Visual Aesthetic Perception and Judgement Of Urban Streetscapes

Gjerde, M.
School of Architecture, Victoria University of Wellington, New Zealand
(email: Morten.Gjerde@vuw.ac.nz)

Abstract

The past century has seen tremendous change in the way building projects are conceived, built and evaluated, factors that are also affecting the appearance of our cities. The visual qualities of well liked settings are known to include richness and variety tempered by perceptible underlying structure and clear associational meanings. Many people are of the opinion that contemporary cities fall well short of achieving this standard, laying the principal blame for this failure on contemporary transformation processes. Opinions about these environments are usually voiced by experts but can they speak for everyone? What are the views and aesthetic preferences of the broad range of people who actually use the city? The research is cast in these questions, seeking first to understand whether there are built form characteristics seen across numbers of buildings that are preferred to others. Delving deeper, aesthetic preferences are also known to be subject to cultural influences and the literature suggests that designers have markedly different preferences to those of people who have not been professionally trained. This issue is also tackled in the research. The paper reports on the results of recent research evaluating perceptions of and preferences for urban street scenes that exhibit a range of different characteristics. The opinions of the lay public as well as design and planning professionals are collected for comparison. Based on data from 200 survey responses and a focus group discussion, the findings identify built form characteristics that are deemed to foster well liked urban settings as well as those that should be avoided. One of the principal outcomes of the research is a tool to help designers and development control authorities rate the quality of street scenes, which can inform the design process and enable visual impacts of projects to be understood over time.

Key-words: environmental aesthetics, townscape, urban design guidance

1. Introduction

With the notable exceptions of death and taxes, it is often said that there is nothing more certain than change. Change helps ensure continued viability of virtually every man-made and natural system. In urban environments, change is seen to be the lifeblood of economic, social and political systems that underpin society as well as of the built fabric that accommodates and facilitates activity (Dovey 2001). Kevin Lynch (1960) reminds us that no city is ever considered complete; the details at every morphological level are in constant flux. Change itself, or at least the consequences of change, also provides sensory pleasure, as citizens are able to temporally position themselves and the environment and for history to be traced through the artifacts from earlier periods (Lynch, 1972, Carmona et al., 2003). However, contemporary attitudes shaping many towns and cities have not always been sympathetic to the inescapable nature of the built environment and therefore the general public must also bear the brunt of environments that have poor visual qualities (Carmona and Tiesdell 2007). Throughout design and review the natural focus is on the building. That is to say, the first consideration is whether the building is of a suitable standard, irrespective of the setting (RFAC 1994). Following this a relationship to the context is probed, asking the question, 'Will this project fit here?' (RFAC 1994, CABE 2006). Perhaps a more appropriate question is 'what are the qualities of building that this setting demands?'

The appearance of the physical environment is not simply an abstract aesthetic phenomenon, it does matter and the perceived quality depends on the evaluations of those who regularly experience it (Sanoff 1991, Nasar 1998). Yet when consulted, the people are united in their dislike of the transformations that cities have undergone in recent times (Bentley 1999). The natural state of fluidity has at times been both ignored and challenged by many writers and practitioners, none more so than during the high Modern era when the city was seen as a canvas for comprehensive artistic endeavour. Prominent among theorists was Le Corbusier (1987), whose polemic designs and writings were couched almost exclusively in terms of aesthetics and functional idealism. Little regard was paid in his work to the influences of existing built fabric or to genuine human needs(Carmona and Tiesdell 2007). Where such theories have been brought to manifestation, such as in comprehensive urban renewal projects in British and American towns after WWII, the results have been rightly criticised as sterile and placeless. Referring to monumental projects emerging in post-war North America, Jane Jacobs and Robert Venturi stressed the need for physical, social and commercial variety in urban settings.

On the other hand, unrestrained variety can approach visual chaos, a condition that is also problematic. Habraken (1994) describes changes in attitude toward everyday environments that came with professionalisation of the design disciplines. Well liked, traditional settings that would generally comprise of vernacular buildings of relatively consistent height, form, composition and materials have been transformed into environments where every project is seen as an opportunity for architecture with a capital 'A'. He argues that contemporary practice is preoccupied with singular, individual buildings to the detriment and confusion of the public realm. At one end of the townscape spectrum are monotonous settings inherent to large scale developments and at the other is the discordant chaos that results from buildings that are designed in isolation, with each seeking to be the centre of

attention. This paper examines the visual effects arising from contemporary urban transformation practices.

2. Research design

A framework for the study is developed out of the literature in the field of environmental aesthetics. Cuthbert (2006 p. 174) posits that an aesthetically pleasing experience is one that provides pleasurable sensory experiences, a pleasing perceptual structure and pleasurable symbolic associations. This definition provides a useful guide as to the different levels of aesthetic perception that are necessary to be able to judge a scene or setting. Aesthetic experience can therefore be conceptualised in three levels; sensory perception, cognition and meaning.

The two most important formal factors affecting judgement are *order* and visual *interest* that tends toward ambiguity and complexity (Rapoport and Kantor 1967, Nasar 1994). Gestalt psychology helps us to understand the innate human desire to resolve visual stimuli into ordered patterns. Coherence of overall building shape, patterns developed in building facades and strong compositional elements such as verandahs are but some of the formal characteristics that can enhance sense of order in a scene. Stimulation of interest must be managed to ensure the mind is not taxed in visual perception. Nasar (1994) notes that moderate stimulus levels will generate positive aesthetic experience until reaching a level where pleasure begins to diminish. The built environment provides stimulation of interest at three scales, which are conceptualised as silhouette (complexity of the outline), form articulation (three dimensional modelling) and surface texture (Stamps 2000). Surface interest can be generated by variations in colour as well as in textured patterns. Colour is of particular interest as it can stimulate aesthetic pleasure at subconscious as well as cognitive levels of perception.

Environmental stimuli are also processed and aligned with mental templates that develop through personal experience. This is how we come to understand that a rectangular plane recessed in an opening in a vertical surface is a door. Cognitive processes help us understand the environment and affect aesthetic judgement, particularly when we assign value to the derived meanings (Weber 1995). This can best be understood by the example of a building that is clearly recognisable as a church. The meanings and values that the viewer may associate with this typology can be strongly positive and so influence aesthetic judgement. Powerful meanings attach to the way we understand the environment or a building to be used. Not only do people evaluate the nature of the activities they understand to take place within, they are also influenced by the degree to which they can imagine themselves able to participate in those activities. Therefore public buildings can have very positive associational meanings for many people. Construction materials, standard of detailing and standard of maintenance can convey messages about the status of the building owner or the way a building would feel to be inside (Alcock 1993). With this background, informed by the literature in the field of environmental aesthetics, an analytical framework is derived (figure 1).
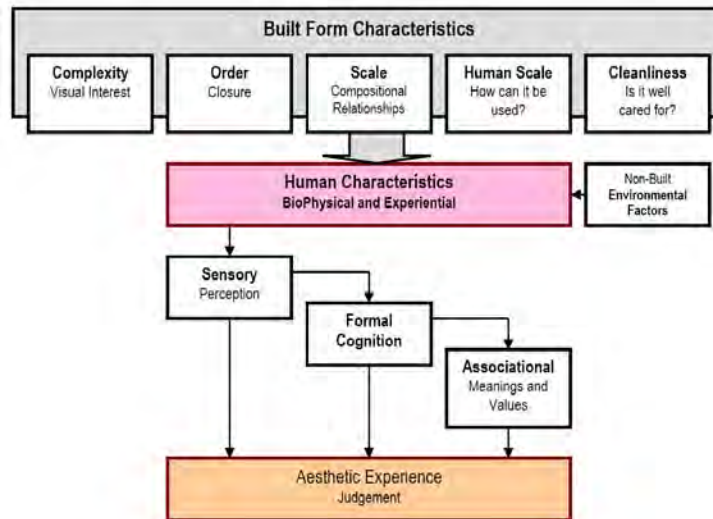
Figure 1: Diagram of the analytical framework developed in support of this research.

The framework lists characteristics of built form that may be perceived by the viewer and around which judgement is made. The aesthetic experience is informed by the viewer's biophysical and experiential makeup. Judgement is formed around immediate sensory, cognitive appraisal of the scene and alignment with schema formed through experience and appraisal around meanings and value.

It was determined that a survey of people's opinions would be conducted to enable people's aesthetic preferences to be understood by way of objective data. To stimulate responses, six urban streetscapes were selected to be represented in two dimensional format. While it is clear that experience of the built environment is four-dimensional (including time), previous research (Groat 1988, Nasar 1998, Stamps 2000) has found there to be a useful correlation between preferences expressed around two dimensional representation and preferences expressed in the field. Photographic representation would enable data to be generated efficiently such that a large response could be anticipated. Six actual urban street scenes were presented, with the final selection made to ensure that a range of contemporary building types and relationships would be represented. Extending the techniques used by Portella (2007) in her investigation of responses to urban signage, individual buildings were digitally photographed and stitched together to create an accurate elevation of each scene. Photoshop™ software was used to correct the perspective of each image and to stitch the individual images. A pilot study provided useful feedback on the presentation technique, which was refined for production of the final scenes. Each scene was also provided with an angled view taken at each end to enhance respondent perception of three dimensional modelling. The six scenes are illustrated in figure 2.

To enable people's perceptions to be correlated to specific characteristics of the scene a tool to measure the characteristics was developed. After canvassing a number of options, the analytical method developed by Reeve and his colleagues (2007) for longitudinal evaluation of townscape provided a foundation for this tool to be developed. Designed to be used objectively by one with expertise in the field, the tool builds up a rating for a particular scene in respect of the five discrete

headings of the analytical framework; visual interest, sense of order, communication of human scale, evidence of human activity and maintenance. The tool uses a ten point scale to enable greater distinction between the numeric values generated. A survey questionnaire was developed around the same list of attributes, refined to limit the time commitment by respondents.
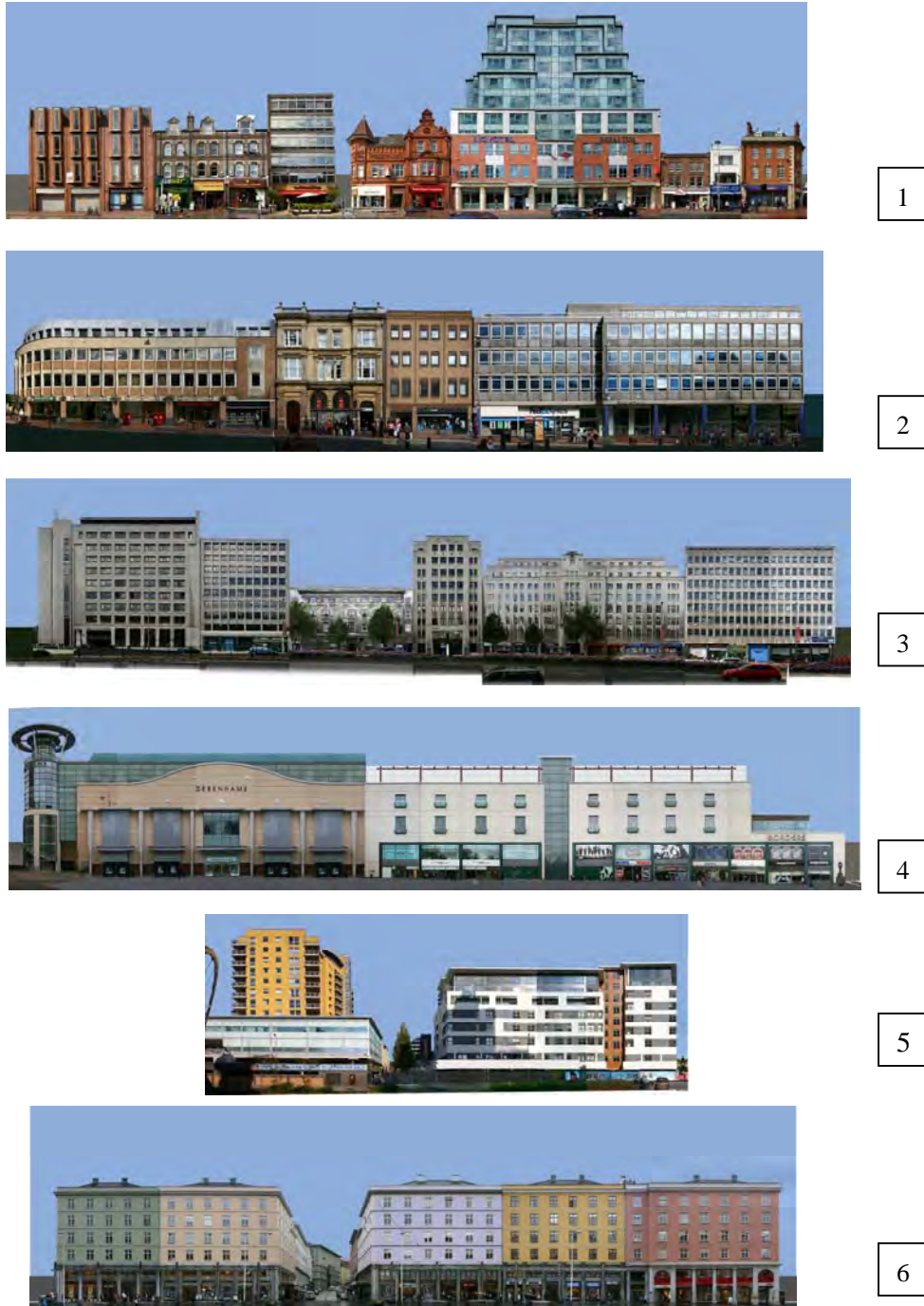

Figure 2: Scenes 1 to 6, running from top to bottom. The scenes were selected to provide a range of built form characteristics that aesthetic judgement could respond to.

In addition to overall pleasantness, a descriptive term from Nasar (1994) related to calmness and degree of fit, opinions were sought on

- the relationship between building heights – silhouette

- architectural style – associational meaning

- materials and finishes – sensory perception and associational meaning

- colours - sensory perception and associational meaning

Respondents were also asked to rate their overall preference for the scene and to identify any buildings that did not fit, with the additional request that they provide a brief rationale for their response.

3. Findings and discussion

The survey returned 199 formal questionnaires with a further eight judged informal. The response rate was higher than anticipated and could be attributed to a very ambitious two-week period during which displays were set up in six fixed locations for up to ten days each. Gender representation was effectively equal and responses were received from people in a wide range of age groups, occupations and education levels. Indeed, the sample includes a relatively high number (83%) of people with tertiary qualifications.

Each of the six scenes was scored in-situ using the townscape evaluation form. A summary of the scoring is shown below in table 1.

Table 1: Summary townscape scores for each of the scenes, as rated by the researcher.

	Visual Interest	*Order*	*Combined order and complexity*	*Human Scale*	*Human Activity*	*Maintenance*
Scene 1	**65**	*36*	***101***	*25*	*17*	*13*
Scene 2	*35*	*44*	*79*	*21*	*19*	*15*
Scene 3	*34*	*38*	*72*	*22*	*18*	*13*
Scene 4	*23*	*42*	*65*	*13*	*10*	*24*
Scene 5	*36*	*28*	*64*	*22*	*11*	***25***
Scene 6	*29*	***56***	*85*	***33***	***23***	*20*
Max	***90***	***70***	***160***	***50***	***30***	***30***

The data raise a number of interesting points in respect of the research aims. Scene 1 generated a relatively high combined score for *order* and *complexity (101)*, the principal formal factors affecting aesthetic judgement. However, it was not regarded highly by the respondents. The next highest

combined score was that of Scene 6 (85), which these findings also reveal to be the scene favoured overall by most people by a very wide margin. This comparison may support Berlyne's (1974) suggestions that too much stimulation – in this case as form complexity – leads to negative hedonic values. Indeed, this could be a case approaching sensory overload. However, another interpretation is that the scoring apparatus requires adjustment to reflect relative impact on judgement by complexity and perceptual order, as the mean scores for *pleasantness* (2.78 on scale of 5) and overall preference (2.66) situate Scene 1 somewhere in the middle of the other five. None of the categories or individual scores in the evaluation is currently weighted but this certainly warrants more study in a follow-up to this research.

Table 2: Comparison of pleasantness scores for each of the six scenes, expressed as percentages.

	Strongly dislike	*Somewhat dislike*	*neutral*	*Somewhat like*	*Strongly like*
Scene 1	*18.2*	*38.0*	*12.0*	*24.0*	*7.8*
Scene 2	*13.0*	*40.6*	*26.6*	*17.2*	*2.6*
Scene 3	*14.6*	*22.4*	*26.0*	*32.8*	*4.2*
Scene 4	*21.6*	*26.3*	*26.8*	*19.5*	*5.8*
Scene 5	*21.6*	*35.8*	*26.8*	*12.6*	*3.2*
Scene 6	*3.1*	*4.2*	*10.4*	*46.9*	*35.4*

One of the lowest scoring scenes in terms of visual interest was Scene 6, where all five buildings, although articulated in façade treatment by way of fenestration, are generally of similar shape, height and position. Each building in the scene is distinguished mainly through colour. Yet the scene has the highest approval rating of any of the scenes presented, with the mean *preference* score registering some 34% higher than Scene 1 (4.07 compared with 2.66). This provides further reinforcement of the notion that perceptible order is the key component of a pleasing aesthetic experience (Weber 1995, Smith 2003).

In addition to having the highest score for *order*; Scene 6 also led the way in the categories of *human scale* and *human activity*. A high score in the former category is enabled by a nearly transparent and fully public ground floor, both in terms of physical accessibility during business hours and visual accessibility throughout the day. The lowest scores for *human scale* and *human activity* were achieved by Scene 4, which is the public face of a large private shopping centre. Contributing strongly to this result is the lack of openings at upper levels. Openings provide opportunities to envisage the types of activities that may occur within. The designers have suggested clues by way of external balcony elements but these are all inaccessible and several of the glazed areas that the balconies sit in front of have been blanked out. This is to be expected, in terms of orientation of the shop to the internal mall. Effectively the wall facing the street is the back wall and usually used for storage. More than 46% of the respondents found this scene to be *unpleasant*. Some focus group participants voiced concerns over perceptions of scale and activity in this building, expanding on the

surveyed opinions of nearly half of the respondents and corroborating Rapoport's (1982) views on building use as an important factor in forming meanings.

Scene 5 rated the highest on *cleanliness* and *maintenance* with Scene 4 only a point behind on 24 out of 30 possible. However, the mean scores for *overall preference* and *pleasantness* for Scene 5 ranked the lowest of all, on 2.40 and 2.37 respectively. This is an interesting result that again may call into question the extent to which cleanliness and maintenance are taken into account when evaluating urban street scenes. Rapoport (1982) has suggested cleanliness to be one of the major associational factors in judging aesthetic preference. An interpretation here is that cleanliness and maintenance factors may not rescue perceptions of a place that otherwise falls substantially short of communicating how and whether a building can be used in the most critical zone - the ground floor. Scene 5 scored very low in terms of *human activity* largely because of a completely inaccessible – physically as well as visually - ground floor.

As noted, the *pleasantness* and *overall preference* scores for Scene 6 stand far ahead of the mean scores for the other scenes. The calculated mean scores are only useful for rough comparison, given that these are based on ordinal data. More compelling comparisons can be made using a percentage based split of scores for each scene. 82% of those sampled found the *overall* response to Scene 6 to be positive, while 53% were negative about Scene 2 and 56% negative about Scene 1. Several key factors can be considered to have influenced these results.

A focus group suggested that how buildings are used is important in evaluating preference and in Scene 6, the ground floor is virtually open, inviting to those in the public street space. The ground floor of Scene 2 is dark and foreboding, even though much of it is also visually open. The area is dark because of the deep overhangs along the length of the street and architectural styles that incorporate heavy colonnades.

In contrast, the colonnade along the front of Scene 6 is light and airy, supporting an almost transparent glass canopy that protects pedestrians. This colonnade can also be seen as a uniting feature, adding an ordering element in the form of a datum (Ching 2007). Above ground level the windows of the largest building in Scene 2 are reflective, limiting visual access to the internal arrangement, limiting further still a sense of what may take place inside. The two scenes present similar orderly silhouettes and have patterns of distinct window openings. While the buildings in both scenes may be of a similar age, another obvious difference is in the appearance of cleanliness. The painted façades of Scene 6 appear to add sparkle and can be refreshed every so often. In contrast the brick and concrete facades of Scene 2 appear old and tired. This is also borne out in the data, with more than half the respondent having negative reactions to the external finishes of Scenes 1 (53% neg) and 2 (54% neg) whereas 80% felt positively about the *finishes* of Scene 6.

More than one-quarter of the respondents have a professional interest in urban transformation, either on the production side as designers or as planners, controlling design outcomes. A strong motivation in the research is to register whether there are differences of preference between these groups. While there is anecdotal evidence of differences between these groups, the literature is not conclusive.

As a group, architects appear to express their negative views more strongly than others. This can be observed in a comparison of *overall* responses to Scenes 1 and 4. More than 35% of all architects feel strongly negative about Scene 1 and nearly 40 % feel the same way about Scene 4. In comparison, the strongly negative responses to Scene 1 for both planners and the lay public lay in the 14% range. If we group the negative categories for each however, the scores begin to even out. That is to say, while the three occupational groups have similar overall feelings about Scenes 1 and 4, architects seem to have stronger convictions of opinion.

At the other end of the scale, three times the number of lay people feel positively about Scene 1 as do architects. This may be attributed to the number of people who respond positively to the warm colours of the masonry, as suggested by some respondents. It may also be attributable to low perceptions of order, where the 36 points awarded for order on the townscape evaluation form represents the second lowest total after Scene 5.

A high percentage of planners (45%) appear to have difficulty with the *architectural styles* in Scene 3, which are almost uniformly neo-brutal and typical of those favoured by the civil services in the 1960s and 70s. Some 25% of the non-professional public expressed negative views about these styles but less than 10% of the architects did. The negative views of planners and public contrasted with ambivalent and positive opinions expressed by architects and corresponds with anecdotal evidence that designers feel more positively passionate about exposed concrete structures. A big factor in the perception of settings containing raw concrete structures is that of cleanliness. As a largely monolithic material with low colour value, patina on concrete can quickly appear and be difficult to remove. The *cleanliness* score of 3 out of 10 put this scene at the bottom of those evaluated.

The experience of evaluating the six scenes using the research tool suggests that there may be benefits in addition to providing comparison between the nominated factors. In a similar way to sketching, use of the tool on site encourages the reviewer to note and evaluate details. Too many critical details are missed in contemporary practice through mindless recording of images for viewing later back in the office. Designers may benefit from using the tool to help them understand the structure and details of a setting in which they are working. The tool may also be useful for longitudinal evaluation of the success of interventions over time, similar to studies carried out by Reeve and his colleagues. Longitudinal studies can be made with respect to a particular place or across many places. The growing usefulness of post-occupancy evaluations around the world can be traced in part to the now extensive database that has been established. New evaluations can immediately be benchmarked against international standards, enabling the results of any one evaluation to be contextualised. A rating tool for townscape qualities, coupled with an understanding of aesthetic evaluation of these qualities, could enable a similar research database to be set up for urban evaluation.

4. Conclusions

It appears that the public have discerning tastes in respect of the built environment. The investigation has shown that people care and that they form strong preferential views. There appear to be two principal factors affecting visual perceptions of urban settings. Firstly, people generally seek

stimulation that piques their interest, but only up to a point, and underlying this should be a clear sense of order. The research confirms the majority of theories, both speculative and empirical, on visual perception; visual stimulation tempered by order is preferred. Secondly, people seek to project themselves into a scene to understand how they themselves would use the buildings and spaces. This refers to another level of perception, where meaning and value are assigned to the image. It seems the most important, perhaps universally accessible, aspect of meaning is that of use.

It appears that efforts to guide new development into appropriate areas should be directed at encouraging designs that enhance levels of visual stimulation in a setting. However, as the research also reveals that too much complexity is poorly received, interventions should look for clues in the setting to which the new form can relate. Wilful, self-referential and contrary buildings are not tolerated in the main as the public, including design professionals, also seek ordered relationships across a scene. New buildings should be visually accessible to enable use and activity to be understood and engaged with. This is particularly relevant at ground floor level, as the research also shows that buildings that do not enable perceptions of public activity at this level are roundly dismissed. Conversely, settings that have publicly accessible ground floors are generally perceived favourably.

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