

THE EFFECTS OF COMMERCIAL SIGNS ON USER'S SENSE OF VISUAL QUALITY IN HISTORIC CITY CENTRES OF DIFFERENT URBAN CONTEXTS

Adriana Araujo Portella, Ph.D Researcher
*Joint Centre for Urban Design,
School of Built Environment of Oxford Brookes University, England*

ABSTRACT

This paper focuses on the relationship between visual quality of the built environment and commercial signage in historic city centres. It identifies the physical aspects of commercial signs and buildings that should be taken in account in the development of a general approach to control commercial signs in historic city centres of different urban contexts. This study suggests that while some visual preferences are influenced by users' urban contexts, others can be universal and applied to define general urban design principles. This study explores whether user perception and evaluation of the number of commercial signs and the percentage of building facade coverage by these media has some influence on (i) user satisfaction with commercial street facades, (ii) user perception and evaluation of order, colour variation and complexity, and (iii) user feeling of pleasure and interest in relation to the appearance of commercial streetscapes in historic city centres. The findings (i) show that there are common visual preferences among users from different countries, and (ii) suggest that these can be applied to develop a general approach to control commercial signs in historic city centres.

Keyword: Visual quality; commercial signage; historic city centre; user perception and evaluation.

1. INTRODUCTION

This study looks at the problem of visual pollution in historic city centres. "Visual pollution" is an established expression commonly used in countries of North, Central and South America. It is usually

given to unattractive visual elements of a streetscape; commonly cited examples are billboards, commercial signs, litter, graffiti, telephone lines and poles. In this paper, this expression concerns the degradation of the visual quality of historic city centres caused by commercial signs displayed on building facades and in public spaces. It is often said that historic city centres are being damaged by the uncontrolled display of commercial signs on the streetscape (Figure 1). This phenomenon is evident in contemporary urban settings in many countries, and it is not new as the literature demonstrates (Cullen, 2000; Passini, 1992; Nasar, 1988a; Ashihara, 1983; Herzog, Kaplan & Kaplan, 1976; Rapoport & Hawkes, 1970). Many researchers have already analysed this problem and explored the negative consequences that it can have on user perception and evaluation of commercial street facades (Portella, 2006a, 2006b, 2003; Klein, 2000; Nasar & Hong 1999). Despite the fact that the problem is well described and familiar to many, there is a lack in the literature of any evidence which might relate the physical aspects of commercial street facades with perceptions and evaluations of users from different urban contexts; and which could allow clear conclusions to be drawn about the universality of this relationship.

This paper recognizes that other studies have already proved that user visual preferences for street scenes can differ among people from distinct backgrounds and urban contexts (Coolican, 2004; Oliver, 2002; Golledge & Stimson, 1997; Bartuska & Young, 1994; Lang, 1988; Lynch, 1960). What this paper proposes is that, as argued by Nasar¹, some visual preferences are common to the

1 Nasar, J. (1988b). *Visual Preferences in Urban Streets Scenes: A Cross-cultural Comparison between Japan and the United States*. In: Nasar, J. (Ed.), "Environmental Aesthetic: Theory, Research, and Applications". Cambridge, England: Cambridge University Press, pp. 260-274.



Figure-1: Example of visual pollution in historic city centres of different countries: (A) Pelotas in Brazil, (B) Madurai in India, and (C) Lisbon in Portugal (Source: author).

majority of users independent of their backgrounds and urban contexts, and these common views can be applied to develop a general theory to control commercial signs in historic city centres. In light of this issue, this study seeks to:

(i) contribute to the understanding of which physical aspects of commercial signs and buildings should be taken in account in the development of a general approach to control commercial signs in historic city centres in different urban contexts, and

(ii) inform the debate about the distinction between universal and individual visual preferences, thus helping to form better urban design principles to guide development control of advertising and facade treatment. Seeking common views among users from different case studies and countries, the objective of this study is to understand whether user perception and evaluation of the number of commercial signs and the percentage of building facade coverage by these media has some influence on:

(i) User satisfaction with commercial street facades,

(ii) User perception of order, colour variation and complexity, and

(iii) Users' feelings of pleasure and interest in relation to the appearance of commercial streetscapes in historic city centres.

2. CASE STUDIES AND METHODOLOGY

The case studies were selected in order to cover a variety of aesthetic aspects that can be present in different historic city centres. The main criteria used to select countries to allow a comparison among user preferences were: (i) a country where a national approach to help local authorities to guide and control commercial signs in historic city centres is applied in practice, and (ii) a country where there is no national approach to control commercial signs leaving local authorities with the responsibility to develop commercial signage controls, and to decide whether these controls are necessary in historic city centres. England and Brazil were chosen because they satisfy these criteria, respectively. Three historic cities were defined as case studies: the city centre of Oxford in England, as an example of a city where a national commercial signage approach is applied, and the city centres of Gramado and Pelotas in Brazil. In the first Brazilian city, commercial signage controls are applied by the City Council, whereas in the second city these controls have never been applied

(Table 1 and Figure 2).

Having chosen these three case studies, two commercial streets in each city centre were selected representing typical streetscapes. Ideally, to ensure maximum realism the users from the two countries would observe the same streets *in situ*. However, because of the impracticality of bringing users from England to Brazil and vice versa, the experiment was based on colour photo-simulations, which were shown to residents in Oxford, Gramado and Pelotas (Figure 3). As already discussed by other researchers, methods using stimuli such as colour photos and photo simulation are scientifically valid (Sommer & Sommer, 2002; Stamps, 2000; Sanoff, 1991; Rosenthal & Rubin, 1986; Light & Pillemer, 1984).

The responses of two user groups were analysed: professionals (architects, urban designers, civil engineers, and planners) and lay people. The respondents were randomly selected through articles published in local newspapers inviting people to be participant of the survey. A total of 361 people contacted the researcher to answer a questionnaire (114 users from Oxford, 120 users from Gramado, and 127 users from Pelotas). The questionnaire comprised of 28 close-questions and 8 open-questions, that were designed to identify users' visual preferences for six commercial street facades. A focus group discussion in each case study was also organized (20 participants in each city) in order to better understand the reason for some of users' visual preferences. Participants were also invited to the focus group through local

newspapers. The photo simulations of the six commercial street facades were printed out in a poster size A1 and showed to the respondents when the research questionnaire was being completed (Figure 3). Non-parametric statistical analysis was carried out to analyse the data (Howitt, 2005; Sommer & Sommer, 2002; Howell, 1997; Siegel, 1988; Rowntree, 1981).

3. FINDINGS

3.1 Preliminary Findings

Before discussing the results from user perception and evaluation of the number of commercial signs and the percentage of building facade coverage by these media, it is useful to mention those commercial street facades chosen as the best and the worst streets in terms of appearance by respondents from the three case studies. This study asked the respondents from each case study to rank the streets from 1 (users like the most) to 6 (users like the least).

Taking into account responses of users from the whole sample, Oxford, Gramado and Pelotas, the results show that the commercial street facades located in Pelotas city centre, where commercial signage controls exist but are not applied and where the historic character is strongly damaged by shopfront and window displays, were ranked as the worst streets in terms of appearance (streets 5 and 6). In addition, the street facades located in Oxford case study, where commercial signage controls are applied in order to preserve the historic

| CASE STUDIES | MAIN DIFFERENCES |
|------------------------------|---|
| OXFORD CITY CENTRE (ENGLAND) | <ul style="list-style-type: none"> Commercial signage controls are applied in order to preserve the historic character of buildings and public spaces. Result: commercial street facades ordered in terms of commercial signs and buildings and characterized by preserved historic buildings. |
| GRAMADO CITY CENTRE (BRAZIL) | <ul style="list-style-type: none"> Commercial signage controls are applied as a tool to reinforce the manufactured image of the city promoted by the City Council as the "Brazilian Switzerland". This image is mainly represented by contemporary buildings known in Brazil as "Neo-Bavarian". Result: commercial street facades ordered in terms of commercial signs and buildings and characterized by a manufactured character. |
| PELOTAS CITY CENTRE (BRAZIL) | <ul style="list-style-type: none"> Commercial signage controls exist but not applied. Result: commercial street facades disordered in terms of commercial signs and buildings and characterized by historic buildings harmed by these media. |

Table-1: Main differences among the streetscapes in the city centres of Oxford, Gramado and Pelotas. (Source: fieldwork 2007)



Figure-2: (A) Oxford city centre in England, (B) Gramado city centre in Brazil, (C) Pelotas city centre in Brazil
(Source: fieldwork 2007).

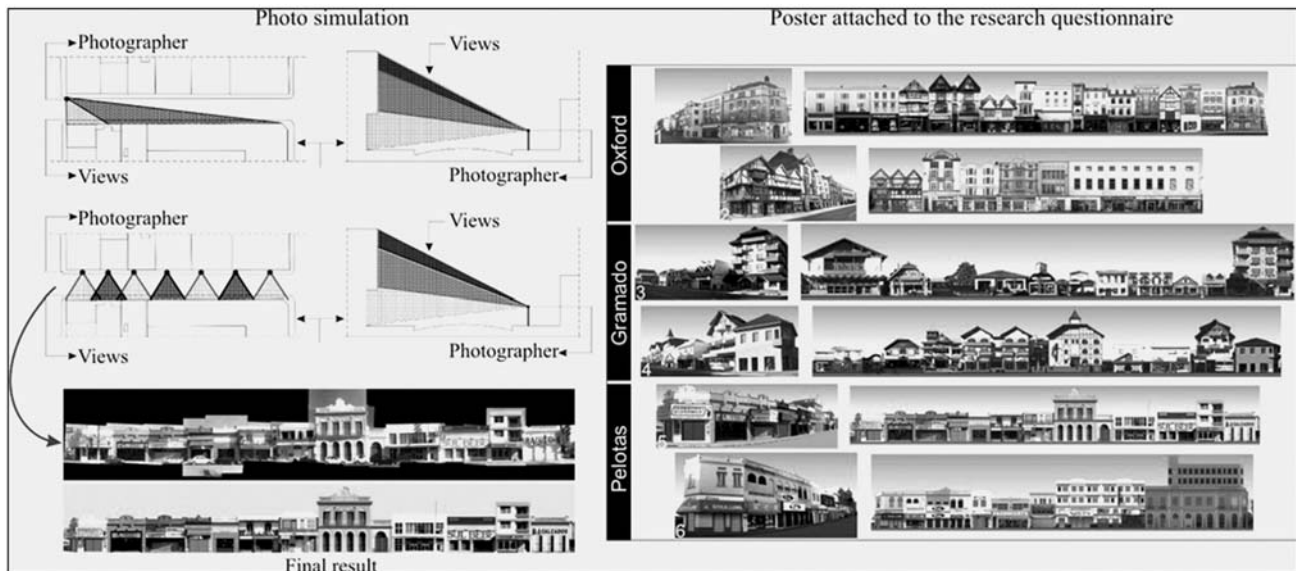


Figure-3: Technique applied to take the photographs to make the photo-simulations and the poster attached to the questionnaire showing the commercial street facades selected in each case study.
(Source: fieldwork 2007)

character of buildings and public spaces and preserved historic buildings characterize the streetscape, were ranked as the best streets in terms of appearance (streets 1 and 2). Moreover, as predicted by Kaplan and Kaplan² and Lang³, user familiarity with the streetscape and symbolic meanings attributed to buildings influenced on some users' preferences, but this influence has been demonstrated as complex rather than positive or negative. The findings of this study suggest that user familiarity with a particular streetscape and symbolic meanings attributed to buildings can influence users' preferences: street 3, located in Gramado city centre, was ranked as the best street

by residents in Gramado who, in a focus groups discussion, mentioned that the historical and cultural importance of some of the buildings influence their satisfaction with this street (Table 2).

Differences between perception and evaluation of users from Oxford, Gramado and Pelotas were also found: (i) street 1 (located in Oxford) and street 5 (located in Pelotas) were evaluated more positively by users from Oxford than by users from Gramado and Pelotas; (ii) streets 3 and 4 (located in Gramado) were evaluated more positively by users from Gramado than by users from Oxford

2 Kaplan, S., & Kaplan, R. (1982) "Cognition and Environment: Functioning in an Uncertain World", Praeger, New York.
3 Lang, J. (1987). "Creating Architectural Theory: Role of the Behavior Science in Environmental Design", Van Nostrand Reinhold, New York.

and Pelotas; (iii) street 6 (located in Pelotas) was evaluated more positively by users from Pelotas than by users from Gramado; (iv) street 2 (located in Oxford) was evaluated more positively by users from Pelotas than by users from Oxford and Gramado. This study does not identify the factors that result in those differences, but it suggests that, in the cases which residents prefer the streets from their cities, user familiarity with the streetscape and symbolic meanings attributed to buildings can be influencing user responses.

Furthermore, similarities and differences between lay people and professionals were found. Taking into account responses of users from the whole sample, the results show that the commercial street facades located in Gramado, where commercial signage is ordered and the streetscape is built to promote a manufactured image of the city, tend to be popular with lay people more than

with professionals. Professional preferences tend to be higher with the streets located in Oxford and Pelotas, while lay people preferences tend to be higher with the streets located in Gramado. At the same time, similarities between both these groups were verified: street 1 had the highest user evaluation, while street 6 had the lowest user evaluation; and streets 4 and 5 were placed in fourth and fifth places, respectively, by both these user groups. When responses of users from the case studies of Oxford and Pelotas were analysed, two common tendencies were found between lay people and professionals: lay people tended to evaluate street 3 most positively, while professionals tended to evaluate street 6 most positively. Common views between these users groups were also identified in Oxford and Pelotas: lay people and professionals from Oxford classified street 1 as the best and street 6 as the worst streets in terms of appearance, while both these users groups

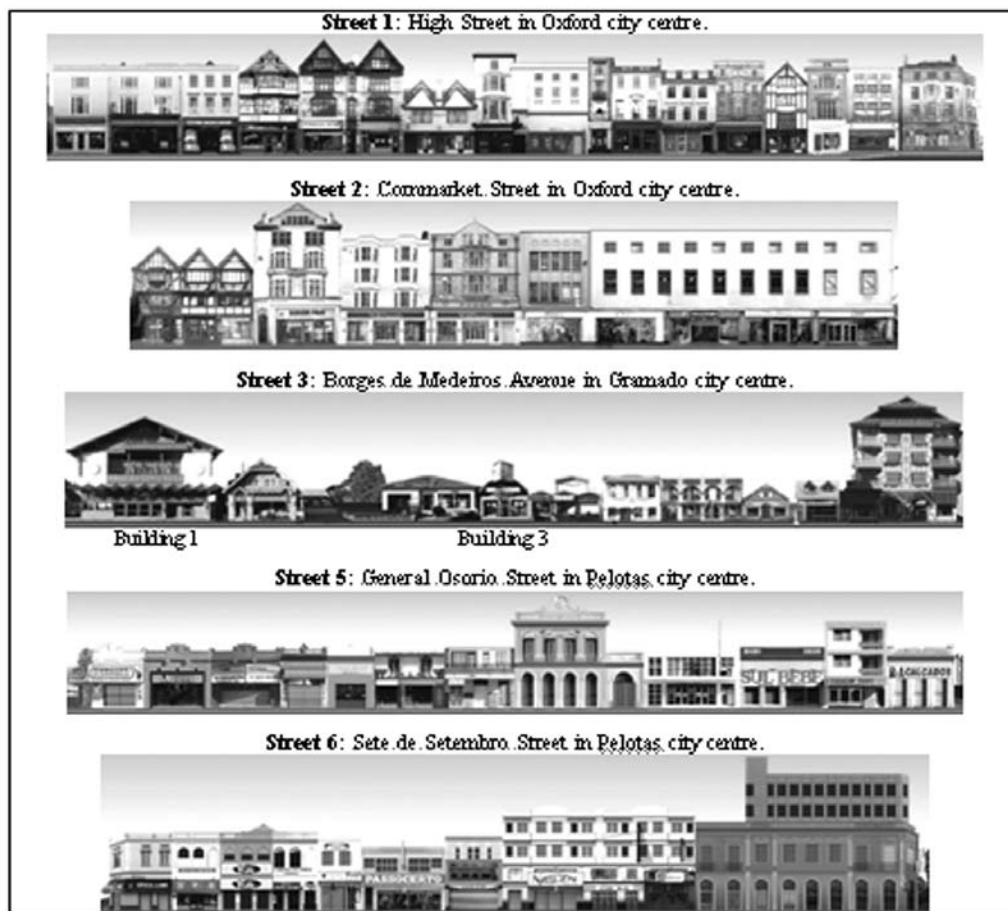


Table-2: Commercial street facades chosen as the best (streets 1, 2 and 3) and the worst (streets 5 and 6) streets in terms of appearance.

from Pelotas mentioned street 2 as the best and street 5 as the worst streets in terms of appearance. In Gramado, both users groups agreed that street 6 was the worst street in terms of appearance, however street 3 was mentioned as the best street by lay people, while professionals indicated street 1.

Based on these findings, the following tendencies were verified in more than one case study: according to the majority of users (lay people and professionals), (i) commercial street facades where commercial signage controls were applied and preserved historic buildings characterized the streetscape were ranked as the best streets in terms of appearance (streets 1 and 2), and (ii) commercial street facades where commercial signage controls had not been applied and historic buildings were harmed by commercial signs were ranked as the worst streets in terms of appearance (streets 5 and 6). The findings also showed that users who preferred commercial street facades characterized by preserved historic buildings do not sympathize with commercial streets characterized by contemporary buildings designed to create a manufactured image of the city. Moreover, streetscapes characterized by a mix of historic and contemporary buildings seemed to have a positive effect on user perception and evaluation of commercial street facades.

3.2 Main Findings

Looking for common perceptions and evaluations among users from the different case studies, three hypotheses were tested:

(i) There is no relationship between user perception and evaluation of the number of commercial signs and user satisfaction with the commercial street facades;

(ii) The higher the user satisfaction with commercial street facades, the lower the user perception and evaluation of the percentage of building facade covered by commercial signs; and

(iii) The higher the user perception and evaluation of the number of commercial signs and the percentage of building facade covered by these media, the less pleasant, the more interesting, the less ordered, the more colourful, and the more complex the commercial street facades.

3.2.1 Hypothesis One: There is no relationship between user perception and evaluation of the number of commercial signs and user satisfaction with the commercial street facades.

When responses of users from the whole sample (361 users) were analysed, the results showed that there was no relationship between user perception and evaluation of the number of commercial signs and user satisfaction with the appearance of streets 1, 2 and 3.

However, taking those streets classified as the worst streets in terms of appearance, the following relationship was identified: the higher the user perception and evaluation of the number of commercial signs, the lower the user satisfaction with the commercial street facade (street 5: Spearman, $\rho^4 = -0.35$, $p^4 = 0.01$; street 6: Spearman, $\rho = -0.33$, $p = 0.01$). Street 5 had the lowest number of commercial signs compared to the other streets in the sample but it had the highest percentage of building facade covered by these media (11.31% of the streetscape = 79.97m²). At the same time, street 6 had the second highest number of commercial signs compared to the other streets in the sample, and the second highest percentage of building facades covered by these media (9.11% of the streetscape

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- 4 "Rho" is a number between +1 and -1. This number tells us about the magnitude and direction of the association between two variables. The magnitude is the strength of the correlation. The closer the correlation is to either +1 or -1, the stronger the correlation. If the correlation is 0 or very close to 0, there is no association between the two variables. The direction of the correlation tells us how the two variables are related. If the correlation is positive, the two variables have a positive relationship (as one increase, the other also increase). If the correlation is negative, the two variables have a negative relationship (as one increase, the other decrease).
 - 5 The "p" value is the estimated probability of rejecting the null hypothesis (H0) of a study question when that hypothesis is true. The null hypothesis is usually a hypothesis of "no difference" (e.g. no difference between responses of group A and group B). Most authors refer to statistically significant as $P < 0.05$, and statistically highly significant as $P < 0.001$ (less than one in a thousand chance of being wrong).

= 93.34m²). In this regard, this study suggests that user satisfaction is influenced by the percentage of building facades covered by commercial signs rather than by the number of shopfronts and window displays.

When the responses of users from Oxford, Gramado and Pelotas were analysed individually, there was no relationship between user perception and evaluation of the number of commercial signs and user satisfaction with streets 1 and 3. On the other hand, taking into account users from Pelotas, the following relationship was found when street 2 was analysed (Spearman, rho= - 0.33, p=0.02): the higher the user perception and evaluation of the number of commercial signs, the lower the user satisfaction with the commercial street facade. Street 2 had the second lowest number of commercial signs compared to the other streets in the sample but the highest percentage of building facade covered by these media (5.62% of the streetscape = 54.56m²) when compared to street 1 (2.70% of the streetscape = 34.60m²) and street 3 (3.48% of the streetscape = 30.54m²). In this regard, the percentage of building facade covered by signs seemed to (i) increase user perception and evaluation of the number of commercial signs, and (ii) influence user satisfaction with the appearance of street 2.

A significant relationship was also found between user perception and evaluation of the number of commercial signs, and user satisfaction with streets 5 and 6 when responses of users from Oxford (Street 5: Spearman, rho= - 0.48, p=0.01; Street 6: Spearman, rho= - 0.40, p=0.01) and Pelotas (Street 5: Spearman, rho= - 0.32, p=0.01; Street 6: Spearman, rho= - 0.38, p=0.01) were analysed. The results showed that: the higher the user perception and evaluation of the number of commercial signs, the lower the user satisfaction with the commercial street facades. In this regard, as explained before, this study suggests that user satisfaction has been influenced by the percentage of building facade covered by commercial signs rather than by the number of these media. If the number of shopfronts and window displays was affecting user satisfaction with the appearance of commercial street facades, a correlation between these variables should have been found when street 1 was analysed (street 1 has the highest

number of commercial signs), and not when street 5 was analysed (street 5 has the lowest number of commercial signs).

Considering these results, the hypothesis "there is no relationship between user perception and evaluation of the number of commercial signs and user satisfaction with the commercial street facades" was verified when streets 1 and 3 were analysed. Although this hypothesis was not supported by the results from streets 2, 5 and 6, the findings suggested that user perception and evaluation of the number of commercial signs can be influenced by the percentage of building facade covered by these media. In addition, it is relevant to note that the commercial street facade chosen by the highest number of users as the best street in terms of appearance (street 1) has the highest number of commercial signs (46 signs) compared to the other streets in the sample; while one of the two commercial street facades chosen as the worst street in terms of appearance (street 5) had the lowest number of commercial signs (25 signs) compared to the other streets in the sample. These findings helped to support Hypothesis One.

3.2.2 Hypothesis Two: The higher the user satisfaction with commercial street facades, the lower the user perception and evaluation of the percentage of building facade covered by commercial signs.

Taking into account responses of users from the whole sample (361 users), there is a relationship between user satisfaction with commercial street facades and user perception and evaluation of the percentage of building facade covered by commercial signs. This relationship was found when street 2 (Spearman, rho=-0.27, p=0.02), street 5 (Spearman, rho=-0.35, p=0.001) and street 6 (Spearman, rho=-0.35, p=0.001) were analysed. Taking into account responses of users from each case study, a relationship between those variables was also found when responses of users from Pelotas in relation to street 2 (Spearman, rho=-0.21, p=0.01), and responses of users from Oxford, Gramado and Pelotas in relation to streets 5 and 6 were analysed (Oxford - street 5: spearman, rho=-0.54, p=0.001; street 6: rho=-0.65, p=0.001; Gramado - street 5: spearman, rho=-0.21, p=0.02; street 6: rho=-0.21, p=0.02;

and Pelotas - street 5: spearman, $\rho=-0.28$, $p=0.002$; street 6: $\rho=-0.20$, $p=0.03$). In all these cases, the following tendency was verified: the higher the user perception and evaluation of the percentage of building facade coverage by commercial signs, the lower the user satisfaction with the commercial street facades.

In this regard, the hypothesis "the higher the user satisfaction with commercial street facades; the lower the user perception and evaluation of the percentage of building facade covered by commercial signs" was verified. It is relevant to note that the street chosen by the highest number of users as the best street in terms of appearance (street 1) had the lowest percentage of building facade coverage by commercial signs (2.70% of the streetscape = 34.60m²). On the other hand, the street chosen by the highest number of users as the worst street in terms of appearance (street 6) had the second highest percentage of building facade coverage by these media (9.11% of the streetscape = 93.34m²). These findings helped confirm the hypothesis, and they also showed that what influence user satisfaction with commercial street facades was the percentage of building facade coverage by commercial signs rather than the number of shopfronts and window displays.

In addition, the results showed that street 2, which had the highest percentage of streetscape covered by commercial signs (5.62% of the streetscape = 54.56 m²) and the highest square meter of commercial signs per street meter (0.68 m²/m) when compared to streets 1 and 3, was perceived and evaluated by the majority of users from each case study as having "small" or "very small" percentage of building facade coverage by commercial signs. On the other hand, almost the majority of respondents from each city indicated

that: (i) street 1, which had only 2.70% of the street facade coverage by this media (34.60 m²) and 0.31 m² of commercial signs per linear street meter, and (ii) street 3, which had the lower percentage of street facade covered by commercial signs (3.48% of the streetscape = 30.54m²) than street 2 and only 0.25m² of commercial signs per linear meter of street, had moderate percentage of building facade coverage by commercial signs.

Taking into account the physical characteristics of streets 1, 2, and 3, one plausible explanation for these results was the localization of shopfronts on building facades. This analysis suggests that when almost all shopfronts were located in similar places on different buildings (base, body or coronation), user perception and evaluation of the percentage of building facade covered by commercial signs decreases. This may happen because these media were concentrated in one zone of building facades, leaving the others clean of signs. This was the main difference between the commercial signage in street 2 and in streets 1 and 3. In street 2, almost all shopfronts were aligned and located on the top part of ground floor of every building facades, while on streets 1 and 3 there was more variety regarding this aspect (Figure 4).

In the analysis of street 5 & 6, it was revealed that the majority of respondents from each case study agreed that the percentage of building facade coverage by commercial signs was "very much" or "a lot" in both these streets. These results could be related to the following aspects: (i) street 5 had the highest coverage of building facade by commercial signs (11.11% of the streetscape = 79.97m²) compared to the other streets in the sample, and 0.85m² of commercial signs per linear street meter; and (b) street 6 had the second highest coverage of building by commercial signage



Figure-4: The majority of shopfronts are located on the top part of the ground floor of every building facade leaving the other zones of these buildings free of signs. (Source: fieldwork 2007).

(9.11% of the streetscape = 93.34m²) compared to the other streets in the sample, and the highest square meter of commercial signs per street meter (1m²/m). In this regard, this study suggested that a minimal amount of 9% of a street facade coverage by commercial signs, and a minimal amount of 0.85m² of commercial signs per linear street meter could increase user perception and evaluation of the percentage of building facade coverage by these media, and, consequently, decrease user satisfaction with the appearance of commercial street facades.

3.2.3 Hypothesis Three: The higher the user perception and evaluation of the number of commercial signs and the percentage of building facade covered by these media, the less pleasant, the more interesting, the less ordered, the more colourful and the more complex the commercial street facades.

Taking into account responses of users from the whole sample, the following tendency was found: the higher the user perception and evaluation of the number of commercial signs, the less pleasant (verified in relation to street 1), the more interesting

(verified in relation to streets 1 and 6), the less ordered (verified in relation to streets 1, 2 and 6), the more colourful (verified in relation to streets 1, 2, 5 and 6), and the more complex (verified in relation to street 1) the commercial street facades. In addition, the same tendency was verified when user perception and evaluation of the percentage of building facades coverage by commercial signs was analysed: the higher the user perception and evaluation of the percentage of building facade coverage by commercial signs, the less pleasant (verified in relation to street 6), the more interesting (verified in relation to street 5), the less ordered (verified in relation to streets 1, 2, 3, 5 and 6), the more colourful (verified in relation to streets 1 and 2), and the more complex (verified in relation to streets 1 and 3) the commercial street facades (Table 3).

On analysing responses of users from each case study, the following results were found: the higher the user perception and evaluation of the number of commercial signs, the less pleasant (verified with users from Gramado), the less ordered and the more complex (verified with users from Oxford street 1. In addition, taking into account the streets

| Variables | Variable C: User perception and evaluation of >x<: | THE WHOLE SAMPLE (N=361 users) | | | | |
|---|---|--------------------------------|-------------------------------|------------------------------|------------------------------|-------------------------------|
| | | Street 1 N=153 users | Street 2 N=74 users | Street 3 N=106 users | Street 5 N=149 users | Street 6 N=169 users |
| Variable A: User perception and evaluation of the number of commercial signs. | Pleasant | $\rho = -0.31$, $p=0.001$ | none | none | none | none |
| | Interest | $\rho = -0.18$, $p=0.02$ | none | none | none | $\rho = 0.22$, $p=0.004$ |
| | Order | $\rho = -0.46$, $p=0.001$ | $\rho = -0.34$, $p=0.003$ | none | none | $\rho = -0.22$, $p=0.004$ |
| | Colour | $\rho = 0.17$, $p=0.03$ | $\rho = 0.36$, $p=0.002$ | none | $\rho = 0.18$, $p=0.02$ | $\rho = 0.28$, $p=0.001$ |
| | Complexity | $\rho = 0.31$, $p=0.001$ | none | none | none | none |
| Variable B: User perception and evaluation of the percentage of building facade covered by commercial signs. | Pleasant | none | none | none | none | $\rho = -0.22$, $p=0.004$ |
| | Interest | none | none | none | $\rho = -0.21$, $p=0.01$ | none |
| | Order | $\rho = -0.42$, $p=0.001$ | $\rho = -0.34$, $p=0.003$ | $\rho = -0.23$, $p=0.02$ | $\rho = -0.18$, $p=0.05$ | $\rho = -0.20$, $p=0.009$ |
| | Colour | $\rho = 0.25$, $p=0.002$ | $\rho = 0.36$, $p=0.002$ | none | none | none |
| | Complexity | $\rho = 0.25$, $p=0.002$ | none | $\rho = 0.25$, $p=0.01$ | none | none |

Table-3: Spearman correlations found between user perception and evaluation of the number of commercial signs (variable A) and the percentage of building facade coverage by these media (variable B) and user perception and evaluation of pleasant, interest, order, colour variation and complexity (variable C) – the whole sample.

classified as the worst streets in terms of appearance, similar tendency was verified: the higher the user perception and evaluation of the number of commercial signs, the less pleasant (verified with users from Gramado in relation to street 5 and with users from Pelotas in relation to street 6), the more interesting (verified with users from Oxford in relation to street 5), the less ordered (verified with users from Oxford in relation to street 5 and with users from Oxford, Gramado and Pelotas in relation to street 6), the more colourful (verified with users from Gramado and Pelotas in relation to street 5 and with users from Pelotas in relation to street 6), and the more complex (verified with users from Pelotas in relation to street 5) the commercial street facades. (Table 4)

Analysing user perception and evaluation of the percentage of building facades coverage by commercial signs, the same tendency was found: the higher the user perception and evaluation of

the percentage of building facade coverage by commercial signs, the less ordered (verified with users from Oxford in relation to street 1) and the more complex (verified with users from Oxford in relation to streets 1 and 2) the commercial street facades chosen as the best streets in terms of appearance. Focusing on the streets chosen as the worst in terms of appearance, the following results were verified: the higher the user perception and evaluation of the percentage of building facades coverage by commercial signs, the less pleasant (verified with users from Oxford and Pelotas in relation to street 6), the more interesting (verified with users from Oxford in relation to streets 5 and 6), the less ordered (verified with users from Oxford in relation to street 5 and with users from Pelotas in relation to street 6), the more colourful (verified with users from Pelotas in relation to streets 5 and users from Pelotas in relation to street 6), and the more complex (verified with users from Oxford and Pelotas in relation to street 6) the commercial street facades (Table 4).

| | Streets | Variable C: User perception and evaluation of >x<: | OXFORD N = 114 users | GRAMADO N = 120 users | PELOTAS N = 127 users |
|---|----------|--|-----------------------------|----------------------------|-----------------------------|
| Variable A: User perception and evaluation of the number of commercial signs. | Street 1 | Pleasant | none | <i>rho= - 0.39, p=0.01</i> | none |
| | | Order | <i>rho= - 0.29, p=0.01</i> | none | none |
| | | Complexity | <i>rho= 0.45, p=0.01</i> | none | none |
| | Street 5 | Pleasant | rho= 0.53, p=0.002 | none | none |
| | | Order | none | none | <i>rho= - 0.30, p=0.02</i> |
| | | Colour | <i>rho= 0.41, p=0.02</i> | <i>rho= 0.29, p=0.003</i> | none |
| | Street 6 | Interest | <i>rho= -0.26, p=0.04</i> | none | <i>rho= -0.30, p=0.04</i> |
| | | Colour | <i>rho= - 0.40, p=0.001</i> | none | none |
| | | Complexity | <i>rho= 0.37, p=0.003</i> | none | none |
| Variable B: User perception and evaluation of the percentage of building façade covered by commercial signs. | Street 1 | Order | <i>rho= - 0.31, p=0.008</i> | none | none |
| | | Complexity | <i>rho= 0.28, p=0.001</i> | none | none |
| | Street 3 | Complexity | rho= 0.57, p=0.001 | none | none |
| | Street 5 | Pleasant | <i>rho= 0.38, p=0.03</i> | none | none |
| | | Interest | <i>rho= - 0.38, p=0.03</i> | none | none |
| | | Order | rho= - 0.51, p=0.003 | none | none |
| | Street 6 | Colour | none | none | <i>rho= 0.29, p=0.02</i> |
| | | Pleasant | <i>rho= 0.34, p=0.008</i> | none | <i>rho= - 0.32, p=0.03</i> |
| | | Interest | <i>rho= -0.38, p=0.002</i> | none | none |
| | | Order | none | none | <i>rho= - 0.49, p=0.001</i> |
| | | Colour | none | none | <i>rho= 0.43, p=0.003</i> |
| | | Complexity | <i>rho= 0.27, p=0.04</i> | none | <i>rho= 0.40, p=0.006</i> |
| There is no correlation when user perception and evaluation of the number of commercial signs was analysed in relation to streets 2 and 3. There is no correlation when user perception and evaluation of the percentage of buildings facade coverage by commercial signs was analysed in relation to street 2. | | | | | |
| Legend: <i>Italic</i> = Moderate Correlation. Bold = Strong Correlation. | | | | | |

Table-4: Spearman correlations found between user perception and evaluation of the number of commercial signs (variable A) and the percentage of building facade coverage by these media (variable B) and user perception and evaluation of pleasant, interest, order, colour variation and complexity (variable C) – case studies of Oxford, Gramado and Pelotas.

The findings show that the number of commercial signs and the percentage of building facade coverage by these media influence on user perception and evaluation of order, colour variation and complexity and on user's feelings of pleasure and interest in relation to the appearance of commercial street facades. The results also show that this influence is verified when analysing the commercial street facades classified as the best and the worst streets in terms of appearance where the percentage of building facade coverage by commercial signs is different. Taking into account that user perception and evaluation of the number of commercial signs can be influenced by the percentage of street facade coverage by these media, these outcomes suggest that to increase user perception and evaluation of pleasure and order, the percentage of building facade coverage by commercial signs should be controlled. At the same time, this control will decrease user perception and evaluation of colour variation and complexity, what can be positive factors in historic city centres streetscapes. According to the literature, too high colour variation and complexity can provoke chaos and decrease user satisfaction with the appearance of street facades. In addition, if users are bombarded with high levels of commercial signage and building variation, they will experience saturation losing the enjoyment of variety, and becoming insensitive to this succession without order.^{6,7}

4. CONCLUSION

One of the main conclusions of this study is that: (i) commercial street facades, where a national approach to help local authorities to guide and control commercial signs in historic city centres is applied in practice and preserved historic buildings characterize the streetscape, are ranked as the best streets in terms of appearance by users from the different case studies. At the same time, (ii) commercial street facades, where commercial signage controls exist but are not applied and the streetscape is harmed by shopfronts and window

displays are ranked as the worst streets in terms of appearance by users from the different case studies.

The evidence presented in this paper suggests that a general approach to control commercial signage in historic city centres is fundamental in promoting commercial streets evaluated positively by users from different urban contexts. In the development of this approach, user familiarity with particular streetscapes and symbolic meanings attributed to buildings should be taken into account as both these factors influence on user perception and evaluation of commercial streetscapes. This study has also demonstrated that this approach should take into account the following issues: (i) users who prefer commercial street facades characterized by preserved historic buildings do not like commercial street facades comprised of contemporary buildings designed to create a manufactured image of the city, and (ii) streetscapes characterized by a mix of historic and contemporary buildings can positively influence user evaluation of commercial street facades.

This investigation has also shown similarities between lay people and professionals in terms of perception and evaluation suggesting that common views between different users groups can be applied to develop a general commercial signage approach. Taking into account responses of users from the whole sample, the commercial street facades chosen as the best (street 1) and the worst (street 6) streets in terms of appearance by lay people were the same as those indicated by professionals. On the other hand, the findings have demonstrated that commercial street facades where commercial signage is ordered and the streetscape is characterized by a manufactured image tend to please more lay people than professionals. This result can explain one of the reasons that makes Gramado, in Brazil, such a popular and successful tourist destination from the point of view of people from several parts of this and other countries. This has also underlined

6 Nasar, J. (1988a) *The effect of sign complexity and coherence on the perceived quality of retail scenes*. In: Nasar, J. (Ed.), "Environmental Aesthetic: Theory, Research, and Applications", pp. 300-320, Cambridge University Press, Cambridge, England.

7 Weber, R. (1995) "On the Aesthetics of Architecture, A Psychological Approach to the Structure and the Order of Perceived Architectural Space". Ashgate Publishing Company, San Francisco.

the fact that public spaces which are seen negatively by design professionals, for example, can be attractive places for lay people. In this study, the professional group tends to sympathize with commercial street facades characterized by ordered commercial signs and historic heritage.

The findings have shown that user perception and evaluation of the percentage of building facade covered by commercial signs have a significant influence on user satisfaction with the appearance of commercial street facades. On the other hand, there is no relationship between user perception and evaluation of the number of commercial signs and user satisfaction with the appearance of commercial street facades. In addition, this study has indicated that user perception and evaluation of the number of commercial signs is influenced by the percentage of street facade coverage by these media. In this regard, this paper suggests that user satisfaction is influenced by the percentage of street facade covered by commercial signs and not by the number of shopfronts and windows displays. The evidence also show that the higher the user perception and evaluation of the percentage of building facade coverage by commercial signs, the lower the user satisfaction with the appearance of commercial street facades. Taking into account responses of users from the whole sample (361 users), it is relevant to note that (i) the street chosen by the highest number of users as the best street in terms of appearance has the lowest percentage of building facades coverage by commercial signs, and (ii) the street chosen by the highest number of users as the worst street in terms of appearance has the second highest coverage of building facades by commercial signage. These findings have reinforced the idea that what influences user satisfaction with the appearance of commercial street facades is the percentage of building facade covered by commercial signs. Moreover, this study has indicated that when almost all shopfronts are located in similar zones of different building facades in a street facade, user perception and evaluation of the percentage of building facades covered by these media decrease.

This study suggests that a general approach to control commercial signs in historic city centres should instigate the development of polices to

control the percentage of streetscape facade coverage by shopfronts and window displays and the location of these signs on building facades as both these factors influence satisfaction of users from different urban contexts. This approach should also take into account that a minimal amount of 9% of a streetscape coverage by commercial signs and a minimal amount of 0.85 square meters of these media per linear street meter are evaluated negatively by users from the different case studies. Furthermore, this study also suggests that: the higher the user perception and evaluation of the number of commercial signs and the percentage of building facades coverage by these media, the less pleasant, the more interesting, the less ordered, the more colourful, and the more complex the commercial street facades. In this regard, this investigation has indicated that this general approach to control commercial signage should focus on the control of the percentage of building facades coverage by commercial signs in order to increase user perception and evaluation of pleasure and order in commercial streets of historic city centres. Consequently, this control can lead to a decrease in user perception and evaluation of colour variation and complexity, which when too high can affect negatively the visual quality of commercial streets.

In conclusion, this investigation has identified common patterns of visual preferences among individuals from different urban contexts and distinct user groups (lay people and professionals). A possible future stage of this investigation might be the application of the same methodology in other case studies and countries in order to verify whether the same universal preferences would be found. If these findings can be found consistently among users from other urban contexts, then urban design principles that incorporate user perception and evaluation of the number of commercial signs and the percentage of building facades covered by these media can be addressed as theoretical concepts. These concepts could be applied to develop a general approach to control commercial signs in historic city centres of different urban contexts in order to promote commercial street facades evaluated positively by people from distinct countries.

BIBLIOGRAPHY

- Ashihara, Y. (1983). "The Aesthetic Townscape". Trad. Lynne Riggs, MIT Press, Cambridge, Massachusetts.
- Bartuska, T. & Young, G. (Eds.). (1994). "The Built Environment Creative Inquiry into Design and Planning", Crisp publications, California.
- Coolican, H. (2004). "Research Methods and Statistics in Psychology" (4th edition), Hodder & Stoughton Educational, London.
- Cooper, H. M. (1989). "Integrating research: A Guide for Literature Reviews". Newbury Park, Sage, CA.
- Cullen, G. (2000). "The Concise Townscape", The Architectural Press, Oxford, England.
- Howitt, D. (2005). "Introduction to SPSS in Psychology: with Supplements for Releases", 10, 11, 12 (3th ed.). Prentice Hall, Harlow.
- Rowntree, D. (1981). "Statistic without Tears: A Prime for Non-Mathematicians", Peguim, Harmondsworth.
- Golledge, R. G., & Stimson, R. J. (1997). "Spatial Behavior: A Geographic Perspective", Guilford Press, New York.
- Herzog, T. R., Kaplan, S., & Kaplan, R. (1976). *The Prediction of Preferences for Familiar Urban Places*. in: "Environment and Behaviour", v.8, pp. 627-645.
- Howell, D. C. (1997). "Statistical Methods for Psychology" (4th Ed.). Duxbury Press, Belmont, CA.
- Kaplan, S., & Kaplan, R. (1982) "Cognition and Environment: Functioning in an Uncertain World", Praeger, New York.
- Klein, N. (2000). "No logo". Flamingo, London.
- Lang, J. (1987). "Creating Architectural Theory: Role of the Behavior Science in Environmental Design". Van Nostrand Reinhold, New York.
- Light, R., & Pillemer, D.B. (1984). "Summing up: The Science of Reviewing Research". Harvard University Press, Cambridge.
- Lynch, K. (1960). "The Image of the City". MIT Press, Cambridge, England.
- Nasar, J., & Hong, X. (1999). *Visual Preferences in Urban Signscapes*. in: "Environment and Behavior", 31 pp. 671-691.
- Nasar, J. (1988a). *The Effect of Sign Complexity and Coherence on the Perceived Quality of Retail Scenes*. In: Nasar, J. (Ed.), "Environmental Aesthetic: Theory, Research, and Applications". pp. 300-320. Cambridge University Press, Cambridge, England.
- Nasar, J. (1988b). *Visual Preferences in Urban Streets Scenes: A Cross-Cultural Comparison between Japan and the United States*. In Nasar, J. (Ed.), "Environmental Aesthetic: Theory, Research, and

Applications". pp. 260-274. Cambridge University Press, Cambridge, England.
Oliver, K. (2002). "Psychology in Practice: Environment". Hodder & Stoughton, London.

Passini, R. (1992). "Wayfinding in Architecture". Van Nostrand Reinhold, New York.

Portella, A. A. (2003). *A Qualidade Visual dos Centros de Comercio e a Legibilidade dos Anuncios Comerciais* (Visual quality of commercial city centres and legibility of commercial signage)". Master dissertation in Urban and Regional Planning, Federal University of Rio Grande do Sul. School of Architecture, Porto Alegre, Brazil.

Portella, A. A. (2006a) *Visual Pollution in Historic City Centres: How to Analyse this Issue*. (Electronic version). in: "II Congress of ABEP-RU, Association of Brazilian Post-Graduate Students and Researchers in Great Britain", Embassy of Brazil in London, London,
<http://www.brazil.org.uk/education/researchlinks.html>.

Portella, A. A. (2006b) *Visual Pollution in Historic City Centres of Different Cultural Contexts*. In: "Book of Abstracts of the Third Annual School of the Built Environment Research Student Conference". Oxford Brookes University, Oxford, England.

Rapoport, A., & Hawkes, R. (1970). *The Perception of Urban Complexity*. in: "Journal of the American Institute of Planners", 36 (v2) pp.106-111.

Rosenthal, R., & Rubin, D. B. (1986). *Meta-analytic Procedures for Combining Studies with Multiple Effect Sizes*. in: "Psychological Bulletins", 99 (v.3) pp. 400-406.

Russel, J. (1988). *Affective Appraisals of Environments*. In Nasar, J. (Ed.), "Environmental Aesthetic: Theory, Research, and Applications". pp. 120-129. Cambridge University Press, Cambridge, England.

Sanoff, H. (1991). "Visual Research Methods in Design". Van Nostrand Reinhold, New York.

Siegel, S. (1988). "Nonparametric Statistic for the Behavioral Science" (2th ed.) McGraw-Hill, London.

Sommer, R., & Sommer, B. (2002). "A Practical Guide to Behavioral Research" (5th ed.). Oxford University Press, Oxford.

Stamps, A. E. (2000). "Psychology and the Aesthetic of the Built Environment". Kluwe Academic Publisher, San Francisco.

Weber, R. (1995). "On the Aesthetics of Architecture, a Psychological Approach to the Structure and the Order of Perceived Architectural Space". Ashgate Publishing Company, San Francisco.