere • 1 inclement weather (wind)

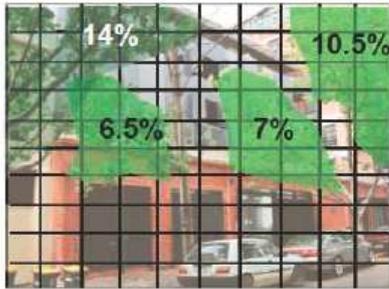
Figure 2. Experience oriented route/precinct study - results table



Figure 3 – Participants 1-15 favourable and Non-favourable images



Figure 4 – Participants 1-15 favourable and Non-favourable images



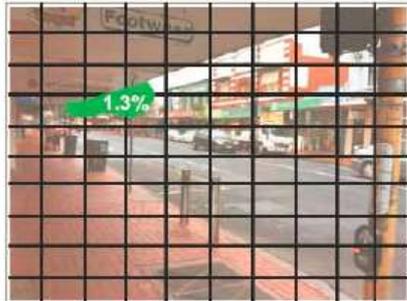
26 - LIKE Cognate

There is a surprising intensity of apartment development in this street, hidden up in the trees canopies. The new building pictured in ... is a modern take on the facadism of the Woolworths building. Its original red brick base and textured finishes, visually break down a large building into a more human scale. I like the deep first floor balconies where people seem to sit outside and enjoy their leafy view.



27 - LIKE Cognate

Both recent and older developments in Killara and Gordon are consistent in terms of colours and material finishes which makes the streetscape aesthetically appealing. Landscaping is a very prominent feature of the streetscape setting, which softens development and provides natural fragrances which make the journey pleasant. The frontages to the commercial sites are monotonous in terms of style and layout, however have been softened and broken up by landscaping in the form of planter boxes, planter beds and trees. The commercial hub also consists of active green spaces including benches and manicured gardens. This softens the built environment and provides members of the public with a space to relax.



28 - LIKE Cognate

Activated shop front windows, well-maintained footpaths as well as some old and wellmaintained verandahs that protect from the rain make Pakington Street a very pleasant place to be and pass-by.



29 - LIKE Cognate

Kingston group centre, Canberra. Public outdoor seating recessed into garden beds. Height of shopfront windows Articulation of garden beds. Variety of plantings within garden beds Low level landscaping providing visual and acoustic separation between the road and pedestrian path



30 - LIKE Cognate

Preston. When I arrive at the end of the block the landscape and streetscape of the area have a positive influence on how I feel. I like the funky building on the corner ... and the highly imageable row of trees standing tall in front of the distinguished church. Adding to this is the comforting smell of delicious Asian food wafting from high street.

Sample sheet determining percentage of green space in image with supporting written participant narrative

Figure 5 – Measuring the amount of green-space presented in the visual field

Average Percentage of Greenspace in Image		
Non-Cognate Favourable		
Data Ref	Sample Number	Percentage of green in image
4	1	4
5	2	2.5
6	3	11.5
7	4	5
8	5	28
9	6	17
10	7	11
11	8	21
12	9	57
13	10	3
14	11	5
Non-Cognate Total		165
Non-Cognate Total Percentage		16.5
Cognate Favourable		
Data Ref	Sample Number	Percentage of green in image
1	12	22.5
2	13	39
3	14	25.5
15	15	13
16	16	32
17	17	29
18	18	7
19	19	16.5
20	20	24
21	21	19
22	22	1
23	23	24
24	24	32
25	25	10
26	26	38
27	27	34
28	28	1.3
29	29	21.5
30	30	20
Cognate Total		409.3
Cognate Total Percentage		20.465
Overall Total		574.3
Overall Total Percentage		19.1

Average Percentage of Greenspace in Image		
Non Cognate Not Favourable		
Data Ref	Sample Number	Percentage of green in image
4	1	2
5	2	0.5
6	3	3
7	4	0
8	5	30
9	6	20
10	7	0
11	8	11
12	9	1
13	10	3
14	11	10
Non-Cognate Total		80.5
Non-Cognate Total Percentage		8.05
Cognate Not Favourable		
Data Ref	Sample Number	Percentage of green in image
1	12	4
2	13	0
3	14	0
15	15	2.5
16	16	0
17	17	0
18	18	3
19	19	0
20	20	0
21	21	1
22	22	1
23	23	0
24	24	2
25	25	0
26	26	0
27	27	1
28	28	2.5
29	29	12
30	30	5
Cognate Total		34
Cognate Total Percentage		1.7
Overall Total		114.5
Overall Total Percentage		3.8

Figure 6 – Data tables presenting the percentage of green space in a set of 60 images arranged with respect to favourable, Non-favourable, Cognate and Non-cognate participants.

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