

MANAGING NEW ZEALAND URBAN STREETSCAPE DESIGN: UNDERSTANDING PEOPLE'S PREFERENCES

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Urban design is conducted at scales and across timeframes that are much broader/longer than those of conventional, site specific projects. Indeed, as noted by Christopher Alexander, the aim of urban design is to orchestrate the outcomes of discrete projects such that they each contribute to a more coherent whole. In most cases the coherent whole is centred on public streets, the spaces that people use every day as they conduct their lives. The research responds to gaps in knowledge about which building and street design characteristics people find most attractive. Other researchers have noted that most contemporary design guidance is developed largely on the basis of normative theories rather than on empiric evidence. The paper discusses the findings of a study designed to understand people's visual preferences for buildings and streetscapes in two New Zealand cities. When people were invited to evaluate individual building facades and to consider entire streetscapes, the study confirmed their strong preferences for ordered variety. These findings were reinforced through the preferences they also expressed for building height relationships that vary within a narrow band of difference and for close plan alignment between the facades of adjacent buildings. The findings provide empiric evidence that can inform the work of designers and of those who regulate urban change proposals. The challenges local governments must confront if they wish to manage changes toward better aesthetic outcomes include a legislative framework is not conducive to proactive development control, particularly where they refer to outcomes that are not easily quantifiable, such as aesthetics. Planning authorities in New Zealand have tended to shy away from the vexed matter of aesthetics, preferring instead to leave this in the hands of experts. In addition, local governments are inadequately resourced to be able to be able to proactively plan urban areas toward specific aesthetic outcomes. To get there, aesthetics must be elevated to a status equal with other performance matters in regulatory planning processes.

Keywords: environmental aesthetics, streetscape, urban design review

INTRODUCTION

Think of a city and what comes to mind? Its streets. If a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull.

With this very simple observation, Jane Jacobs (1961) provides the rationale for ongoing interest in urban streetscapes. Although not always recognised as such, managing development and use of streets and other public spaces ranks amongst the most important of activities undertaken by local government. It seems ratepayers and other stakeholders have vested interests in the way these assets are managed, as they

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are known to affect people's economic, physical, emotional and social wellbeing (Mehta 2013). Streets contribute significantly to a city's sense of place and are increasingly referred to in promotions aiming to attract tourists, businesses and high-quality workers. All cities seek to encourage positive growth by promoting their comparative advantages and in many cases, this can include the quality of their public realm. An example of this is Wellington, New Zealand, where the district plan looks to "encourage positive growth that promotes the City's comparative advantages". The quality of the public realm, which depends to a large extent on the characteristics of the buildings and structures that define it, is noted to be one of Wellington's advantages. Safe and attractive streets encourage people to linger or to walk and cycle along them, not only helping to raise levels of physical activity but encouraging shopping and other impromptu economic exchanges. As attractive places encourage people to linger for longer periods of time there is also the chance they will run into someone they know or strike up new social acquaintances. There is evidence confirming that people have stronger connections with the physical settings they find attractive and such connections help to lift emotional well-being (Cold 2001, Dovey 2001). People generally feel better about the places they know and love. For these reasons and many more, it is clear that local authorities should work to help ensure that a city's streets are well liked.

This paper is concerned with incremental changes that take place through the development of private land facing onto urban streets. In particular, how can these changes be managed to help ensure that the visual appearance of urban streetscapes meet with people's preferences? Managing building appearance remains a contentious matter for many architects, site owners, planners, and even the public (Holden 2012). As privately initiated development is increasingly speculative in nature, with seemingly limitless choice of materials and construction methods and with little control over the qualifications of those undertaking the design and development in our urban centres, many people are of the opinion that the quality of the built outcomes is diminishing. One such critic was Peter Buchanan, who in 1988 took the architectural profession to task over the quality of buildings he saw emerging in British cities. Buchanan reminded his colleagues of the responsibility they had for ensuring the future quality of the spaces their buildings faced out onto. Facades, he noted, do not simply enclose interior spaces or become a filter to the weather and other external conditions, but they also address and articulate outdoor space. He argued that buildings should be considered together, with new designs responsive to those that are already there, such that they create well-mannered outdoor rooms (Buchanan 1988). Punter and Carmona (1997: 200) offered compelling arguments for contemporary societies to control the aesthetic design of buildings, reaffirming that "the quality of architecture and the external appearance of development are important to perceptions of environmental quality and sense of place, and that the controversial issue of architecture has to be faced by policy."

Context for Managing Streetscapes

Streets are the primary public spaces in any city, in many cases occupying more than 50% of the urban land area (Moudon 1987). They are literally and metaphorically the most fitting symbol of the public realm (Mehta 2013: 9). However, the important role streets play in the social life of cities has not always been acknowledged, in circumstances that are particularly relevant over the past hundred or so years. Streets in cities, or parts of cities, that have been developed after the advent of motorised transport are by and large designed to facilitate movement of people and goods. In

this context, the pedestrian environment almost always gives way to the dominance of vehicles. A compounding factor is that the layout of contemporary cities often do not include the squares and plazas that could provide alternative venues for people's social activities. However as noted earlier, there is a renewed interest amongst urban planners, politicians, economists and the general public in the potential of cities and this is leading many to recognise the importance of making streets attractive to people so that they choose to linger along them.

People make choices about how and where they wish to spend time based on visual perceptions. Recent studies by Mehta (2013) and Lesan (2015) found the visual attractiveness of streets to influence people's lingering social activities. Mehta looked specifically at the influence of the visual qualities of the buildings lining both sides of a street on people's feelings of sensory pleasure. His study found a direct positive correlation between attractive, visually interesting streets and the social activities he observed taking place. Despite concerns about the subjective nature of aesthetic perception, people were found to agree that some street blocks are more visually attractive and that these qualities affected their choices to use these areas for social and lingering activities. Mehta's respondents also chose not to make use of unattractive streets, findings that correspond with earlier research by Gehl (1974).

Through the work of Kevin Lynch (1960) and other environmental behaviourists, we have come to understand the important role streets play in helping people comprehend the environments they find themselves in. To help them navigate, people form mental images incorporating the spatial and visual character of pathways, nodes and edges. The street is a fundamental spatial type extending across all three. Streets are important, not only for their imageability potential but also for the health and wellbeing of individuals and the community as a whole. As noted by Allan Jacobs (1993: 314); "if we do right by our streets we can in large measure do right by the city as a whole - and therefore and most importantly, by its inhabitants."

In light of the important role contemporary urban streets play in the health and wellbeing of towns and cities, there is growing interest in the quality of these spaces and how they may be managed to meet the needs of different stakeholders. Local governments have come to recognise the need for management to extend from the way public spaces are designed and developed to the way they are managed on a day to day basis (de Magalhães and Carmona 2006). Early efforts to manage public streets were largely focussed on retailing activities and seldom had aspirations higher than to ensure streets were swept and maintained to an appropriate standard. As the field has developed, its potential strengths have been encouraged by engaging all stakeholders with interests in how streets are developed and managed. The broad remit of public space management revolves around three core processes; regulation of activities, maintenance routines, and obtaining new investment and resources. A fourth, and overarching process is coordination, which seeks to ensure that the efforts of a wide array of people and organisations that manage public space are pulling in the same direction (de Magalhães and Carmona 2009). This paper is particularly concerned with management of the design and development of the privately-owned sites along streets.

Development activities in New Zealand cities are managed by local authorities through the Resource Management Act (RMA). Emerging in 1991, the RMA has its roots in a period of economic liberalisation, where planning had fallen out of favour with the government of the day (Dixon 2003). The RMA provides a permissive

context for development and is open to any outcome provided the potentially negative effects can be suitably managed. This presents a significant challenge to any efforts that aim to closely manage design outcomes.

One of the biggest challenges for planners when managing and regulating changes to the built environment is to navigate between the needs and expectations of all interested parties, including the public (Dovey 2017). To assist them, planners in the largest New Zealand cities are increasingly referring to design guidelines alongside the more objective zoning criteria they have traditionally referred to. The design guidelines are generally prepared by planners, with input from the community arranged through public consultation, to achieve desired form and activity characteristics (Holden 2012). Where they are prepared on the basis of empirical research findings, design guides are seen as a suitable way of influencing project outcomes in the absence of the public being directly involved in each project. However, Holden (2012) has argued that design guidance is generally prepared with ad-hoc reference to theory and that the bases for individual guidelines is implicit rather than explicitly communicated. His concern is that such guidelines are vulnerable to inconsistent interpretation and to legal challenges and in response proposes a model for preparing design guides on the basis of empirical research. The research discussed in this paper responds to that call.

RESEARCH METHODOLOGY

A research methodology was developed that would enable identification of the building design characteristics that people find most attractive. This methodology would enable collection of responses to design characteristics of individual building facades as well as of entire streetscapes. One of the questions driving the research relates to how people evaluate design characteristics observed across a number of closely spaced individual buildings. The findings of the overall project are intended to inform design review, recognising the important role this process plays in the way cities manage change. Two studies were undertaken in sequence, the first of which invited people to evaluate urban streetscapes on the basis of photographic representations. In the second study, people provided their responses as they walked along the streets being studied. The streetscapes were selected on the basis of the particular characteristics of individual buildings along their length and the relationships they formed with each other. The aim was to present a range of conditions encountered in design review processes.

In the first study, more than 200 people responded through a paper based survey to photographic representations of six urban blocks. The elevations were prepared from digital images corrected for perspective and stitched together using Adobe Photoshop software. The elevations were printed on A0 size paper and presented to survey respondents. This helped ensure that respondents could see sufficient detail in the facades. In the second part, respondents were invited to visit two streets in Auckland and one in Wellington. At least 40 people participated in each of the three cases and were asked to evaluate the design characteristics of individual buildings, the relationships between adjacent buildings and the overall streetscape composition along both sides as they walked along each street. Both surveys employed Likert scale response fields to generate data that could be analysed quantitatively. Correlations between different responses and demographic characteristics of respondents were analysed with the help of SPSS software. To help tease out the key

issues that influence the ways people perceive the environment, two focus groups comprising people who had participated in the Wellington survey were held.

Understanding People's Preferences

In respect of individual buildings, people were found to prefer facades that are monolithic in nature, where the structural floor levels behind the façade are not expressed in it. Such monolithic facades are generally considered to be more traditional, seen conceptually as a wall extending over the full height of the building. While the majority of traditional, monolithic facades incorporate surfaces that can be painted, the most preferred surface finish was found to be brick. A critical distinction between traditional and non-traditional materials is that the former are significantly thicker than the latter and therefore the resultant facades also appear deeper, a quality most apparent at door and window openings. These materials appear monolithic even though they may or may not be providing load bearing structural support.

The façade design features that people liked most were discrete (individually articulated) window openings. Discrete windows provide buildings and their facades with a sense of scale and human proportion. Windows establish a scale relationship in the façade of a building, enabling viewers to better understand the size of other elements in it and within the building. Discrete windows in a façade can assist people to gauge the overall size of a building. It can also be noted that the human mind looks for patterns in the environment and derives pleasure from discovering rhythms that extend across more than one building (Smith 2003: 35-47).

Preferences for monolithic building facades and discrete windows corresponds well with people's dislike of facades that appear horizontally banded through the use of continuous strip windows and/or by expressing the horizontal loadbearing structure. People expressed strong preferences for buildings that were well maintained and found those that were not well looked-after to be unpleasant. Indeed, it seems that the levels of maintenance and cleanliness of the exterior surfaces of a building are more important preference factors than the design composition and materials of the façade itself. While maintenance is not specifically a design characteristic, the extent to which it can be perceived is influenced by design. The surface qualities of cladding materials, their durability and the way different components of a construction are detailed can all affect the aging process and some designs will perform better than others. At present, maintenance is not regulated by local authorities and yet it appears to have measureable effect on people's perceptions. Specialist expertise would be required if maintenance or anticipated aging are to be evaluated during planning approvals processes.



Figure 1: Partial elevation of the streetscape with the highest preference rating. A key factor for this rating is the height relationships between buildings.

Buildings that enable visual links to interior spaces, particularly at ground level, were also well liked; further analysis revealed that the extent to which buildings were liked was influenced by the activities people understood to take place in them. An example of a well-liked activity at ground level is a bar or café. Positive perceptions of such activities are enhanced when people can see into the interiors. While in many cases

the two factors of well-liked activities and a visually permeable façade treatment worked well together to enhance people's perceptions, they were not mutually dependent. Women exhibited strong preferences for retail activities, but it was not necessary to see into the building and the activities inside for the host building to be liked. Signage and building typology appeared to be suitable signifiers of the retail activities that caused the building to be liked.

At the scale of the street, the height relationships between buildings on adjacent sites were found to be the most important success factor. Streetscapes where heights varied within narrow bands of difference - between two and three storeys - were the best liked in the study and correspondingly, large variations - anything more than four storeys - between buildings were disliked by most. Building height consistency appeals to people's natural underlying preferences for ordered variety. Indeed, where building heights were absolutely consistent across the whole of the street, preferences were somewhat lower. With these findings, it would seem that blanket height limits across an urban area, which is not uncommon, may be problematic. Height limits may be set in conjunction with anticipated future growth as well as expert opinions about scale relationships with the adjoining street environment. Height limits are likely to be higher than buildings in the current environment, which may lead to disliked building to building relationships and streetscapes when acted upon. An approach that would enhance people's experience of the resultant streetscapes would be to map existing building heights along the street or in an area to enable heights to be prescribed on a site by site basis.

Plan continuity of building façades along the street edge is another well-liked streetscape characteristic. However, it appears that spatial definition and containment, in the sense advocated for by (Sitté 1979) and (Jacobs 1993), is not the strongest factor underlying people's responses. Their preferences for continuous facades along the length of the street appear to be driven by a dislike of blank and uninteresting flank walls on internal site boundaries. Side walls become visible where the facades of adjoining buildings do not align in plan or height. People's preferences are also linked to the notion of positive space, where the space between the building facades and the footpath is developed positively for use by pedestrians. People liked seeing coordinated visual interest across individual facades in a street. This feature corresponds to broadly-held aesthetic preferences for ordered variety. Green landscaping and positive open spaces in a street are very well-liked streetscape characteristics. These help to mitigate the negative visual effects that might arise from other poor relationships between buildings. An example of this is in relation to large differences in building height. Where these are mediated by open space, even an intersecting road, the otherwise negative visual effects are reduced and may even become positive.

A summary of the findings from this project is presented in Table 1. These findings are discussed in terms of physical characteristics and relationships, which welcome translation into specific design guidelines. For example, a guideline could be written requiring "the height of a new building to be the average of the heights of the two buildings to one side of the site and the two buildings on the other side of the site, when looking at the site from the street frontage". Such a design guideline would be supported with an explanation that through a survey of public preferences, it seems people prefer streetscapes that vary within a relatively narrow band of difference, no more than two storeys. Additional guidelines could be written and supported by other findings of the research.

Table 1: Summary of the preferences people were found to have for building and streetscape

Buildings	Streetscapes
People preferred traditional cladding materials, particularly those that can be repainted	Relationships between buildings where there was coordinated visual interest across the individual facades were best liked
People preferred buildings with discrete window openings	People preferred streetscapes where building heights vary within a narrow band
People preferred building facades that appear clean and well maintained	People preferred streets where building façades are aligned consistently
People preferred street level designs that enable visual engagement with the activities inside	Open spaces were found to mitigate potentially negative relationships between adjoining buildings
People disliked horizontally banded building facades	
The findings were inconclusive about whether "contextual fit" is considered when people evaluate individual buildings	

Regulating Change for Aesthetic Outcomes

While the findings address the knowledge gap identified by Holden (2012) and can ensure that urban design guidance is informed by a ground up understanding of aesthetics, several challenges remain to be overcome if urban streetscapes are to be managed effectively toward meeting people's preferences.

The first to be noted here is the challenge represented in the underlying agenda of the RMA, which assumes market-led development activity, free to innovate as long as the outcomes are manageable. The RMA and the planning context it creates lacks aspiration beyond the pillar of *sustainable management*. This is evident in the expectations that decision makers focus their decisions on whether any negative effects that a project would lead to can be tolerated or somehow mitigated (Dixon 2003, Baker, Sipe *et al.*, 2006). In this context, urban design and aesthetics fall far behind other, measureable effects such as changes to wind speed, water usage and shading onto adjoining properties. Consequently, design issues are marginalised in the vast majority of planning decisions because, where building form and location are controlled by clear standards, local authorities do not believe it is their role to comment on aesthetic matters (Hunt 2008). In New Zealand's planning context, aesthetics is considered "like a kind of froth, difficult to analyse and easy to blow away" (Lynch 1976: 68). Even with evidence-based guidelines, which could be informed by these research findings, the RMA is not conducive to proactive development control focussed on aesthetic outcomes.

A second challenge is that development and ongoing management of the built environment is administered through two uncoordinated pieces of legislation. In practice, the Building Act trumps the RMA when it comes to public safety, as it should. New Zealand is a seismically active country and many of the buildings contributing to attractive streetscapes are those built to the lower structural design standards of earlier building codes. Streetscape amenity continues to be reduced in many cities through removal or alteration of existing buildings in order to satisfy Building Act requirements. There appears to be greater clout in matters of public safety allowing demolition to be successfully argued without adequate resistance under planning legislation to require alternative courses of action. In some cases, this has led to severely negative effects, even after considering the contribution made by the replacement, but local planners have been powerless to intervene. Despite this, where owners are committed to retaining the economic and social values of older buildings, there are also many good examples of sensitive structural strengthening and adaptive reuse. In some cases, adaptive reuse and the cost of structural strengthening has been fostered through making additions to these buildings aided by innovative

practices of designers and builders. While maintenance sufficient to ensure ongoing viability of building systems is required by the Building Act, only those that affect life safety appear to be controlled because of resource limitations.

Local governments have few resources they can call on to help them manage for improved streetscapes and public space appearance. While aesthetics is recognised in the RMA as a contributor to amenity, it is over to local councils to advocate for aesthetics through their district planning instruments. During a Labour led government in the 2000s, the Ministry for the Environment (MfE) had an active agenda aimed at encouraging better urban design; the highly regarded but non-statutory Urban Design Protocol is perhaps the best known of the resources made available to urban planning and design practitioners. Following a change in government in 2008, the past decade has seen attention to urban planning and design diminished in MfE and other departments.

To address these challenges, it is helpful to look at the experience in other countries. Norway and Sweden are two countries with which New Zealand is at times compared. All building activity in Norway is administered under the Planning and Building Act 1965. From the time it was introduced, the Act had included a so called 'beauty paragraph', requiring authorities to exercise reasonable judgement about the aesthetics of new buildings. Even so, this expectation proved difficult to pursue in practice in regulatory processes. Then, in 1997 after having made a commitment to advocate for stronger place identity in towns and cities, the government issued a circular requiring that aesthetic considerations would be pursued in all private and public developments and at every level of the planning process. Aesthetics now has the same status under Norwegian law as the functional, structural and durability outcomes of a building project. The focus on aesthetics, backed up by clear legislation, creates an environment where local government planners can negotiate with developers from a position of strength (Pløger 1999). A similar building regulatory system, established under the Planning and Building Act of 1987, links across all planning and building activities in Sweden (Nystrom 1999). Through the Act and in the National Agenda for Architecture and Design, Sweden's government foregrounds aesthetic outcomes in all building work.

Local and county administrators in both countries appear to be resourced at levels that enable leadership and preparation of plans outlining agreed public/private aspirations for municipal areas and individual sites. The key planning instruments here are municipal plans and building development plans. Building development plans may be prepared for individual development sites, in consultation with the owner and the public, and are the main instruments used by regulators to communicate aesthetic ambitions for a local area (Pløger 1999). A review of the Norwegian and Swedish contexts for managing changes affecting streetscape appearance reveals that

- Central government actively supports aesthetically pleasing outcomes in legislation and with national policy guidance.

- Local authorities are resourced to enable positive planning of areas and individual sites, informed by consultation

- Aesthetic outcomes are given the same status as other, measurable performance matters in planning and building regulations

- Decisions are not made on the basis that a proposed development is acceptable i.e. not too ugly, but on the basis that all new and altered buildings must add to the visual qualities of the area.

The development control systems in these two countries appear to have overcome several of the circumstances that appear to limit achievement of well-liked streetscapes in New Zealand through regulatory planning processes. The findings of the study of people's visual preferences for design characteristics of buildings and streetscapes could, in conjunction with changes to the regulatory planning system, enable streets to be managed to enhance people's experiences of them.

CONCLUSIONS

Streets are the essential form of public space and deserve close attention from those charged with managing their quality. While considerable attention and resources flow toward managing design of and activities taking place within the public spaces of streets, somewhat less attention has been paid to actively managing changes to the buildings that define streets. Changes to the built environment are market led and in New Zealand the regulatory planning system has been created to assess effects. Consequently, the spatial configuration of public streets simply happens instead of changing to an agreed design goal. In a conducive regulatory context, design guidelines can be used as tools to help local authorities pursue well liked streets. Holden (2012) has noted that most design guidelines are developed through top down processes, informed by normative theories of good design. He argued that to be effective, design guidelines should also be grounded in the local, referring to people's expressed design preferences.

The paper reports on the outcomes of a project designed to understand which design characteristics people find most appealing and which they find to be least pleasant, at the two scales of individual building and of overall streetscape. It is noted that people prefer traditional design expressions, comprising monolithic street facades and discrete window openings. This confirms theories that people prefer scenes that provide moderate levels of visual interest within overall patterns that can be ordered. This preference pattern also extends to those expressed for overall streetscapes, where people preferred height relationships between buildings that create variations of between one and three levels over those that were absolutely consistent and over those that had large differences of height. The findings of this research can be used to inform ground up design guidelines, reflecting people's known preferences.

The paper has also discussed challenges to implementing proactive management of urban streetscapes through development control processes. It would appear that similar challenges have been faced in other countries, with Norway and Sweden cited here. Their regulatory planning systems and practices could provide guidance to central and local government leaders in New Zealand if there is a will to manage public street spaces toward people's expressed preferences.

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