

UNDERSTANDING UGLY

IAN ELLINGHAM, MBA, PHD, FRAIC





UNDERSTANDING UGLY by IAN ELLINGHAM

In this insightful book, Dr. Ellingham explores research about the visual factors that determine how a building is received – sometimes esteemed by one group and despised by another. The rich collection of research done in the universities and research institutes too often remains within academic publications and rarely reaches architects, developers, planners or the people who use buildings and cities.

Dr. Ian Ellingham, an architect and land economist, has increasingly focused on research, teaching and writing after a career in property development. His research has focused on two areas: decision making under uncertainty, and the human response to the built environment. He is an associate of Cambridge Architectural Research, a United Kingdom-based think tank and consulting group.



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As people respond to building design, they are measuring some physical reality against a personal mental model of some imaginary, and yet unimaginable perfection; something that cannot exist, cannot be realised, and cannot even be properly articulated. Designers can hint at it, but for each person that design utopia will be different.

**Do you feel this building is Ugly? Beautiful?
Challenging? Bizarre? Something else? Why?**

***This book will give you insights into your own perceptions,
and those of others.***

Design is important, and we spend most of our time in designed environments. Sometimes we notice them, often we don't, but we are always affected by them, and, when prompted, will often express very strong opinions about them. *Understanding Ugly* explores the intense, and sometimes curious relationships between people and building appearance, and what researchers have discovered about the matter. In particular it will address the question of why some buildings may be perceived as ugly and others as something else.

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PREFACE

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ABOUT THE PHOTOS

The photographs are the author's own, taken at various times over the past decades, except for:

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Tycho Brahe Planetarium, Copenhagen, Denmark. Opened 1989. Knud Munk, Architect.

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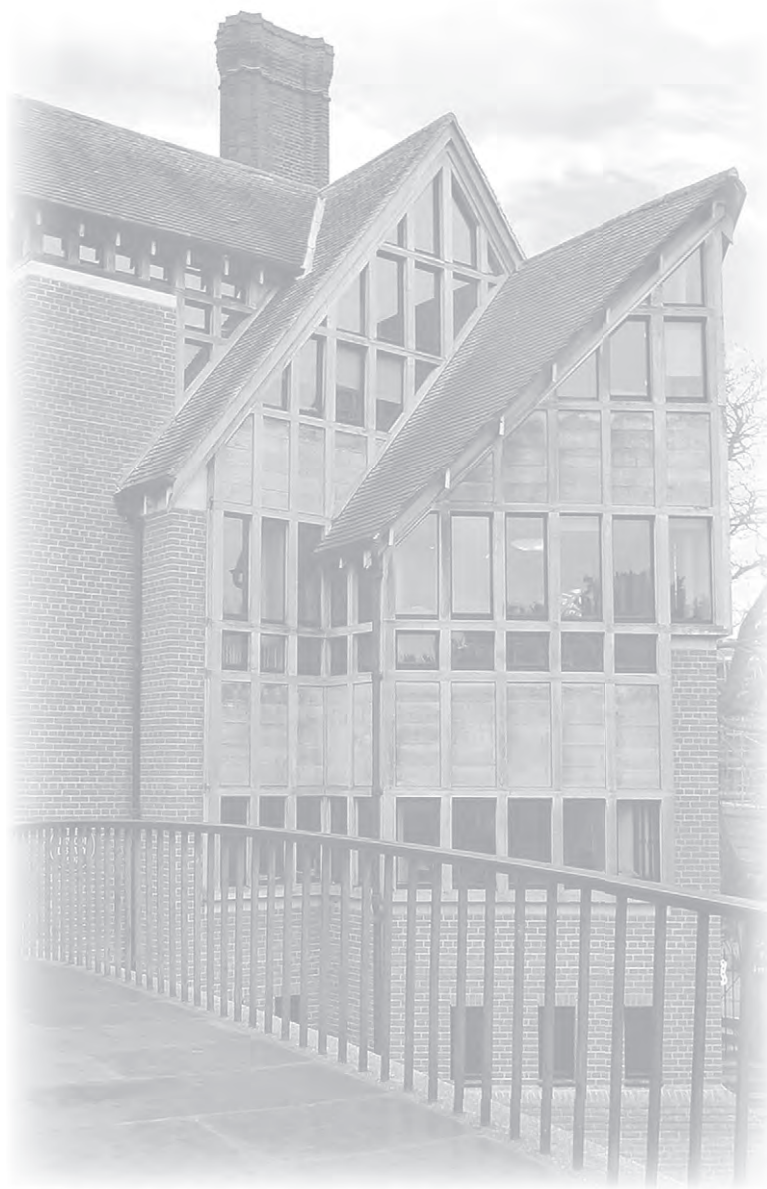
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Jerwood Library at Trinity Hall Cambridge, UK. Completed 1998. Freeland Rees Roberts, Architects.



INTRODUCTION

Architecture: An art and a science?

Like so many people, in my late teens I made a momentous decision. Mine led to a protracted journey towards the understanding of building design. I was interested in buildings and cities, but my school offered little career advice. I was allowed three choices, so I applied to two programmes in architecture, and one in engineering. The interview at the local school of architecture should have cautioned me about what I was getting into. The experience was bizarre: it was scheduled for 7:00 p.m., but started sometime around midnight. The panel's biggest concern was my stance on the war in Vietnam. My priority in school had been to survive and achieve decent marks, so I had spent little time considering the matter or gathering information about it, and had developed no real opinion at all about Vietnam – obviously not the right response. Soon after, I received an offer of admission from a relatively new school of architecture in Ottawa, and took it, so never knew what happened to that engineering application. Accordingly, I entered into a discipline in which decision-making can take unexpected turns, and often the collection and analysis of evidence can be subordinate to personal belief.

Architecture school was an enigma. Much of the programme was agreeable and I did well, but something was lacking – how to evoke positive design responses (presumably without spending too much money). I anticipated finding a set of somewhat objective guidelines that might offer guidance, but these did not materialize. Insights of even the recent modernist past had been abandoned, and it sometimes seemed as if nothing had replaced them. My fellow students contemplated the work of some of the great architects: I remember one classmate who was enamoured with the work of Louis Kahn (1901–1974), and while I personally liked Kahn's creations, I did not know why, nor did I know how many other people responded similarly.

It was generally accepted that a positive user response would somehow result from making all the other aspects work – if it functioned well, it must be okay. Of course, that is oversimplifying things – but something more measurably scientific about the human factor was missing.



Exhibition outside the Architectural Association, London. The author spent one of his undergraduate years at the AA, and participated in the pushing of the limits of architectural thought that takes place there.

Architectural education has two strands: the school experience and the work experience. I spent my summers (and other breaks) with a medium-sized architectural practice. Its speciality was designing accommodation for senior citizens, principally care facilities. That industry was in a period of massive transition,

and the clients ranged from religiously-based charities to some very curious, and sometimes dubious, entrepreneurs – one was later convicted of murdering his wife. The architectural practice was spread over a large geographical area, and one of my roles was to drive a senior partner while he worked in the car. I was envious of my fellow students who obtained jobs in more prestigious firms, but ended up seeing, in detail, the adventures of this architect – who not only designed the buildings and worried them through their construction, but also put some of the deals together. I became more interested in the business of development than in design. After graduation I worked for a regional developer – taking buildings through the development and construction processes. Still searching, I enrolled in graduate business school, and did my two years, and thrived there. In facing the complex, ambiguous and ever-changing world of business, the management discipline pursues the collection and analysis of data, in order to make better decisions. It strives to do that even when data is limited or suspect, making use of whatever can be obtained.

After that came a number of years and numbers of projects. I managed to design very little, but became reasonably capable at assembling the nuts-and-bolts of projects – the land, the money, the marketing, the approvals and the set-up of operations. Through this role as a development manager, I repeatedly saw the importance of visual design in achieving market acceptance of real-estate products, but solid guidelines were still missing – and elusive. After a decade, I needed a holiday, so I told my business partner to look after things, and did a one-year Master of Philosophy in Land Economy at Cambridge. The course approached matters of land and buildings in a different way – more the scientific, evidence-based approach I had hoped to find as an undergraduate. I became interested in the ageing processes affecting buildings, and wrote the required papers. Then, refreshed, I returned to consulting in Canada.

After a couple more development adventures, I decided to do a PhD. I applied to the Department of Land Economy, but the person I thought might be a good supervisor took that opportunity to retire. A supervisor was found who was associated with an architectural research group. We met in a pub, chatted, found we had a good fit, and my family and I returned to Cambridge. My research started with questions about building and urban ageing processes, but it soon became apparent that they were intertwined with matters of human preference. I became serious about exploring the fundamental questions I had flirted with as an undergraduate.

The questioning about why we, collectively and individually, might prefer one thing over another is an exercise that extends back at least into classical antiquity. Yet we remain far from being able to definitively answer what causes the design of a building, a painting, a car, a coffee-maker, or a certain type of wine or music to evoke a positive response. There is no shortage of opinion. What is usually lacking is evidence, analysis and understanding. Is there a real measure of human response to building design – or is it just a matter of personal (perhaps expert) opinion?

This is an important matter. Now that issues of sustainability have come to be so significant, it is reasonable to ensure that what we create is esteemed – both when new and over time, in particular with respect to buildings, which are capable of remaining productive assets for centuries. It can be wasteful to demolish buildings while useful life remains in them. In a number of projects done at Cambridge, it has appeared that buildings that are esteemed aesthetically seem to last longer. If a building is esteemed, people seem likely to upgrade and refurbish it. If it is seen as an eyesore, demolition is more likely to be a feasible alternative.

From a scientific viewpoint, questions about building preference can be regarded as similar to questions in other disciplines, and can be explored through insightful experimentation. In 1600, there were many physicians, but they worked primarily on the basis of received tradition, and little of what they were doing had been put through the filter of what we now see as modern science. As people increasingly looked to real evidence, there were revolutions in medicine. This change was not always easy. Some simple and immediately observable techniques could be highly effective, but acceptance came slowly. In 1847, Hungarian-German physician Ignaz Semmelweis (1818–1865), working in Vienna, found that if physicians washed their hands before undertaking deliveries, the maternal death rate was dramatically reduced. This simple innovation was opposed by many of his contemporaries – it was not part of received tradition. Semmelweis left his legacy in a number of ways, including the ‘Semmelweis effect’, being the all-too common human tendency to deny new knowledge when it conflicts with an established belief system. While we now have an excellent science of materials and structures, building designers still lack an evidence-based body of knowledge that can guide them in creating buildings that will be appreciated by most people.

It is not uncommon for built development projects to proceed with little or no evidence about how the users might respond to the design – even when the building serves a marketing purpose. A university building itself may be one factor in attracting foreign students – or their parents, who might be paying their tuition fees. The university is likely spending

considerable amounts to create a building without undertaking any meaningful market research at all. In most business endeavours that would seem ludicrous, but it is a very usual practice in building design.

Human response to building design is difficult to study, and the results are rarely as clear as those discovered by Semmelweis; however, good research does exist, even though most designers and developers do not encounter it, or they ignore it. There are innumerable questions that can be posed. Why do we respond as we do? Why do different people have different preferences? Why do we feel so strongly about them? Why do we spend so much money to configure environments? Why do buildings end up as they do? What are architects up to, and why? And, how do we create buildings that will be esteemed by large groups of the present and future population who might encounter them?

These questions are important because buildings are important. For many families, their home is their most important single asset, and many spend considerable amounts to individualize them. The great recession of 2007–2008 originated in the American housing market, which, in part, resulted from a propensity to overconsume housing, ultimately threatening the global financial system.

This book is based on a stream of research findings and is intended as a journey into a fascinating aspect of the human mind and its relationships with buildings, with the anticipation that it will help all readers understand their own responses to the structures and urban spaces they encounter every day, and enhance their enjoyment of them. For the managers, planners, financiers, developers, architects, estate agents and designers who create buildings, the intent is to present and organize research findings to enable them to create better built environments.

“ **Note on images: Although dealing with visual matters, this is not an architectural picture book. Black and white images are included, however, in the age of the Internet, numerous images of almost every building discussed herein are readily available.** ”



The Auditorium Building, Chicago. Completed 1899. Adler & Sullivan, Architects.



CHAPTER 1

Quandaries

■ Wren and wondering

When people discover that I am an architect, a common response is to ask what I think about some building or other. Of course, they really don't want to know my opinion – they want to express their own, and, if I do offer a comment, they usually take great delight in telling me that I am obviously wrong. It is easier for me to turn the question around and ask: 'what do you think about it?' When subsequently I ask 'why do you think that?' there is usually a pause and some comment that suggests they believe their personal opinion should be widely held and the reasons self-evident. But they aren't. Usually people cannot give good reasons – and this is perplexing, given that personal beliefs about what is ugly, and what is not, are usually very strongly held. But, having done research, and much speaking and writing in the field, I am actually interested in their answers.

It is fascinating that in the twenty-first century the collection of real evidence about human response remains foreign to most architectural culture, while it has become commonplace in other disciplines. While there are reasons for this, many academic researchers have identified patterns. They just need to be translated into forms that practitioners can use. This translation is one objective of the following discussions. Of course, architecture is incredibly varied, so not all the findings will apply to all buildings – it is for the practitioner to determine how to apply those that pertain to their own individual projects.

It should not be surprising that Christopher Wren (1632–1723), that great scientist, physician, astronomer, architect, project manager and political manipulator, would wonder about the very fundamentals of building appearance – his interests embraced structural techniques and project management, as well as the nature of Saturn’s rings and the functioning of the spleen. Wren observed and noted the complexities of attitudes towards buildings and he speculated as to whether esteem for different designs was established through absolute and permanent sets of values, or whether it was a phenomenon based ‘on the laws of society and man’.¹ Is beauty somehow fundamental, meaning that it can be embedded in a design? Or is it a manifestation of the various contexts in which we were brought

up and live, or is it epigenetic – resulting from something in our genetic makeup and how it functions?

Unfortunately for Wren, and for us, he went no further: in the seventeenth century the concepts and methods necessary to explore this convoluted field had yet



Wren Library at Trinity College, Cambridge. Completed 1695.

to be developed, so building design and construction progressed without the sort of answers that would satisfy a scientist.² Of course, even if he had had the tools he might not have used them: historian Sir John Summerson noted that, although Wren had many activities and insights, he seldom pushed his non-construction undertakings through to conclusion.³

¹ Soo. 1998. p.127.

² Jardine. 2002. p.128. *Toward the end of his long life, Wren said he regretted spending so much time on ‘rubbish’ – meaning architecture; that he should have directed more effort to medicine.*

³ Summerson, 1963.

Even after suitable concepts and methods had been developed in statistics, psychology and market research, it was the development of the computer that made serious investigations into design response feasible. Laptop computers now perform statistical operations in seconds that in the early 1950s took a room full of undergraduates a whole summer of cranking adding machines to complete.⁴

In a practical vein, it is possible to express Wren's question differently, in a way more suited to the twenty-first century. How should the resources consumed in creating a building (including money, materials, energy and human effort) be allocated to achieve the best response from the populations who will use or encounter it? There is little reason to direct resources to an aspect of a building that will show little or no return, might detract from the overall result, or shorten its life.

Some 300 years later, Wren's questions are still valid – what exactly makes a building esteemed – or ugly? Wendy Steiner of the University of Pennsylvania, writing in 2001, asked similar questions as Wren, albeit using different language, and with the benefit of three centuries of discussion and, more recently, experimentation: 'Are we taught to identify certain traits – in people, nature, art – as beautiful, or do we come into the world wired to admire?'⁵

“Are ‘certain traits’ universal, fixed and permanent, or are they mutable? Where do our perceptions, interpretations and preferences come from? And ultimately, how should greater understanding of them inform our designs? If designers intend to convey some meaning, is the meaning being understood as planned by those for whom it is intended, or misinterpreted or even completely lost? Do rules exist that can lead us to better architecture? How do we, as civilizations, integrate the subjective and the objective – two aspects of design that often remain apart? And, as always, the overwhelming question: Why?”

⁴ Discussions in 2000, with Professor Terence Lee (1923–2014) about his dissertation of 1954.

⁵ Steiner, 2001, p.xvi.

Lawyer, playwright, politician and academic Sir Henry Wotton, MP (1568–1639), offered plenty of mostly forgotten words of wisdom. However, among his works was *The Elements of Architecture* (1624), an interpretation of *De architectura* (On Architecture), by the first-century Roman builder Marcus Vitruvius Pollio (usually just called Vitruvius). From this, one phrase continues to flow through architectural thinking, ‘Well building hath three conditions: firmness, commodity, and delight’, a paraphrase of a line in the earlier book. Rephrasing yet again, a successful building will not collapse and will survive the elements, will be useful (presumably for the purpose for which it was intended), and the design will please someone – probably the individuals to whom it is directed, all done responsibly with respect to money expended. It is important to recognize that in more recent times, ‘delight’ clearly encompasses more than just pleasing people. Shopping centres are composed to both delight and seduce the shopper, and, to an extent, the investors. Is that ‘delight’ or ‘commodity’? In the twenty-first century, in developed countries, the first of Wotton’s requirements has been largely met, and most of the second: buildings tend to functionally work. Achieving the third, ‘delight’, remains elusive.

“ **Well building hath three conditions: firmness, commodity, and delight.**

Sir Henry Wotton, MP (1624). *The Elements of Architecture* ”

While much research has been done on human response to design, it has been conducted primarily by psychologists and marketing people, and more recently by neuroscientists, so it has had limited impact on building and urban design professionals, let alone the wider public. There are several reasons for this, but it has become clear that there is no simple recipe to guide designers. We now clearly recognize that human response is based in the relationship between the stimulus (such as a building or space) and the individual viewing it. Steiner suggested: ‘Beauty is an unstable property because it is not a property at all. It is the name of a particular interaction between two beings, a “self” and an “Other”: I find an Other beautiful.’⁶

⁶ Steiner, 2001, p.xix.

Witold Rybczynski, of the University of Pennsylvania, suggested that beauty implies ‘... both fitting in and propriety, giving pleasure to the mind as well as the eye’.⁷

So, what is the ‘it’ that leads to positive responses? As a student, and later as a teacher, I have observed the capabilities of some people, who, with a few strokes of a pencil or marker, can produce a sketch that has an almost magical appeal. But what is it about those lines that create that response? Unfortunately, that capability also leads to potential pitfalls. I recall an architect who presented himself as a great artist and saw others as lesser beings. But were his creations actually superior? How could one tell, except in retrospect, possibly after some succeeding generations have had the opportunity to experience and evaluate his works? Artists have divergent opinions, so create different things – and can we tell in advance whose creations will receive enduring esteem, and whose might later be stamped simply as ugly? And, as always, why?

Numbers of academics have shown that there are indeed factors that tend to make architecture pleasing to people – and that those factors can be identified, classified and recorded. But unfortunately, not only are there variations from person to person, but those factors are interconnected and generally slippery. Hence, the genius of artistry – the capabilities of those fortunate (or perhaps unfortunate) people who can reflect those factors, and produce works that enjoy widespread appeal. The rest of us should like to know what they are. Through a trial and error process, many structurally impressive medieval cathedrals were created and still stand, but quite a few collapsed – calculations make things more likely to stand up. Similarly, a bit of science might help designers who are not especially talented, or lucky, to create buildings that provide visual or mental delight, thereby enhancing overall performance.

⁷ Rybczynski, 1989, p.65.

Looking for the answers involves looking into the mind of both transmitter and recipient. In this quest, we can look back at over a century of experiments, conducted at many of the centres of research that have been established in and around universities. Their findings might lead to an increased understanding of factors that can lead to the creation of better built environments.

■ Talking about beauty

Among those who create buildings today, most notably architects, the word 'beauty' is almost forbidden, so an extensive and often impenetrable language has been created to avoid using it.⁸ Scientists seem to be happier with the subject,⁹ and often look into the structures of the living cell and of the cosmos with excitement and see beauty, and mathematicians see beauty in their concepts and equations – whereas, over the past century or so, architects' opinions have largely revolved around some sense of functionality. When our editorial committee embarked on creating an issue of *OAA Perspectives* magazine addressing the matter,¹⁰ its title invoked ugliness, not beauty. It is curious that after the Industrial Revolution, when new styles were being explored, the lead of engineering and science technologies seemed to dominate, and Western civilization and its building professionals lost the ability to understand whether a building design was pleasing or not – and to whom – and why. One possibility is that there was (and is) no real consensus on what beauty might actually be.¹¹ Modernism/Internationalism usually took the stance that if something was 'functional', the wider population would respond well to it. The focus became functionalism – and the idea of trying to understand the more complex relationships between person and built environment became suspect.

⁸ There are cynical tables that allow the construction of evasive and elusive architectural jargon. See *OAA Perspectives*, Winter 2010/11, 18(4), p.20.

⁹ *Ede*, 2008, p.13.

¹⁰ *OAA Perspectives*, Fall 2012, 20(3).

¹¹ *Conway*, 2013, p.1.

‘Form follows function’ was the Louis Sullivan misquote heard at my undergraduate school of architecture.¹² Things were seen to be ‘honest’ and ‘dishonest’, ‘authentic’ or ‘bogus’ – value judgements applied in strange ways. Design did not seem to encompass the function of pleasing the wider public. Somehow, the welded-on steel channels that characterize the vertical elements of many of Mies van der Rohe’s black skyscrapers were acceptable,¹³ but neo-Gothic buttresses or applied classical columns were not. One might also note that Mies van der Rohe was not actually his name (it was more ‘aristocratic’ than his real name¹⁴) – was that ‘honest’?

In increasingly affluent cultures we worry about style in many aspects of life. Cars are styled and restyled, and computers, furniture and even such utilitarian objects as blow dryers follow fashion trends – to sell more units at higher prices by appealing to the market’s design preferences. Vast amounts of money are spent on clothing in order to please the wearer, and people who might see them. Meanwhile in the architectural world, there is still an uneasiness about obviously and explicitly concerning oneself with creating visual environments to which people might actually respond favourably.



The Auditorium Building, Chicago. Completed 1899. Adler & Sullivan, Architects.

¹² Usually attributed to Chicago architect Louis Sullivan (1856–1924), who actually wrote ‘form ever follows function’, from *Autobiography of an Idea*. Consideration of Sullivan’s own architecture immediately reveals the complexity of how he saw this relationship.

¹³ He created and inspired the ‘black box’ skyscrapers that can be found in so many cities around the world.

¹⁴ Maria Ludwig Michael Mies.

■ What is beauty? What is ugliness?

A few years ago, a national newspaper published a short article that named what the reporter regarded as Toronto's ugliest buildings. On the list was one of my own building creations: Suomi-Koti, Toronto – a non-profit retirement project built by and for the Finnish community in Toronto, and completed in the 1980s. I played my usual role as overall conductor of the process – perhaps being more involved than usual, as it used innovative financial and tenure techniques that I had previously developed in a government-funded research effort.¹⁵ The Toronto Finnish community was intimately involved in all aspects of the development process, including the building design (done by Finnish-Canadian architect, Seppo Kanerva), even using volunteer carpenters to complete an elegantly Nordic community centre. The housing and community centre have remained in high demand ever since – and not just by elderly Finnish-Canadians. The building is blue and white, the Finnish colours, with abundant wood trim inside. The point is that Suomi-Koti is esteemed by the people for whom it was created. It reflects an immigrant community, who saw it as reflecting the specific modernism of their homeland. The newspaper commentator, presumably with a different background, and

probably never having visited Finland, simply classified it as 'ugly'.

This is an example of the old saying 'beauty is in the eye of the beholder'. That concept is not new – it goes back at least to the ancient Greeks. Ugliness is often thought of as the opposite of beauty, and there are thoughts about both.



Suomi-Koti Toronto. Completed 1986. Extended 1992. Sedun + Kanerva, Architects. Why do some people esteem it and others reject it?

¹⁵ Ellingham et al., 1984.

“ **Shakespeare expressed this sentiment in Love's Labours Lost (1588):**
'Good Lord Boyet, my beauty, though but mean,
Needs not the painted flourish of your praise:
Beauty is bought by judgement of the eye,
Not utter'd by base sale of chapmen's* tongues.'

**A 'chapman' is/was an itinerant deal maker or merchant.*

Benjamin Franklin, in Poor Richard's Almanack (1741), wrote:
'Beauty, like supreme dominion
Is but supported by opinion.'

Philosopher, economist and historian David Hume, also working in the mid-1700s, agreed – and in his essay 'The Standard of Taste' (1757), proposed that:
'Beauty in things exists merely in the mind which contemplates them.'

Immanuel Kant in The Critique of Judgement (1790) distinguished the subjective from the objective – this means that it is incorrect to say a building, or any other thing, is beautiful, because the comment is (or at least should be) subjective – what the person intends to say is 'I feel the building is beautiful...'

Oscar Wilde offered, in 'Lecture to Art Students' (1883):
'No object is so beautiful that, under certain conditions, it will not look ugly.'

H.G. Wells A Modern Utopia (1905):
'Ugliness is the measure of imperfection.'¹⁶ ”

All of this suggests that one might presume that a pig might be beautiful to another pig (or to a pig farmer). While we all (or at least most of us) know that whether a building is regarded as beautiful or ugly is dependent upon the viewer and is a personal opinion, huge amounts of writing, discord and possibly the occasional black eye have resulted from attempts by one person to convince another of the universality of their particular opinion. Theory is presented, but usually little real evidence.

¹⁶ Wells, H.G. (1905), A Modern Utopia, Ch.3, sct.8.

In the architectural world there are many texts that offer sometimes endless and sometimes incomprehensible justifications for architectural design. This is the reason for caution: that one's own personal subjective preference about what constitutes beauty is not likely to be held by everyone else. Many people fail to recognize this very real fact – that (some) buildings are ugly because (some – or perhaps most) people think they are. Fortunately, there is a considerable amount of research that can assist in identifying patterns of response.



*Bibliotheca Alexandrina, Egypt. Conference Building.
Snøhetta, Architects. Opened 2002.*



CHAPTER 2

Why the concerns? Why now?

After a couple of thousand years of discussion, there is still no good set of rules to guide managers and designers in their decisions about building appearance. One obstruction is that there is overwhelming experimental evidence that most designers, including architects, perceive the built environment very differently than do other people. This might not have been a problem in the past, but in the twenty-first century there are reasons to worry about this.

■ Who exactly should be satisfied?

Historically, in a world (or place) where most people were agricultural or industrial labourers, designers and property developers did not have to consider individuals in the same way. They served the needs and expectations of a small, educated, affluent and influential part of the population. Projects were created to please that group, and the peasants did not matter much; they took what they could get, and might be expected to defer to their betters.

It is tempting for designers and developers (as well as economists and politicians) to develop some sort of universal design formula, and over a protracted period of time this seemed to be feasible. If one considers photographs of crowds in the developed West, through the twentieth century up into the mid-1960s, there is astonishing uniformity of dress and hair. People now express their individuality, rather than quietly accepting the dress, beliefs, behaviour and preferences of their culture and social class.

The one-size-fits-all design approach was manifested in what was most suitably entitled the International Style – part of modernism. This led to buildings that, through a focus on functionality, or perhaps just stripping away anything else, strove to ignore social, regional or temporal differences. Simplifying somewhat, the internationalist concept was that, based on addressing rational function, one could erect essentially the same building anywhere, in any time, with only slight variations to address basic function. Yet, all styles, including the International, are artefacts of specific cultures and specific eras.

It was not that human response was seen as unimportant by the modernists – it was assumed that a positive response could be obtained through efficient functionalism. Noted Canadian architect and academic Eric Arthur (1898–1982), writing in 1936, supported the concept of modernism, stating that ‘... modern materials and construction have an intrinsic beauty ...’¹⁷ In keeping with the times, there was no experimental evidence for such a statement – it was his own opinion. The reality is that a large portion of users and passers-by may find a functionalist building ugly – or perhaps simply irrelevant. At its worst, in certain contexts, modernism has been termed ‘neo-colonial’,¹⁸ a description of something developed in Western Europe and subsequently imposed on the rest of the world with little regard for differing climatic or cultural conditions. Yet, as noted architect Eberhard Zeidler offered in 1973, the future is unknown: ‘The solution to the problems that confront us cannot be found by compiling functional, economic, and technical criteria alone’, and he lamented ‘the neglect of the emotional criteria’.¹⁹ Research has confirmed that emotions are important in decision-making, and they work to guide the human system in how to respond to new situations or interactions.²⁰ They help the individual sort through and prioritize available information, and employ appropriate problem-solving methods.²¹

¹⁷ Arthur, 1936.

¹⁸ Abel, 1997, p.161.

¹⁹ Zeidler, 1973.

²⁰ Xenakis et al., 2012, pp.212–213.

²¹ Xenakis et al., 2012, p.213.

Indeed, individuals who have experienced damage that impairs their emotions can have great difficulty in making decisions, perhaps standing in front of the mustard section of the supermarket, unable to make a selection. Even though data is on the mustard bottles, the decision is of minor consequence, and the individual may have personal experience, the emotional element of the human condition is important in guiding the decision to choose one mustard over another. It is necessary to recognize that human decisions are not exclusively logical processes.

The marketing world has come to recognize the importance of emotion in human response. Despite the global spread of Western products and brands, many are formulated differently in different countries. When I go to Europe I always return to Canada with a few bars of a particular kind of soap my wife likes. That brand can be bought in Canada, but it is a different soap. Soap manufacturers know that one size does not fit all.

There are reasons for the current situation. Buildings have a long life and high cost, so have to appeal over long periods of time, which is one justification for conservatism among architects and their clients, and helps explain why the universal, internationalist form continues to be built – especially for large office buildings. Research in different disciplines, marketing in particular, has shown us how to understand how people interpret and respond to the things they encounter. However, research costs money and takes time, and the nature of the way we create buildings means both are usually in short supply during the development process.

■ Change in relative importance of factors of evaluation

Buildings are important. We eat and sleep in them, we shop and work in them, and we travel great distances at great expense to see treasured and interesting places. It might be argued that the visual appeal of buildings, and perhaps many other products, should increase in importance over the coming decades. Over time, the functional-technical nature of products tends to become less varied as they move towards a mature optimum state. Hence, there is less opportunity to differentiate products on the basis of functionality or technical superiority.

Building and planning regulations have raised the functional quality of houses. In most advanced countries, foundations, windows and plumbing are now required – features that were often missing in Industrial Revolution-era dwellings. Inspections by local government and specialist consultants minimize the likelihood of major problems. If this process continues, those who create buildings will increasingly have to sell their projects on the basis of factors other than just technical performance. In my own research, I found certain age cohorts brought up during periods of privation, when evaluating common house forms, put a high level of emphasis on the perceived functional aspects – more so than people brought up in more affluent times, who, regardless of age, put more weighting on the socio-aesthetic aspects when compiling an overall evaluation of a building.

■ We are still under the influence of some older thought

We have apparently not fully recovered from the modernist period, even in such areas of design where subjectivity is a major characteristic. While it is best to avoid excessive jargon, it is necessary to remember that the word ‘modernism’ in the arts means something different from its everyday usage, and is not to be confused with the word ‘contemporary’. Modernism has deep roots in the search for knowledge and reason – and the belief that somehow these should be universal and separate from historical, cultural and emotional contexts. This can lead to the assumption that a right solution will fit everyone, all of the time, and it is only necessary to find that ‘right’ solution, with the expectation that the users will – logically – appreciate it. In some fields this is more legitimate than others. When human response is important, modernism comes up short. Even in the world of physics there is constant evolution in the nature and acceptance of knowledge. The development of the notion of ‘post-modernism’ suggests that there is ultimately no universal, objective truth – that most things exist within human and cultural contexts.

I have the advantage of having had a mother-in-law who was an author and outspoken social radical. Born during the First World War, she had been raised by a genuine Victorian mother. We still recall her over-cooked

vegetables, and her belief that to sleep without an open window was sure death. When houses were heated by open coal fires that might have been true, as in her own mother's childhood, but now, with gas-fired central heating, it does not make much sense. It was just something her mother told her. Tradition dominates many things, even when we attempt to be radical. We are inevitably creatures of our backgrounds, yet we also need to be aware of dissonances with the present.

■ A matter of 'taste'?

Another reason for the need for an evidence-based approach to the aesthetics of design in the built environment is the widespread increase in individual personal opinion. A couple of generations ago, most people would simply accept the decisions of their 'betters'. But with rising education and political empowerment, this is no longer the case. This makes it especially timely to ensure that what we build is not simply there to satisfy only certain small groups, perhaps liberal intellectuals, while annoying everyone else.

When I was a child, I recall people talking about 'good taste', a term rarely heard now. This term implies that certain individuals must be willing to disregard their own response if it runs counter to the preferences of some other group of people. Tiffany Jenkins, Culture Editor for the journal *Sociology Compass*, and visiting fellow at the London School of Economics, also noted this and commented that '... [the] idea [of good taste] has come to be negatively associated with an outlook and a period in history when, it is argued, a group of old, white men imposed their views on the rest of the population, who they looked down on'.²² Her assertion can be confirmed by looking at some older writings.

In an urban planning context, a 1958 paper by architect, planner and glass engraver David Peace (1915–2003) attempted to explain good taste: "Taste" is a much misused and misunderstood word. We have to distinguish between "good taste" and "matters of taste".

²² Jenkins, 2014.

“Good taste” implies that it is a thing to be aimed at, and that there is a recognized standard; on the other hand, “matters of taste” are matters of opinion.²³ He differentiated ‘good taste’ from fashion: ‘...a new shop-front in a Georgian style can be in good taste even if it may now be unfashionable; or a shop-front may be in contemporary fashion and yet in bad taste’.²⁴ Peace pointed out that context can be important – something might be in good taste by itself, but it would be tasteless to employ it in certain contexts. His ultimate, and perhaps insightful, suggestion about how to decide what was in good taste was that one should find some people who might be regarded as having ‘good taste’, and ask them. At the time, over half a century ago, this might have seemed like a feasible idea, but in the twenty-first century it seems quaint. It might be like asking a prominent chef what we would find good to eat (perhaps a plate of deep-fried insects) – and accepting that choice, paying no attention to one’s own preferences. But of course, chefs (and building designers) often do that, by engaging with the world as they would like it to be, rather than how it is, and then criticising people with other preferences because they do not agree.

The American cultural columnist Virginia Postrel agreed that in the early postwar period, this question of taste was seen as a matter for some sort of sophisticated expert: ‘In the technocratic era of the one best way, correct taste was a matter of rational expertise (“this is good design”) not personal pleasure (“I like this”).’²⁵ It is easy to understand the attitudes of the 1950s and 1960s, and the widespread acceptance of function-dominated design. People had been raised in uncertain economic times – if they had not suffered personally, they saw many who had and they had felt the impact of the Second World War. For example, our Niagara-area house is adjacent to a bridge that has provided shelter for generations of unfortunates. In the 1930s they were simply men travelling seeking work to support their families. For that generation, evidence of what could happen if you didn’t succeed was close at hand. Life was serious – and frivolity was, well, frivolous.

²³ Peace, 1958, pp.339–340.

²⁴ Peace, 1958, p.340.

²⁵ Postrel, 2003, p.37.

**“What exactly is ‘good design’? How might it be defined?
What do you think it is?”**

Another factor driving change is the increasing level of education. In a society in which people with higher levels of education were few, it was reasonable for most to accept the opinions of those who had it. In status-seeking cultures (probably all cultures), it is somewhat rational to mimic the expressed preferences of higher-status individuals. But as more people acquire the attributes of high-status individuals, the fewer people there are to willingly accept the subjective judgement of the few. This increase in wealth, especially relative to the costs of many goods, has enabled people to expect to be able to exercise their personal subjective judgement. Exhibit 2.1 shows the astonishing growth of university education in the United Kingdom (UK) over the past century. Even into the 1960s, few people had a higher education.

**Exhibit 2.1: The increasing level of higher education
over the past century (UK census data)**

University degrees awarded in the UK

YEAR	FIRST DEGREE	HIGHER DEGREES
1920	4,357	703
1930	9,129	1,323
1950	17,337	2,410
1960	22,426	3,273
1970	51,189	12,901
1980	68,150	18,925
1990	77,163	31,324
2000	243,246	86,535
2010	330,720	182,610

To put this in perspective, in 1920, roughly one first degree was awarded per year for every 10,000 people in the population. In 1960 the number was one per 2,400 and in 2010, one first degree for every 200 people.

This was reflected at the lower levels of the educational system. From our viewpoint in the early twenty-first century, it is difficult to accept that in 1950, with a school leaving age of 15, only 14 per cent of 16 year olds and seven per cent of 17 year olds were in full-time education in England and Wales. Sixty years later, in 2010, the numbers in England in full-time education were 88 per cent of 16 year olds and 76 per cent of 17 year olds.²⁶ And the same thing has happened in the United States, where the percentage of the currently unfolding population with a university degree is about the same as the percentage in the 1950s who had finished high school.²⁷ In the immediate postwar period, a relatively uneducated population might be expected to look to others for leadership in many areas.

In this period of cultural change, there has also been the effect of globalization, leading to a level of familiarization with other cultures and their designs. In the UK in 2014, 13.1 per cent of the total population were foreign-born; it was 7 per cent in 1993. In the Inner London area, in 2013, 39 per cent were foreign-born.²⁸ In the City of Toronto, approximately half of the population was born outside Canada, with a wide range of cultural origins.²⁹ With low-priced air fares and almost free communications, the importance of distance has diminished, so migrants can remain in contact with their home cultures and tourists can visit them.

Even in an era with widespread education, some designers still believe they should be educating the wider public, rather than understanding and engaging with them. This will probably continue – we shall consider later the research results which confirm that building designers' perceptions and preferences are very different than those of the wider population. However, a couple of hundred years of designers attempting to educate the public has demonstrated that this is, at best, a very slow process, and likely impossible.

²⁶ *Education: Historical statistics. Standard Note: SN/SG/4252*_Last updated: 27 November 2012
Author: Paul Bolton. *Social & General Statistics*. www.parliament.uk/briefing-papers/SN04252.pdf.

²⁷ Ryan and Bauman, 2016.

²⁸ *The Migration Observatory at the University of Oxford*, www.migrationobservatory.ox, accessed 17 November, 2016.

²⁹ *Statistics Canada*: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo35c-eng.htm>.

Moreover, such an approach presumes that the preferences of trained designers, or some cultural elite, should prevail.

■ The capabilities and roles of managers are increasing

A few years ago, I taught for a couple of years at a university business school, offering a popular course on real estate to third- and fourth-year students. As part of their evaluation I asked groups to create development proposals, thereby doing the work that a prudent property developer might undertake in the pre-construction phase. I offered a range of local sites that might be amenable to development, or they could propose some other site. The student work was superlative, far in excess of what I had expected. They offered market studies and financial feasibilities, explored planning matters and even prepared designs, all of which were impressively presented – verbally, in writing and with drawings. They had done serious in-the-field research, to the extent that one group considering the extensive refurbishment of a historic building included a set of photographs that suggested the business school also offered a prerequisite ‘Break and Enter 101’. They had done their homework and were prepared to convince people to invest in their projects. I had taught them about the need for architects – but my business school students saw architects as only undertaking working drawings and site inspections. These would-be managers were not going to assign any important decisions to architects. In contrast, older architects, recalling the 1950s and 1960s, tell of a time when they were seen as pre-eminent building creators, and were trusted with all-encompassing authority to see that appropriate buildings appeared on time, and on budget.

Numerous business schools now offer specialization options in real estate, covering, in detail, subject areas that are foreign to traditionally trained architects. The Master of Business Administration degree was a rarity a couple of generations ago – now it is commonplace, as are the capabilities bestowed on graduates.

For architects, this is leading to considerable distress. At meetings of local architects, the problem of ‘project managers’ and the diminishing influence of architects is often a subject of discussion. This is a worldwide issue, as discussed by Dina Shehayeb of Nile University, who is part of a European Commission-funded project ‘... to breed architects ... to become more integrative, multidisciplinary, people-centred, and technologically agile, using ICT enabling technology in a context-dependent manner’.³⁰ (I like the term ‘breed’.) There is the need for more initiatives like this, not just to benefit architects, but to bring the benefits of ‘design thinking’ to more areas of human endeavour.

Two possible futures exist. One is the situation in which architects become only producers of construction documents and undertake site review, while building design matters are increasingly determined by managers, marketing people, informed clients and, indirectly, by consumers. The other is that architects develop additional capabilities, and perhaps specializations, in order to retain their traditional design role, enabling them to communicate better with clients and other parties in the development and construction process. Regardless, in the development and construction industries there is a need to undertake increasingly complex trade-offs between economic, social and environmental factors. This demands enhanced analytical and decision-making capabilities.

■ It is a complicated matter

A significant problem in determining an optimum visual design for a building is the fiendish complexity of it all. Research has indicated repeatedly that not only do people vary in their stated preferences, but even that the factors they consider when making such an assessment interact, depend on context and can evolve.

The result is a wonderful collection of propositions, research, discussion and design, but little consensus. Inevitably, research happens in a certain time and place, with a particular group of subjects.

³⁰ Shehayeb, 2018, p.25.

In some fields this may not be important, but it is very clear that human response to building design varies between population groups. This must always be acknowledged when considering research results, although consistent patterns can be found.

Today, Venice is regarded as containing wonderful buildings and urban experiences, but for centuries the architecture of Venice was viewed with horror. Kenneth Clark, in 1928, related some of those attitudes: ‘... critics of architecture still considered Venetian Gothic monstrously ugly, and praise of St. Mark’s was taken as evidence of insanity’.³¹ We know that fashion does apply to the built environment, and changes, albeit at a slower pace than for clothing. We can throw out the unfashionable clothing from a decade ago, but buildings are more enduring. An owner/developer of a building would prefer that in fifteen or twenty years an asset was not widely regarded as evidence of insanity.

Beauty is not necessarily the opposite of ugliness. Preference does not necessarily mean that the object is seen as ‘beautiful’. Hekkert and van Wieringen, of the Free University in Amsterdam, note ‘Preference may in principle be based on other than aesthetic criteria’³² and that, when dealing with buildings, or coffee pots, an overall aesthetic preference is likely to encompass a subjective evaluation of utility.

This complexity might be compared to the oft-repeated story of the collection of blind men encountering an elephant for the first time. One person encounters a leg and describes it as being like a tree, another feels the trunk and senses that an elephant is snake-like, while another comes upon the body, and interprets it as a wall. As with so many research efforts (including my own), one piece of the field is being explored, often yielding rich and remarkable results, but at the end the guidance any single element can offer a designer is limited. It is like asking the assemblage of blind men, now that they have encountered an elephant, to build a statue of one.

³¹ Clark, 1928/1964, p.187.

³² Hekkert and van Wieringen, 1990, p.485.

You might imagine the results – perhaps not much different than the multitude of designs we are offered by architects and their clients, each purporting to be ... something, but rarely ugly by intent.

The difference is that now, with available theory, mathematical models, computers and research precedent, exploration of this matter can be more than just groping around for solutions.



Allotment building in Copenhagen, Denmark.



CHAPTER 3

What are the Questions?

In this complex area, definition of the questions is important. Who are we designing for, and why? Should designers try to educate and/or challenge their audiences? To what extent should design reflect widespread attitudes and preferences? And what are those attitudes and preferences?

■ What should a building design be attempting to accomplish?

Some time ago, our provincial government, in conjunction with the association of architects, decided to celebrate World Architecture Day by holding an awards event. Each member of Parliament was asked to nominate some new or refurbished building. A panel selected a series of 'winners'. Representatives of the various local societies of architects, including me, represented the buildings in their respective areas. In our Niagara area, one provincial member nominated a recently constructed winery, which, in keeping with the Italian heritage of its owners and the nature of their product, resembled a Tuscan hill village. I regard it as a rather interesting building at a variety of scales – appearing initially as a surprise in an otherwise flat area. On nearing the building, one becomes aware that the outside has been carefully aged – there are parts where it appears as if the rendering has fallen off to reveal the underlying brick. All that is missing is the real patina of age – and that should appear in a decade or so. When the local society of architects became aware of the nominated building, some members suggested that I, as the local society chair, attend the awards session in order to make it clear that, despite this building, architects in our area were capable of creating 'good' architecture.

Needless to say, I went to the awards session with every intention of saying that this building represented what they were capable of doing – building things that had market appeal. The reality is that a prominent politician



Colaneri Estates Winery, Niagara-on-the-Lake, Canada. Constructed 2013. Raimondo + Associates, Architects.

recommended the building as having merit, and was happy to make his preferences publicly known.

Considering that specific building it is appropriate to recognize why the specific design form was chosen. It is part of the Niagara wine experience, so designed as a place to manufacture and sell wine.

As a simple factory (and it is very factory-like around the back), functionally it only needs to be a basic shed to house the equipment. But as a place to sell wine, food and related sundries, to both local residents and tourists, it wraps the products offered within a themed environment with which customers can engage.

What is the role of the visual design of a project? Is it to:

- entertain or please people who may be coming to buy something or be entertained?
- challenge the people who may encounter the building?
- educate the public, so as to get them to accept the forms of design that architects prefer?
- respond to the requirements of the client in creating a product that will assist in their financial (or other) success?
- please the designer (or owner)?
- accomplish all of the above?
- or achieve something else?

■ Evidence-based design: What design characteristics will lead to positive human responses?

The objective of considerable amounts of built environment research, both in psychology and more recently in neuroscience, is to identify those factors that will tend to lead to positive responses, and perhaps ultimately suggest concepts that can be employed by designers in their endeavours. While there are differences between findings, such research has provided some general directions. It is clear that there are patterns to be found, both in human behaviour and in the factors that lead people generally to evaluate a stimulus in a positive way.

Evidence-based design requires an openness to new information and ideas. Designers must be flexible: pragmatic rather than dogmatic. A dogmatic person will tend to behave in a specific way, regardless of circumstance. Such individuals have developed sets of rules that govern their beliefs – and those often work, but may not reflect changing environments. In contrast, pragmatic individuals are adaptable, with beliefs and behaviours attuned to whatever situation arises. Of course, there is a continuum between extremes, and, inevitably, our beliefs and actions relate to individual backgrounds and life experiences. A particular hazard is that many designers have been subjected to a long educational process that has included quantities of subjective materials, so can be excessively dogmatic about design.

■ Is it more important to avoid ugliness than to achieve beauty?

The marketing industry knows that the aesthetics of product design is important. Visual appearance is often the first point of contact between a product and a consumer: ‘... the design of a product can have a pervasive effect on the desirability of a good’.³³ Think about your last purchase of a kitchen appliance – perhaps a toaster or coffee-maker. The first thing that happens in the shop (or online) is usually visual – and may determine whether you give a particular model further consideration.

³³ Kumar and Garb, 2010, p.485.

Visual design is one way manufacturers can differentiate their products from the competition.

There are differences between property-based assets such as buildings and coffee pots. One is that buildings are usually immovable and take a protracted period to create, meaning that the primary consumer attraction might be the location, and there may be a limited selection of competing products. Unlike coffee pots, one cannot readily crank up the supply of buildings from a factory, or import more. This means that aesthetic response and appeal is often not as significant for buildings, especially in periods of high demand and low supply – and buildings tend to be built in periods of high demand. This is why in many cases it is logical only to strive to avoid repelling people through ugliness, and avoid the risks associated with achieving the ultimate in beauty or artistic relevance.

■ It is possible to understand different people responses to the built environment

You might ask this question about one particular subject – yourself. A related question concerns how and why those reactions have developed as they have, in the individual, and among larger groups of people.

“Why do you prefer one thing over another, be it a building, or a kind of wine, or a style of music?”

In one sense, it does not matter whether a building (or anything else for that matter) is appealing or ugly. From a rationalist point of view, an ugly building can provide functional accommodation as well as a beautiful building, yet people will often pay quite a bit of money to get some special effect – sometimes because it will pay off economically. Niagara-area wineries offer a range of architectures – presenting themselves variously as a French château, elegant modernist, down-home style, or as Colaneri’s entire Tuscan village, to enhance the experience of the visitor. Rationally, the wine is the important thing and the building (or the bottle label) should not make a difference to its taste, yet winery owners continue to spend money on both.

Experiments, such as that by experimental psychologist Thomas Jacobsen of the University of Leipzig, with Lea Höfel, have found that positive/negative evaluations are made very quickly, that ‘... negative and positive evaluations differ in character’ and that ‘... positive and negative evaluations are subserved, in part, by distinct neural structures’.³⁴ Given the speed at which overall assessments can be made, as also noted in our own experiments, it is important that an immediate rejection of building or streetscape is avoided. The reality appears to be that the opposite of ugly is not necessarily beauty – there are other possible affective responses, and that more complex assessments take longer to present themselves.

■ Where do architects and other design experts fit in?

With regard to the built environment, professionals, especially architects, are of considerable importance. A significant issue is that repeated research undertakings have shown that the perceptions and preferences of architects relative to the built environment are very different from those of the wider population. This poses a major dilemma when considering building design, as the differences can be substantial. Graham Brown and Robert Gifford, of the University of Victoria, began an article with the example of a particular building that ‘... has been described by some architects as fresh and innovative, and by some members of the public as an abomination’.³⁵

Personally, as a sometime architectural journalist, I have both covered and participated in awards processes. One jury used non-architects. These were leaders from other arts, philanthropy, government ... sophisticated, well-educated people – in Peace’s model, just the people who might be expected to have good taste. One of the other architect-reporters covering an event commented: ‘My three favourites were rejected in the first round.’ What she thought were examples of good design were quickly disposed of by the non-architects.

³⁴ Jacobsen and Höfel, 2003.

³⁵ Brown and Gifford, 2001, p.93.

It is interesting that people in the building industry, and architects in particular, give lower scores on average, including in my current study (see Experiment IV). Given a varied selection of buildings, the architects tend to like them less than anyone else. Aysu Akalin, of Gazi University, and her associates also noted this difference in their work, suggesting that architecture students (in that case) were simply more critical ‘... as they criticized what they saw as negative design decisions’.³⁶ This was also expressed in discussion with a former member of an urban design review panel – that architects score lower because, if they were designing the building, they would inevitably have done something different. Presumably, few non-designers evaluate this way. One architect commented that architects are simply trained to be negative. Regardless of the reason, it is apparent that architects generally regard existing and proposed buildings less well than do other people.

In my post-survey discussions with groups of architects, it appears that there can be a difference between what they actually prefer and what they will admit to preferring, especially in front of their peers. Presumably, this results from the instruction they received at architecture school, and suggests what might be a fascinating dichotomy between their architectural and real selves, or perhaps between their reactive ‘fast’ response, and a more reflective ‘slow’ response.³⁷ Clearly, there is room for more research.

It should not be a surprise that a considerable amount of research has been undertaken, and has repeatedly demonstrated that architects do perceive and evaluate the built environment differently from other people. This is a fundamental element in environmental psychology, and dates back to the 1960s.

Robert G. Hershberger, former Dean of Architecture at the University of Arizona, conducted experiments in the 1960s on architects, architectural students and non-architects, and found significant differences in how they form judgements. He noted in one paper: ‘... it could be expected that

³⁶ Akalin et al., 2009, p.124.

³⁷ As expressed by Kahneman, 2011.

approximately 30 per cent of the time when the Penn Architects [one of the subject groups] would judge a building to be good, pleasing, beautiful, interesting, exciting, and unique, the nonarchitects would judge it to be bad, annoying, ugly, boring, calming, and common'.³⁸ Hershberger and Cass (1988) explored this matter further and verified the results.³⁹ Linda Groat, of the University of Michigan, found that architects categorized architecture along lines of design quality, style, form and vintage, whereas a 'lay' group of accountants sorted the sample buildings by preference and type.⁴⁰

It has also been found that the way architects rank buildings is different from people in the wider population. Gifford et al., in one of their experiments, used a considerable number of buildings, relative to what they termed 'global evaluations'.⁴¹ While some buildings were given either high or low evaluations by both architects and laypeople, some showed surprising differences. For example, of forty-two buildings, the 'Team Disney' office building⁴² in Burbank, California, with a somewhat neo-classical facade featuring the seven dwarfs as caryatids (in Greek architecture, typically female sculptures acting as columns) was ranked third by laypeople and forty-first by architects.⁴³ One might expect an entertainment entity such as Disney to be able to understand the preferences of their audiences – they would not be successful in their fundamental business if they could not.

One of the clearest expositions on the differences between architects' opinions and those of most other people is that by Jack Nasar in his 1999 book, *Design by Competition: Making Design Competition Work*.

³⁸ Hershberger, 1970.

³⁹ Hershberger and Cass, 1988.

⁴⁰ Groat, 1982.

⁴¹ Gifford et al., 2002.

⁴² Designed by Michael Graves, and completed in 1990.

⁴³ When using this building in a similar experiment, I was unable to replicate Gifford's results – the differences were similar, but less extreme. But then I was using an image taken from a different angle, and had a different group of subjects – Gifford noted that his lay group 'were community residents and university students', so probably had a higher proportion of younger people, who may have responded better to the Seven Dwarfs than did my respondents. Based on comments from my respondents, I suspect that people who are mothers also relate well to the Seven Dwarfs.

In it, Nasar attacked the Wexner Center at the State University of Ohio, a building that was generally seen by architects as a fine competition-winning design, but abhorred by its users.

“***‘Do not do unto others as you would that they should do unto you. Their tastes may not be the same.’
George Bernard Shaw’s ‘Maxims for Revolutionaries’
from Man and Superman (1903)***”

In professional disciplines one expects such differences. Patients expect that their physician will view that rash on their leg with more knowledge, and to be able to classify it in some ‘scientific’ way, based perhaps on its cause, and offer an appropriate treatment regime. Your accountant should see financial statements more insightfully. In the past there were clear reasons for this. Members of the traditional professions were seen to be the experts in a world in which formal higher-level education was rare, so they could very reasonably take the position that they knew what was best, and their clients would likely elect to follow them. Today, with a more educated and demanding population, things are different. It is perhaps interesting that the timing of Hershberger’s initial research in the late 1960s corresponded with a significant increase in the general level of education. However, what is ‘best’ in building or urban design is less obvious than it is in medicine or accounting. It is a variable – subject to location, culture and personal opinion, as well as the functional requirements of a building and the budget. Moreover, design results can take decades to appear, in contrast to the results of the work of your accountant or physician. One difficulty, suggested by Nasar,⁴⁴ is that, especially in the case of large-scale developments, the designer may have little contact with the ultimate users, and that other parties to the design process such as developers, financiers, planners and estate agents may have other agendas, such as reducing cost and construction time, or making it easier to obtain planning approvals.

⁴⁴ Nasar, 1994, p.778.

Often experts forget or ignore differences in the way things might be perceived. One example is the criticism that Prince Charles received for his 1989 book *A Vision of Britain*: many ‘experts’ pointed out that he did not have a formal education in architecture. The reality is that without that formal education, the Prince was likely to offer opinions more closely

matching those of his subjects than the experts.

Curiously, architects often regard architecture as self-explanatory – and it probably should be, but sometimes it has to be communicated to the wider public verbally or in writing. Yet, even then, a language is often used that may not be generally



Photo: Courtesy of William Fawcett, RIBA.

Poundbury, Dorset, UK. A new town based on the thoughts of Prince Charles. Development started 1993. Controversial and faces a wide range of opinion. What do you think about it?

understood. Occasionally, I attend review sessions of undergraduate student work at architecture schools. I don’t understand many of the comments made by the faculty reviewers. If I cannot understand them (and I have a PhD in architecture), what chance does the person on the street have – or the architecture student? Public perceptions of police station exteriors were studied by Clinton and Devlin of Connecticut College Psychology Department.⁴⁵ Explicit academic studies such as theirs, which found distinct patterns, are not usually a part of architectural thought or the design process. In Australian studies undertaken by A.T. Purcell,⁴⁶ photographs of modern-style churches were used to determine the extent to which architecture was a nonverbal ‘language’ shared by designers and various cultural and social groups. Little recognition of the buildings as religious facilities was detected. As architects widely anticipate that architecture communicates with the wider population, this sort of failure is worrisome.

⁴⁵ Clinton and Devlin, 2011.

⁴⁶ Purcell, 1984a and 1984b.

In a collection of other research, outlined in Daniel Kahneman's 2011 book *Thinking, Fast and Slow*, the concept of 'priming' is discussed.⁴⁷ This proposes that our mind makes associations within the context of information it has available – and this is often recently collected information. People in the building industry deal with designs, read related journals and work with peers in the industry, and presumably are more aware of buildings and spaces they encounter, so they end up 'primed' differently than most other people. They are likely to be living in a world full of different cues.

The problem in the case of architecture is essentially the same as for other fields where subjective evaluation is important, such as wine, music and art. Johann Georg Sulzer (1720–1779) saw the artist's own expression of their personality as a key aspect of creating music that was more than 'just a pleasant toy', and that arousing music had to emerge from the innermost being of the composer.⁴⁸ Perhaps, but the question remains about which specific artist's soul might have the inherent capability of engaging with the wider population – either the artist's contemporaries or over the longer term. Natural selection can work in music: some survives and is esteemed for long periods of time (Beethoven), while music by other composers (Wellinger⁴⁹) languishes on the shelf. The expense of architecture mitigates against this approach.

Artistic creators are almost inevitably knowledgeable about their medium of expression, so are often working to satisfy their own preferences and those of their similarly minded peers – perhaps seeking a challenging product, rather than the preferences of the less sophisticated population, who are likely responding to immediate understanding and pleasure. The problem is that in all these complex areas, the 'educated' are far outnumbered by the 'uneducated'. While it is nice to think that people can be educated so as to appreciate the subtle nuances, for most people the best question is likely always to remain simply 'do you want red or white wine?'

⁴⁷ Kahneman, 2011, pp.54–58.

⁴⁸ From *Allgemeine Theorie der schonen Künste*, in einzelnen, nach alphabetischer Orngung der Kunstworter aufeinanderfolgenden Artikeln abgehandelt.

⁴⁹ A great-uncle of the author.



CHAPTER 4

The Historical Background of Building Appearance

■ What is architecture? What sorts of buildings should be considered?

Are all buildings meant to have some sort of appeal to people? What constitutes ‘good design’? Is every building ‘architecture’? These are eminently debatable questions, and there are many possible shades of opinion.

Some definitions suggest that not everything built is architecture: there is some sort of qualifier. Daniel Levitin, of McGill University in Montreal, in *This Is Your Brain On Music* (2006), toys with the definitions of ‘music’. He observes that definitions are often personal – that certain genres, especially when new, are frequently not regarded by all as music. He supports and quotes Edgard Varèse: ‘Music is organized sound.’⁵⁰ Presumably disorganized sound can be classified as ‘noise’. While we cannot simply replace the word ‘music’ with ‘architecture’ and ‘sound’ with ‘construction’ (or something similar), a restrictive definition is tempting. Sir Nikolaus Pevsner began *An Outline of European Architecture* with a definition:

*‘A bicycle shed is a building; Lincoln Cathedral is a piece of architecture. Nearly everything that encloses space on a scale sufficient for a human being to move in is a building; the term architecture applies only to buildings designed with a view to aesthetic appeal.’*⁵¹

⁵⁰ Levitin, 2006. p.14.

⁵¹ Pevsner, 1970, p.15.

Probably few buildings are built with absolutely no ‘view to aesthetic appeal’. It might require a wilful dedication to ugliness. Moreover, Pevsner’s definition implies intent, not outcome. Consider a shed in a suburban Cambridge garden. Many architects and classical historians will recognize it as a ‘primitive hut’, part of architectural thought since Roman times (Vitruvius), and amplified by Marc-Antoine (Abbé) Laugier in *Essay on Architecture* of 1755. The primitive hut has been proposed as the origin of the Doric order, which formed the basis of much ancient Greek architecture, including the Parthenon. The theory is that the classical orders descended from simple tree trunks supporting a roof. The Cambridge ‘primitive hut’ was created consciously by a prominent architect couple, who knew exactly what they were doing. Is that Pevsner’s ‘view to aesthetic appeal’? Or is it something else, perhaps ‘intellectual appeal’? Their neighbour might build a similar hut simply because the materials were around – if the intent was merely to accommodate garden tools, that identical building might not be architecture according to Pevsner. Whether either might be successful in actually creating ‘aesthetic appeal’ is a different matter.



The primitive hut in a suburban garden. Is it architecture?

The prolific and influential writer, critic and philosopher John Ruskin (1819–1900) addressed the question in the first chapter of *The Seven Lamps of Architecture* (1849). He stated ‘All architecture proposes an effect on the human mind, not merely a service to the human

frame.’ He saw buildings as more than just visual artefacts, but rather as links to concepts and moods, and saw too that they can have a major impact on personal emotional states. This is easy to understand if you consider some design forms associated with religion, government, eating or shopping.

The editorial teams for *OAA Perspectives* and *The Right Angle Journal* have taken the approach that ‘architecture’ encompasses all built artefacts created by humans – regardless of intent or result. Hence, the featuring of such things as Hannelore Headley’s used bookstore – indeed remarkable, but possibly a building which, if considered at all, would be classified as ugly non-architecture by most people. But such a building can still be experienced as architecture – along with buildings in the shape of giant inhabitable fruit, filling stations in the shape of castles, coffee shops, junk-yard offices, nondescript restaurants and the strange entities one encounters in popular tourist areas.



Hannelore Headley's Bookstore. An interesting part of the built environment.

And, returning to the sound analogy, music and noise are both auditory experiences.

Composers including Vaughan Williams, Handel, Respighi, Elgar, Messiaen and Haydn all featured birdsong in their work – but is birdsong noise or music? A bird singing outside your bedroom window at 5:00 a.m. is likely to be perceived as irritating rather than musical. It depends on the context in which the sound (or sight) is delivered, and the capability and willingness of the recipient to receive it. Many architects would argue that not all people have developed the capability for appreciating the nuances of finer architecture – just as the appreciation of the music of French composer Olivier Messiaen (1908-1992) is probably acquired.

People rarely ask my opinion about some ordinary building – it usually concerns some building that they have already been told is Architecture (note the capital ‘A’). One thing is clear – a building is not architecture because an architect designed the building (or because of what architects think about it). The notion of a trained professional architect is a relatively recent concept in Western civilization.

People have variously ‘... defined the architect in different ways, alternately and sometimes simultaneously as designer, tradesman, artist, intellectual, and professional’.⁵² To complicate things further, in many places licensing laws restrict the use of the term (in a building sense anyway) to people qualified in that jurisdiction. Hence, I am an architect in Canada – at least Ontario, anyway – but in many other places I am not. When outside of Canada, I call myself a ‘land economist’.

The medieval cathedral builders were masons who oversaw all aspects of the work, working as designers, site managers, purchasing agents and engineers. Through the Renaissance, the idea of the architect as someone with a higher-level education of some sort emerged, even though it might not be in architecture – Alberti was a lawyer, Michelangelo a sculptor and Brunelleschi a goldsmith. Over time, there was an increasing separation of roles whereby ‘real’ architects did not soil their hands with many aspects of the building process – not just the assembly of bricks and mortar, but neither with the legal and financing aspects, or construction management. Indeed, early in my own career, architects used to threaten that they would report me to the regulatory authorities because my development management work was not within that narrowest definition of architecture. These separations and prohibitions, together with the

concept of the Victorian gentleman and permitted gentlemanly activities, tended to turn architecture away from the many other disciplines that, combined, can lead to better buildings.

Debating whether a built structure is architecture or not is probably unproductive.



A monster runs loose on Clifton Hill, Niagara Falls, Canada.

⁵² Sykes, 2007. p.15.

One might recognize a continuum, from pure architecture – perhaps something which was primarily ‘... designed with a view to aesthetic appeal’ (the Sydney Opera House might come to mind), through to basic utilitarian structures. Yet even factories, warehouses and garden sheds are often created with some intent to create an aesthetic impact – it is just not as important as for major public buildings located on prominent sites. Where the line dividing architecture from non-architecture lies would probably just lead to meaningless debate – like so much else, it is likely a matter of personal opinion.

■ A brief history of appearance in architectural thought

Some reflection on history – how we got to today’s situation – is appropriate. There are many aspects to the history of buildings, but questions about why things are beautiful, ugly or something else have been a recurring theme among philosophers and artists for centuries.

The chronicle of architecture is often presented in the form of art history – people concentrating on stylistic evolution, precedents and purity of design. The reality is that the history of building is considerably rougher. When I teach architectural history, I am always careful to put it into an economic context: almost every building is the result of ‘deals’, if only between a husband and a wife when designing a new house. On almost every scale, buildings represent a significant expenditure of resources: they are an investment in anticipation of future benefits, but few architecture history courses will tell you about this. For instance, at a time when there was very little agricultural surplus and even the most advanced countries were operating at little more than subsistence level, cathedrals were built across Europe. In a world in which life was usually short and miserable, the church was offering the promise of a better afterlife in exchange for money and labour – a ‘deal’.

One possible explanation for attempts to define architecture as apart from mere building is that, until the very recent past, few people could afford to worry about aesthetic sensibilities. They were too busy simply

trying to survive, often with three-quarters or more of the population toiling in agriculture in pre-industrial economies.⁵³ Architecture was something that related to few people, with a major exception being that most people were, in some way, exposed to religious architecture. Prior to the late nineteenth century, architecture was an elite profession dealing with elite clients, building elite buildings. In the 1870s, the London School Board asked architects to compete for its projects. Some of the invited architects were reluctant to participate because the planned buildings were seen as too modest – respectable architects did not do that sort of work.⁵⁴ Of course other architects, presumably less respectable, did design them, and undertook to create buildings suitable for educating the masses.

It is worth looking at the centuries of architectural thought, in order to gain insights into how buildings have been regarded – and why.

■ The beginnings and the classical tradition

We really don't know when people started to produce things designed with more than basic functionality in mind. People have been creating patterns and jewellery for many tens of thousands of years, and wall paintings for over 30,000 years.⁵⁵ Even in primitive hunter-gatherer societies, people create more than just basic utilitarian objects. Unfortunately, most such societies do not leave anything written that details the motivations behind their artistic or 'architectural' efforts.

Our access to written reflections on architectural design begins in classical antiquity, and these comments are still of interest and debated. Plato (c. 428–348 BC), in *Phaedrus* and *The Symposium*, saw beauty as being independent of the viewer. To him, beauty (or presumably ugliness) was somehow inherent in the object being viewed – implying a permanent state, that what is beautiful at one time would always be beautiful and to all viewers.

⁵³ Allen, 2000, p.11.

⁵⁴ Cook, 2007, p.62.

⁵⁵ Ede, 2008.

Yet in *Hippias Major* (What is Beauty?), one of the dialogues attributed to Socrates, there is a contradictory proposition that beauty is what ‘is pleasing to the eye and ear’ – although, given differences in language, the word *kalos*, meaning ‘beauty’, also implies being good, noble and proper. Hence there was apparently some level of reserved recognition that the viewer is indeed important.

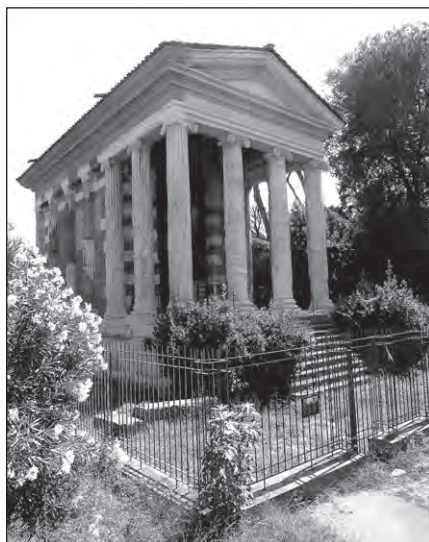
Aristotle (384–322 BC) suggested a triad of categories relating to productions of the human mind, based on consideration of poets and orators: the theoretical, the practical, and the poetic or creative. The Greeks discovered that appealing music was related to mathematical proportion, and so to them it was only logical that physical beauty might also be understood in mathematical terms, as expressed by Pythagoras. Of course, mathematics has a seductive and wonderful beauty in itself. Unfortunately, the Greeks also left a tradition that it was possible to discover the workings of the universe through pure thought – observation and experimentation were superfluous. This is why Aristotle’s propositions about the workings of gravity stood until the time of Galileo, who 1,500 years later actually conducted experiments.

The Roman poet and satirist Horace (Quintus Horatius Flaccus, 65–8 BC) offered the comment, albeit about writers: ‘He who combines the useful and the pleasing wins out by both instructing and delighting the reader.’⁵⁶ In a built environment sense, Vitruvius through *De architectura* left us a lasting legacy, rediscovered in the Renaissance. Unfortunately, it is the only substantial work specifically on architecture to have survived from antiquity, so we do not know to what extent his opinions were shared at the time; it has perhaps had more influence than warranted. But its appearance as a comprehensive system provided an explanatory link to ancient Rome – thereby giving guidance for a Roman-inspired Renaissance. Vitruvius left us with some reasonable and enduring concepts. He stated (Book I, ii, 1) that ‘Architecture depends on Order, Arrangement, Eurythmy, Symmetry,⁵⁷ Propriety, and Economy’. He defined eurythmy as ‘... beauty and fitness in

⁵⁶ Horace, *Epistolas Ad Pisones De Ars Poetica*.

⁵⁷ One has to be careful about the meanings of words, and some, such as ‘symmetry’, can have multiple meanings, some of which may not be in common use.

the adjustment of the member. This is found when the members of a work are of a height suited to their breadth, of a breadth suited to their length, and, in a word, when they all correspond symmetrically' (beware of the multiple meanings of the word 'symmetry'). Propriety is somewhat simpler, essentially that the design is proper for its purpose.⁵⁸ In architectural circles, the most persistent lines from Vitruvius suggest three main themes that the creator of a building should address: *firmitas*, *utilitas* and *venustas* (Book I, iii, 2). Vitruvius recognized that the concept of *venustas* (the features of the goddess Venus, or, to us, 'delight') is complicated, but generally felt that beauty was an absolute concept – it did not depend on the viewer. He suggested that beauty related to nature, and that the designs of nature were based on proportion and symmetry, and also had something to do with the human form. Beyond that there was a concept of an ideal human form, one that fit within both a circle and a square, and he included



Temple of Portunus, Rome. c.3rd or 4th century BC. Over two thousand years later, people still esteem such buildings – and sometimes still emulate them. Why? Was Vitruvius correct?

an illustration – although we are more familiar with Leonardo da Vinci's c.1490 version. Vitruvius proposed that a timeless beauty resulted from this relationship with the human form, and suggested that architects, in order to create beautiful buildings, should extract proportions and symmetries from it. One possible criticism of this, other than the obvious fact that people do vary in opinion, is that it is not explained how closely the built form has to conform to the ideal to achieve delight – is it only approximate?

⁵⁸ Vitruvius: Ten Books on Architecture, trans. by Morgan, Morris Hick, 2006, Harvard University Press/Project Gutenberg.

Of course, through the ages, and even into the twentieth century, it has been conveniently ignored that most people (including all women) do not fit the Vitruvian ideal.

In the Middle Ages questions of beauty were, perhaps inevitably, usually seen as being derived from theology – beauty was considered God-given. Augustine (354–430) in *De vera religione*, saw beauty as unity and order – coming from complexity. Thomas Aquinas (1225–1274) in *Summa Theologica* also explored the concept of beauty, but to the practical builder, his approach is based on spiritual or moral beauty, rather than the sort of beauty that might result from the built environment.

The Renaissance brought additional structured discussion and more design insights. Efforts to understand the built environment were something to be expected as Renaissance natural philosophers (the precursors to what we call scientists) attempted to comprehend the universe. They were starting from the limited base of material that had survived from Greek and Roman civilizations. It is perhaps unfortunate that so few architectural sources survived from antiquity – were there attempts at scientific enquiry in ancient Greece?

Leon Battista Alberti (1404–1472), an Italian humanist (although like many Renaissance notables he contributed to many fields, including art, language, cryptography and surveying), wrote the first printed book on architecture, (*On the Art of Building*), as a clarification of Vitruvian thought. As might be expected of a Renaissance work, it alludes to the architecture of ancient Greece and Rome. Alberti emphasized geometry over ornamentation – suggesting centrally planned churches using circles and the basic polygons to govern their layouts. Alberti's works remained an important part of architectural theory for 300 years. As a practising architect, he had the opportunity to build, so we can see how he implemented his theories.

Alberti had considerable influence on subsequent architects and writers, including the Venetian Andrea Palladio (1508–1580), who trained as a stonemason, so had intimate experience with real buildings.

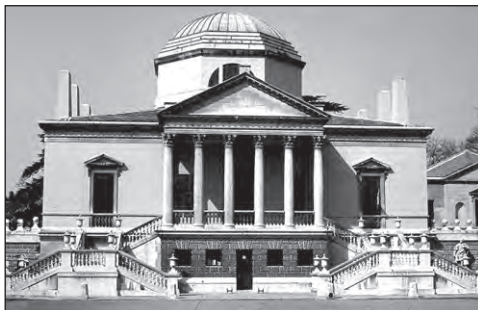
Palladio's buildings, in particular his country houses, and his writings led to an architectural style called 'Palladian', which retains its influence to the present day. Palladio's illustrated treatise *I quattro libri dell'architettura* (The Four Books of Architecture) of 1570 was widely circulated and referenced, with the illustrations serving as guides for building designers. Palladio's book, unlike those of Vitruvius and Alberti, treated architecture and urban design as subjects distinct from engineering. Palladio's thoughts were reflected in the projects of Inigo Jones and Christopher Wren, and embraced in the United States. As with his precursors, Palladio attempted to give instructions on how to achieve beauty using simple mathematical ratios, proportion and symmetry. Palladianism can be quite simple – one example is the Queen's House (1616–1635) at Greenwich by Inigo Jones, where ornament is quite spare relative to the accompanying Wren buildings. It is known that Jones had a copy of *I quattro libri*.



The Queen's House, Greenwich, UK. Completed 1635. Inigo Jones, Architect. The domes and columns behind the simple Queen's House are part of the Greenwich Hospital done by Sir Christopher Wren, Nicholas Hawksmoor, Sir John Vanbrugh and other architects, and completed in the mid-eighteenth century.

The best-known of Palladio's designs was the Villa Rotunda near Venice. Its orderly facade speaks of both classical nobility and order, yet offers the promise of a quiet domesticity (at least in my opinion). Its ongoing popularity suggests that it pushed quite a few of 'the right buttons'. Lord Burlington created a somewhat similar 'Chiswick House' in West London, completed in 1729.

And 150 years after Palladio, Thomas Jefferson followed his guidance when creating his plantation home of Monticello (various phases: 1768–1809) in the United States. The classical ideas and ideals continued to be seen as offering solutions to many of civilization's problems, and it was reasonable to use their architectural forms, even as they were reinterpreted through Baroque and Mannerist derivations.



*Chiswick House, London, UK. Completed 1729.
Richard Boyle, 3rd Lord Burlington, Architect.*

Through the period of the European enlightenment, additional insights were proposed, questioned and developed, by such individuals as Johann Georg Sulzer (1720–1779) and Alexander Gottlieb Baumgarten (1714–1762). What created pleasurable feelings? What was the purpose and nature of the fine arts? How was this entangled with the nature of the soul, the imagination and the emotions? How exactly could the emotions be stimulated? While there were few clear answers generated, some sense of how the area might be defined did emerge. This period was providing some groundwork for the radical changes that were about to happen in the Western world as it encountered the Industrial Revolution and increased urbanization.



St. Pancras Midland Hotel, London. Completed 1876. Sir George Gilbert Scott, Architect.



CHAPTER 5

The Modern World

■ The industrial (and other) revolutions

In Europe, from the Renaissance to the late 1700s, the accepted way to avoid architectural ugliness was clear: beauty lay in the classical forms. The urge for originality was not important – often it was simply a matter of being faithful to the Greek and Roman forms. There was debate about the best ways of implementation, and ongoing stylistic evolution, reinterpretation and ornamentation, but to us in the twenty-first century, even the more radical architects such as Sir John Soane (1753–1837) did not drift far. Even as an innovator, his landmark Bank of England building (variously 1788–1833) still featured columns and classical details.



Bank of England, London, UK. Constructed 1790–1833. Sir John Soane, Architect. Soane was responsible for the lower perimeter walls, the only remaining part of his work.

Through the 1700s and into the 1800s the enlightenment and the Industrial Revolution unfolded in Western Europe, and much changed, including scientific, intellectual and architectural thought. Urbanization intensified and society

changed dramatically. The design ideals of classical civilization that had pointed the way since the early Renaissance no longer held as universal models.

Moreover, societal and economic changes created a demand for new building forms. Factories and warehouses required multiple floors, light and clear interior spaces. A rising urban population needed to be housed. Greater educational opportunities required schools, and the railway networks required vast terminals as well as more modest stations. This was accompanied by the widespread use of new materials, notably iron, concrete and glass, and an increasing ability to undertake engineering analysis.⁵⁹

In the pre-Industrial Revolution world most people lived as peasants in the countryside with no architectural choice – their dwellings were simple and built of whatever materials, skills and precedents existed locally. With industrialization and urbanization there was a need for an enormous number of dwellings for urban labourers. These basic buildings, with limited amenities and poor construction, and usually overcrowded, quickly became squalid. This led to public health acts that were passed in the mid-1800s in most developed countries, to ensure minimum standards of planning, design and construction.

In most traditional land-based economies, ways to fulfil aspirations were limited. One might seek fame and fortune in the army or navy, or make an attempt at piracy or foreign trade, but moving up either economically or socially was often difficult. The rise of a new class of entrepreneurs and managers meant that there were more people whose wealth was not land-based. Wider opportunities meant economic and social aspiration, and architecture is a way of expressing success. Advancement in the 1800s often reflected innovative thinking and actions, so it is not surprising that numbers of newly affluent individuals became open to other ways of doing things. There was a need for well-constructed, comfortable housing for educated occupants, and they were not always bound to traditional precedents.

With increased world travel (and photography), images, information and artefacts could be more readily brought back from the far corners of the world, where Mediterranean classical architecture was not mainstream.

⁵⁹ Addis, 2007.

It became increasingly clear that the classical mode was not the only architectural formula, and that buildings could take on fundamentally different forms.

Another change was that the works of the Middle Ages began to be seen as more than just blots on the landscape. John Ruskin, William Morris and French architect Viollet-le-Duc all developed influential theories on how to deal with older buildings. Movements to preserve ancient buildings emerged, such as the Society for the Protection of Ancient Buildings, created in 1877. In the twenty-first century we are still awed by and admire the great cathedrals, and can relate to their spiritual messages and architectural impact, but in the Renaissance they were often seen as relics of the 'Gothic' Germanic barbarians, who had destroyed Roman civilization. Many cathedrals only survived for the usual reason that so many older buildings remain: a lack of money to create something more desirable.

In the mid-1700s explorations of alternative forms began – conceivably with the construction of the neo-Gothic Strawberry Hill, built essentially as an experiment (or exhibition) by Horace Walpole, in stages between 1749 and 1776. This, and similar efforts, demonstrated that other design forms could be desirable, and the construction of the Brighton Pavilion, built in a number of stages and reaching its current form in 1823, was important. This building had started as a neo-classical lodge by the architect Henry Holland, but in 1815, John Nash was retained to expand and convert it into an oriental palace in the Hindoo style. This royal effort (by George IV, largely when he was Prince Regent) increased the visibility and the acceptability of non-classical forms. As well as the exotic onion domes, and oriental arches and spires, it incorporated the latest technologies, including gas lighting and flush toilets. Monarchies help to make stylistic alternatives acceptable.

The nineteenth century encompassed 'The Battle of the Styles', which may seem to us akin to the violently contested heresies of the Middle Ages – it is now difficult to understand the arguments, which seem unresolvable and sometimes meaningless.

But that is perhaps the very point of them – while scientific disagreements can be resolved through experiment, religious and fashion differences cannot be, and it is only recently that aesthetic differences have come to be dealt with scientifically. Yet it seemed vitally important at the time whether government offices were Gothic, neo-classical or Byzantine. Sir George Gilbert Scott's position suggested that there was an age difference, at least in his own time, that people aged over sixty preferred the Palladian neo-classical, in contrast to younger people who would consider other styles.⁶⁰

■ The Gothic revival

The style that frequently 'won' in the nineteenth century was the Gothic Revival. But winning in one era does not necessarily mean winning forever. Historian Kenneth Clark, writing in 1928, tells us that in 1920s Oxford it was widely held that Keble College (built 1868–1870) was '... the ugliest building in the world. Undergraduates and young dons used to break off on their afternoon walks in order to have a good laugh at the quadrangle'.⁶¹ Of course, the people responsible for its construction did not plan to create



All Saints Margaret Street, London. Completed 1859. William Butterfield, Architect. All Saints Margaret Street is well worth a visit and some reflection – one can be readily overwhelmed by the sheer volume of artwork, and the resources that were obviously directed towards creating it.

an ugly building, and today Keble would not likely rank high on the public's list of ugliest buildings. It was designed by William Butterfield, a prominent and respected architect, and constructed subsequent to the amazing church, All Saints Margaret Street, in London.

⁶⁰ Clark, 1928/1964, p.170, but originally from Hansard (164), 535.

⁶¹ Clark, 1928/1964, p.xv.

The polychromatic brickwork at All Saints became widely popular and, seen by many Victorian theorists as being exemplary, it was praised by Ruskin and repeated at Keble College. Presumably, the members of Keble's building committee had seen All Saints and other of Butterfield's works before proceeding with their project. In 1884, Butterfield won the Royal Institute of British Architects Gold Medal. Forty years later people were laughing at his buildings.

Intellectually, for a couple of centuries, insight into the buildings of the Middle Ages had been limited. But over time, Western Europe, its colonies and other cultural associates, rediscovered its Gothic heritage. In reality, Gothic never completely disappeared, with one example being St. Michael's Cornhill in London, which was rebuilt on the exterior after the Great Fire of 1666, perhaps by Wren. The interior is less convinced by the Gothic and features Doric columns and classical arches.

Sometimes, in particular in the early stages of the Gothic Revival, and in more remote locations (such as in the colonies), the style was manifested as a thin layer of buttresses, pointed windows and pinnacles pasted on an otherwise orderly, symmetrical classical building. In others, scholarship combined with the skill of superior architects produced remarkable but sometimes dubious Gothic. St. John's College, Cambridge's New Court (completed 1831, designed by Thomas Rickman and Henry Hutchinson) is picturesque, symmetrical and regular, and offers a rather thin Gothic, but is still remarkable – even on the back, which has a certain factory-like appearance. Neo-Gothic buildings were often seen as a picturesque addition to the countryside, and in some of the Romantic strands of thought were preferred in a ruined or near-ruined form.



St. Michael's-Cornhill, London, Tower completed 1722. Architects – various designers but most of the tower is probably the work of Nicholas Hawksmoor.

The Gothic revival was far-reaching: such buildings as the Vienna Rathaus (city hall) (1872–1883) and the Ottawa Parliament buildings (variously 1859–1876 and 1916–1927) followed a more secular Gothic concept.



*Vienna Rathaus (City Hall) Completed 1883.
Friedrich von Schmidt, Architect.*

The history of Gothic and Gothic Revival is a clear illustration that not all people, or all generations, evaluate a building within the same frame of reference. In the case of these forms, the Victorians often associated beauty with strength, morality and Christian values. One of the proponents of morality relative to architecture was Augustus Welby Northmore

Pugin (1812–1852), an architect and designer, but most remembered as an author and critic. Pugin became a strong proponent for the use of medieval religious forms in buildings. He saw buildings as having a moral value that could exceed their aesthetic value, and thought that a building should clearly express the purpose for which it was created – an early notion of ‘form follows function’, although his definition of function flowed beyond Wotton’s commodity and firmness. John Ruskin (1819–1900), in his 1849 book *The Seven Lamps of Architecture* (revised in 1855), proposed seven factors as important in architecture: sacrifice, truth, power, beauty, life, memory and obedience. What is interesting is that, unlike the propositions of some more recent theorists, he did not offer simple rules for building, but offered instructions about how the built form can link with the observer – certain designs acting on the human condition to stimulate a sense associated with truth, for example. Interpreting Ruskin requires a degree of caution: he often contradicted himself and did change his mind over the years. One of my research partners commented that he continues to offer a good quote for any occasion.

If the viewer puts a premium on such things as moral or religious values, an object that fulfils those associations is likely to be seen as beautiful. We might presume that the people ridiculing Butterworth's Keble College after the First World War had lost those connections: the First World War destroyed many social and cultural norms in Western Europe and throughout the British Empire. To many people in the 1920s, the society and values that had created polychromatic neo-Gothic buildings had apparently ceased to exist. In the twenty-first century, we no longer need to embrace or even understand the values held by Victorians. Their buildings have become familiar, historic, and we have fit them into our own mental frameworks. Even if they are not seen as beautiful, they might be seen as interesting or challenging, or simply part of humanity's rich heritage.

A surprising bias against Victorian neo-Gothic can still be detected. I particularly like the chapel at St. John's College, Cambridge, completed in 1869 to a design by Sir George Gilbert Scott. Some people wonder why I esteem it above the more 'authentic' late-medieval Kings College Chapel. The reason is that I simply *prefer* the Gilbert Scott building. That it is a reproduction is immaterial to me – it has great acoustics, wonderful art, great windows – and, to me, a more comfortable feeling. Should one's liking for buildings arise from the degree of authenticity or purity, or from simple preference? Perhaps I just fall for the work of the popularizer Scott.

One of the more remarkable Victorian structures is London's Albert Memorial (unveiled in 1872), also designed by Scott, and completed a few years after St. John's College Chapel. In a previous book⁶² we undertook an analysis of the financial implications of this structure, originally funded by enthusiastic donors, and built to commemorate Prince Albert, the deceased spouse of Queen Victoria. This remarkable neo-Gothic structure, 54 metres (176 feet) high, rapidly fell out of fashion, and for most of its life was regarded as a very dubious addition to London's skyline. A hundred years of exposure to weather and urban pollution had caused the monument to deteriorate, so through the 1990s it was subject to major refurbishment.

⁶² Ellingham and Fawcett, 2006.

After adjusting for the differences in the value of money, the effective cost of the restoration was roughly equivalent to its original cost. Today's generation felt that the structure was worth keeping. It is important to remember that it was originally paid for by popular subscription – and perhaps the public received what they wanted. More than a century later the public supported its restoration – one might presume they got what they wanted too, but it would have been something different.



Albert Memorial, London, UK. Completed 1872.
Sir George Gilbert Scott, Architect.

Today, the Gothic still lives and may even be thriving. Mock castles are central to major theme parks. Our children play video games in mock-Gothic virtual environments. And the popular movie *Harry Potter and the Chamber of Secrets* (2002) featured a Ford Anglia flying over Scott's St. Pancras Hotel, built through the 1860s and 1870s. As with the Albert Memorial, for much of its life the St. Pancras Hotel was regarded

as being a rather dubious bit of leftover Victoriana, but it has been subject to a massive twenty-first century reconstruction. Interestingly, while it was one of the first hotels to feature indoor plumbing, it originally had five bathrooms with nine tubs to serve 300 bedrooms.⁶³

■ Arts and crafts

For many reasons, the Arts and Crafts movement is a curious, but important, constituent of late-nineteenth-century culture, and much of what followed. Its ideas and values still shape the way we assess the built environment. It is important to recognize that it is primarily a philosophy, not a specific style.

⁶³ See the *History of St. Pancras Renaissance* website for more about this fascinating building.

One might be criticized for calling an Arts and Crafts house Tudoresque, Italianate, Mission-style, Shingle-style, neo-medieval or National Romantic, yet this diversity of descriptions is not inappropriate. Arts and Crafts concepts were expressed in many different 'styles', in different places, and boundaries to the concept are quite fuzzy.

The roots of the Arts and Crafts movement are in the mid-1800s, at a time when the worst features of industrial urbanization were being manifested. Charles Dickens was railing against social and economic problems, and governments were starting to create public health and building standards. It was also the time of the appearance of mass-produced goods available to the wider population. The display of goods at the Great Exhibition of 1851, held in London in the Crystal Palace in Hyde Park, is often seen to be the stimulus for the Arts and Crafts movement. The philosophers of the day, most notably William Morris (1843–1896), were concerned about the use of technology to create ornate but often cheap and shoddy goods. Morris, in furnishing his 'Red House' of 1859, an early architectural expression of the Arts and Crafts, found virtually nothing commercially available to be acceptable to him.

The Arts and Crafts philosophy suggested that the way ahead was through carefully considered and crafted goods – not in large-scale mass-production of poorly designed products.



St. Pancras Midland Hotel, London. Completed 1876. Sir George Gilbert Scott, Architect. Representative of the renewed esteem given to Gothic architecture. After years of abuse and abandonment, it was revitalised and reopened in 2011 to an appreciative generation.

Ironically, the lower price of goods resulting from mass-production, regardless of design quality, was a main factor behind the increase in the standard of living of the population of the advanced countries of the time – including the mechanization of the production of brick, glass, millwork, iron and roofing.

While some Arts and Crafts buildings anticipated less cluttered and eclectic forms, the movement also looked into cultural roots, hence the proliferation of different manifestations of the philosophy. Looking forward, H.G. Wells wrote many of his prescient works in Spade House in Surrey, and retained Charles F.A. Voysey (1857–1941) to improve it.

The movement valued the honest work of the artisans, but usually such goods were only affordable to the affluent (like Morris). As the forms of the Arts and Crafts became popular, much production occurred within the machine-dominated factories. Although the philosophy proposed that design and production should go hand in hand, in reality, architects and manufacturers usually find it easier to deal with a subservient, docile workforce, which obediently follows design instructions. There are two problems: craftsmen with a design sensibility acceptable to trained designers are invariably few, and a creative workforce can be demanding to supervise. This can be found in some projects where a craftsman's loose interpretation of a drawing led to what a connoisseur would probably regard as a less satisfactory outcome than the professionally prepared design.⁶⁴ The result of this is that, in the UK, many Arts and Crafts buildings are country houses for the wealthy. In North America those exist too, but so do numerous 'craftsmen' houses, some of which were ordered as factory pre-cut packages from the catalogues of Sears or Eaton's. Apparently, the Americans were more comfortable with the notion of factory-produced craftsmanship.

The Arts and Crafts movement is worth considering because of its long-term impact on the way people think and perceive the world.

⁶⁴ Ellingham, 2014.

The contradictions and internal conflicts led to some of its inherent flexibility and the range of design interpretations and subsequent design movements it stimulated, as well as the way we look at design today. Books on the Arts and Crafts movement reference such varied manifestations as Frank Lloyd Wright's Prairie houses, the American shingle and craftsman styles, the romantic Finnish revivalism of Eliel Saarinen, the German Bauhaus works of Walter Gropius, and the pre-manufactured 'catalogue' houses. Many elements of the design inheritance survive today – our frequent preference for natural materials, the notion that materials should not imitate other materials, that function should be recognized and apparent, and that ornament be used with restraint. In keeping with the ambiguity and complexity of the Arts and Crafts, it is even difficult to determine when it ended – or if it ever did: the American magazine *Fine Homebuilding* remains faithful to many of the approaches and beliefs of the nineteenth-century Arts and Crafts philosophers, and some of the products of the early Arts and Crafts period remain in production.



St. Thomas Church Rectory, St. Catharines, Canada. Completed 1928. Nicholson and Macbeth, Architects. A traditional form of the Arts and Crafts, underlining Canada's British religious and cultural connections.

A further factor is that Arts and Crafts was seen as a reforming concept with the objective of improving the lives of very ordinary people, and formed a bridge between the pre-industrial designers who worked for wealthy or aristocratic clients, and their successors who felt that designers should be an instrument of social change.

■ The turbulence of the early twentieth century

The first decades of the twentieth century saw considerable global turbulence. Clashes occurred over industrial and market ascendancy, a grab for colonies, and about forms of government, all of which ultimately led to two massive wars and economic chaos. Today, more than a hundred years after the end of the First World War, it is increasingly difficult to comprehend the reasons why the world descended into madness, causing the deaths of millions of people. Was it just a disagreement between a group of royal cousins, or over a few African colonies, or perhaps between competing industrial concerns? How was the thinking person to react? It is not surprising that the interwar period was full of change. And designers saw themselves having a major role in this change. Their concepts were developed before the social, economic and physical wreckage caused by the First World War, but the war encouraged their spread and influence. Sussman and Chen suggest that the trauma experienced by the numerous survivors of the war was important: that PTSD (post-traumatic stress disorder) was probably widespread, and that in such cases avoidance of the past is a common response.⁶⁵

From a viewpoint in the early twenty-first century it is easy to forget what life for most people was like in 1900, even in the most developed countries. In the USA, in 1900 the infant mortality rate was approximately 100 per thousand live births, falling to under 7.2 per thousand a hundred years later. In 1900, in some cities, as many as 30 per cent of children died in their first year.⁶⁶ Cities were awash with dreadful housing, the legacy of the Industrial Revolution and rapid urbanization. I often use images of slums in Oslo to make this point with students. Oslo today is one of the richest and most elegant cities in the world – but a hundred years ago a large portion of its population lived in squalor, a scene repeated in most cities. It was not that this was new or worse than the rural areas from which so many people had come, but urban densities made squalor more

⁶⁵ Sussman and Chen, 2017, p.5.

⁶⁶ Centers for Disease Control and Prevention, Atlanta, Georgia, www.cdc.gov/mmwr/preview/mmwrhtml/mm4838a2.htm

concentrated and visible. Poverty in the countryside, as represented by so many painters, has an attractive, romantic, pastoral quality.

Many people saw the need to do something about urban conditions, even through some sort of revolution, and architects took the matter seriously. Some were associated with the Vienna Circle and the German Bauhaus school and movement, both of which pursued the application of scientific functionalist logic to art. Renowned Bauhaus head, architect and teacher Walter Gropius (1883–1969), in his book *The Scope of Total Architecture*, offered a biographical thought: ‘... the full consciousness of my responsibility as an architect, based on my own reflections, came to me as a result of the First World War, during which my theoretical premises first took shape ... After that violent conflict, every thinking man felt the necessity for an intellectual change of front. Each in his own particular sphere of activity aspired to help in bridging the disastrous gulf between reality and idealism ...’⁶⁷ The result was that through most of the twentieth century architecture was seen as a tool of radical social change.⁶⁸ We see this expressed in Ayn Rand’s 1943 novel *The Fountainhead*. In this work, the corporate architect, who actually has clients and builds things, is dubious. The other architect toils in downgrading poverty and obscurity, but, by being true to his personal beliefs, is the virtuous one.

■ The twentieth century – modernism

In the twenty-first century we are faced with the legacy of twentieth-century thought, much as people a century ago worked in response to nineteenth-century thought. Buildings are one of the longest-lived of human-created assets, so we are always confronting what our parents, grandparents and great-grandparents thought and built – and we react to them in different ways. It is therefore interesting to consider some aspects of modernism.

⁶⁷ Gropius, 1943/1970, p.19.

⁶⁸ While an undergraduate, one of my studio directors was the pugnacious social radical Brian Anson (1935–2009), who worked to save London’s Covent Garden area, and documented those activities in the book *I’ll Fight You for It* (1981).

One source of pragmatic modernism was Chicago, which in the wake of the fire of 1871 had to rebuild its central core at a high density – and, responding to newer technologies such as electric lighting and telegraphic communications, created the modern skyscraper. Influential early modernist Louis Sullivan (1856–1924), in a series of ‘Kindergarten Chats’, underlined the relationship between people and architecture: that through architecture ‘... Man has expressed, through the generations, the changing drift of his thoughts. Thus, throughout the past and present, each building stands as a social act.’⁶⁹ Sullivan recognized that things had changed and that should be reflected in changing designs – that new buildings should be ‘in consonance’ with changing thought – often reflected through the power structures, acting as a ‘social organism’. Sullivan pointed out how ‘scholarship’ had contributed to gaps between architectural theory and an architecture that might be more in keeping with widespread opinion.⁷⁰ The result, he thought, was that architecture drifts, often simply following transient fashion. He argued (at length) for a guiding philosophy, including a relationship with the thoughts and preferences of the wider population. Sullivan was suggesting a possible, more scientific, direction, but in the



The Fisher Building, Chicago. Completed 1896/1907. D.H. Burnham & Company, Architect. Chicago skyscrapers were one manifestation of the massive changes in an increasingly urban world. The high-rise office building was one response to better transportation and communications.

early years of the twentieth century, the tools and concepts were still limited.

Various forms of Modernism eventually came to dominate architectural thought through most of the twentieth century.

⁶⁹ Sullivan. 1918/1947, p.227.

⁷⁰ Sullivan, 1918/1947, p.230.

Putting actual design to one side, one feature was an increasing separation in attitudes between artists and the wealthy – those people who for centuries had provided artists with their commissions. Art and architecture became increasingly intertwined with social consciousness. Architects looked for social and political meaning in building structures, materials and project objectives. Applied ornamentation fell into disrepute. In my own undergraduate days, ornament was condemned by the student body as ‘not honest’.⁷¹ Historian Peter Collins pointed out that this was essentially an era of rationalism, with a strong reliance on ‘structural justifications for architectural form ... a belief that architecture derives its finest expression from the use of the most economical use of structural forms’.⁷² Wotton’s sense of ‘delight’ as an explicit architectural objective was pushed far into the background.

Wendy Steiner offers a considerable discussion of the process involved in the pursuit of modernism. She notes: ‘In modernism, the perennial rewards of aesthetic experience – pleasure, insight, empathy – were largely withheld, and its generous aim, beauty was abandoned.’⁷³ She further illuminates: ‘The avant-garde were utterly hostile toward the “feminine aesthetics” of charm, sentiment, and melodramatic excess, which they associated with female and bourgeois philistinism.’⁷⁴ I enjoy the use of the word ‘bourgeois’, which in one sense only means middle class, yet has often been hurled as a debate-stopping insult. In university I sometimes heard it – usually from certain students who were almost inevitably also middle-class, but did not want to be. They seemed to express their non-bourgeois aspirations primarily by smoking offensive French cigarettes. Strange, isn’t it – a word specifically used by one social class to put down other members of the same class? Somehow it became appropriate for the true and worthy artist to become a left-wing radical, inevitably in opposition to the values of wider society.

⁷¹ *My sense is that while ornamentation that was not justifiable in terms of function was not explicitly condemned by the school, incoming students quickly recognized the dangers of even flirting with it.*

⁷² Collins, 1965, p.207.

⁷³ Steiner, 2001, p.xiii.

⁷⁴ Steiner, 2001, p.xxiii.

While since the beginning of urban existence, building designers have looked to precedents, this approach was abandoned, and the reproduction or reinterpretation of earlier forms became taboo. Unfortunately, this often meant throwing out the good with the bad, because in some cases (as we shall see) a design based on historical precedent might be the best solution. Many historical forms have survived the test of time, and there are often good reasons why they endured.

I enjoy the rantings of designers in their attempts to impose their own non-historical tastes on an uncooperative public. One term of abuse is ‘Disney design’, yet the Disney corporation has been remarkably successful at understanding and dealing with the preferences of much of the world’s population – a fact usually disregarded. Another, ‘pastiche’, is perhaps my least favourite word. The *Concise Oxford English Dictionary* offers a non-judgemental definition: that it is a word based on or imitating some other source, often following some well-known precedents. In today’s world of architecture, it is usually meant as an insult⁷⁵ even though for centuries most design did follow precedent. But again, this becomes a personal matter – who exactly is establishing the merit, and according to what standards? In some of my experiments, I have faced groups of architects. Often they have problems separating the original buildings from the reproductions. Seen as an original they might like a building, but when the information is supplied that it is a reproduction, the level of esteem falls markedly.

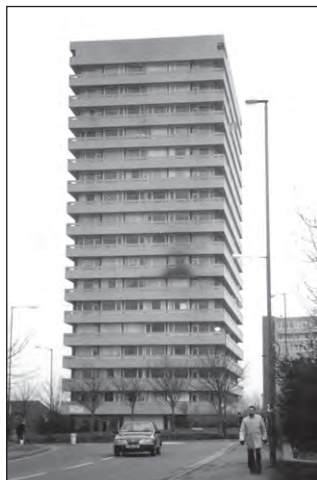
Can good things come from good architecture – a major proposition behind modern architecture? We do know that unfortunate things come from unfortunate architecture – there are hundreds, if not thousands, of deteriorating low-income, high-rise housing projects around the world, once held to be ideal forms of housing.

⁷⁵ From Wikipedia, in the architecture part of the definitions of pastiche it notes (in August 2019): ‘... the term “pastiche” may describe developments as imitations of the building styles created by major architects: with the implication that the derivative work is unoriginal and of little merit, and the term is generally attributed without reference to its urban context.’ In Greek or Italian, *pasticcio* is something one eats – look for recipes to make your own. The negativity associated with architecture is not necessarily shared by the use of the word in other artistic endeavours.

In the late twentieth century, in the UK some tenants were driven to burn their units in high-rise tower blocks in order to obtain priority to be housed elsewhere. But whether improved architecture leads to better people is not as clear – nor do most architects who make that proposition support research to find out how that relationship might work.

Some of the most dramatic thoughts about new forms of built environment were devised by the Swiss-French architect Le Corbusier (Charles-Edouard Jeanneret) (1887–1965), probably the most influential architect/planner of the twentieth century. His suggested solution to the early twentieth-century urban problems of Paris was to tear down most of it and replace it with tall mega-apartment complexes and interconnecting motorways. While the world should be happy this particular scheme did not unfold, his thoughts inspired many other architects and planners – often with disastrous results.

Although the results of some of Le Corbusier's urban planning schemes would tend to be regarded today as ugly, if not horrific, in the early twenty-first century what is of at least equal influence was his clear exposition of the concept of buildings as utilitarian machines. One thing is clear – his statements reflected an ongoing conflict of many ideas and ideals, perhaps characteristic of his time. He pronounced that 'a house is a machine for living in'⁷⁶ but also ranged far beyond his proclamations, and sometimes implementation, of functionalism. His book *Vers une architecture* is a wide-ranging collection of the thoughts of the early twentieth century, in which ships, airplanes, cars, mechanization and mass production are all offered as inspiration for a new architecture.



Coventry, UK, modernist tower blocks. Evidence of the burnt-out units can clearly be seen on the façade. Photographed in early 1994.

⁷⁶ Le Corbusier, 1924/2008.

Meanwhile some of his buildings embrace the visual structure and order of the neo-classical. Again, the problem is the lack of empirical evidence for his proclamations. In 1951 at a conference in Milan, Corbusier commented that during the First World War he had read half a book on architecture – the only one he had ever read. Strangely, he said he found it to be excellent – one might wonder why, following his experience with that book, he did not read more. Perhaps he kept his subsequent reading secret.⁷⁷

The Deutscher Werkbund (German Association of Craftsmen) exhibition of 1927 in Stuttgart brought together the leading European architects of the time (including Le Corbusier), and twenty-one buildings were created containing housing of various sorts. Eleven survive as the Weissenhof Estate. These were built as ideals of ‘workers’ housing’, and incorporated the latest design philosophies. Although at least alluding to the notion of industrialized production, the cost of these model homes was well in excess of what would have been normal, but that can be forgiven – after all, exhibitions are usually just statements of possibilities. Of interest here (in addition to the aspects of concern to architectural historians) is that the modernist housing forms were largely rejected by the ‘workers’ for whom they were intended. The Stuttgart project is now occupied by artists, professionals and architects, who appreciate it as a monument to modernism. It turned out the ‘workers’ wanted more traditional forms. A few years after completion, the Nazis found the project inappropriate and non-Germanic, so they produced fascinating doctored images of the project as an Arab village – complete with camels. A visit to the ‘museum house’, Le Corbusier’s contribution to the exhibition, might leave one baffled. It implies a certain way of life. It is ingenious, with folding elements allowing rooms to be changed to fulfil various functions. While that concept has been widely rejected by the housing market, such environments do usefully exist in travel trailers (caravans) and smaller boats. While we might holiday in such environments, most people don’t seem to want to live in them permanently – at least not when they can afford something else.

⁷⁷ Cohen, 2014.

This lack of human focus has been considered, with some researchers suggesting that Le Corbusier had characteristics of autism spectrum disorder that caused him to see the world in an atypical manner.⁷⁸

Another proponent of ‘mechanistic progress’⁷⁹ was the American inventor and futurist Buckminster Fuller. I encountered him on two occasions. One was as an undergraduate in the early 1970s, when he opened the University Centre at Carleton University in Ottawa.⁸⁰ Fuller posed one of his usual questions: ‘How much does it weigh?’ Fuller’s point, as with Le Corbusier, was that ships, trains, aircraft and many other industrial products weigh much less to achieve their functions – the proposition being that this was a more efficient use of scarce resources. Buildings were heavy and therefore inefficient, and should be designed and built more like aircraft and ships. But it is more logical to match a product with what it has to do.



Buildings from the 1927 Deutscher Werkbund Exhibition in Stuttgart, Germany. Top: Apartment building by Mies van der Rohe (1886-1969). Bottom: Row of five houses by J.J.P. Oud (1890-1963).

⁷⁸ Sussman and Chan, 2017.

⁷⁹ Mumford, 1962.

⁸⁰ Carleton University Centre, designed by Z. Matthew Stankiewicz, Architect.

Few buildings have to move, and it is usually a bad thing when they do. Moreover, the ‘commodity’ or usefulness of a building often takes place over extended periods of time, and buildings are often, perhaps usually, modified to meet future conditions. Aircraft tend to be single purpose (although some passenger aircraft become freighters in their antiquity), so can be carefully designed to fulfil one role, and lightness counts when it comes to aircraft. University centres, perhaps more than most buildings, need to be robust, so as to survive the assaults, changing needs and expectations of ongoing generations of students.

Perhaps the most ruthless manifestations of functionalism were windowless schools. Rationally, with efficient modern lighting, natural light was clearly redundant and outside views a distraction to students, and windows implied heat loss and solar gain. Mechanical plants could be smaller, something school authorities could brag about, but today this hyper-rationalist approach can appear tragic.⁸¹ This was particularly unfortunate when applied to schools as, unlike offices in which occupants can compensate by bringing in plants and other personal items, students cannot do this.⁸² A personal friend, now a psychologist, told about inhabiting a windowless school – now demolished. He entered in the morning, and left in the late



Post Second World War II British prefabricated metal house. ‘...modern materials and construction have an intrinsic beauty...’ Eric Arthur (1936). Was that a reasonable proposition in 1936? Is it now?

afternoon, and had no idea what was happening outside. In a northern winter, he could go for days and never see daylight.

The philosopher-architects who saw the future in terms of ‘machines for living’, were addressing the issues of their time. Many people were living

in physically dreadful conditions, so architects (and others) understandably saw the future in terms of remedying these problems as efficiently as possible, but often destroyed vibrant communities in the process.

⁸¹ See Terte, 1962 and Salt, 1967 for longer discussions.

⁸² Biner et al., 1993.

In 2015, *The Economist* noted: 'But it is also because people like their houses to have a human touch: nobody wants to live in something that feels as if it were built by a machine.'⁸³ Essentially, forget it being like a machine – people seemingly don't even want to live in something built by a machine, and the results of the modernist mentality were, when replacing nineteenth-century buildings with concrete ones, often '... no more practical or functional than the old'⁸⁴ and largely offering little delight.

The irony of this is that the modernist architects did worry about appearance, but seemed almost embarrassed by the concept, so justified their work in logical, functionalist terms, disconnected from subjective human response. It is also curious that through the interwar period, while architects were preaching about functionalism, throughout wider industry 'beautiful' design was being explored as a way of making other products more desirable. Indeed, standardization of manufactured products did bring costs down, making them more affordable, but in more affluent societies, people wanted choice, and appreciate more than just functionality.

■ Afterwards – postmodernism

Going into the complex and sometimes indecipherable literature surrounding postmodernism is well beyond the scope of this book, but some mention is needed.

As many people came to reject the concepts of modernism, something else was required. Modernism saw solutions in terms of functional universals, but people usually wish to express themselves culturally and socially by communicating their personal identity.⁸⁵ Accordingly, modernism was followed by something unhelpfully known as 'postmodernism'. Steve Matthewman and Douglas Hoey of the University of Auckland discussed this enigma – that it is hard to pin down exactly what postmodernism is, other than a rejection of modernism.

⁸³ Schumpeter, 2015.

⁸⁴ Dalrymple, 1995.

⁸⁵ Elliott, 1997. p.285.

Further, they suggest that ‘Paradoxically, it seems that at the moment of its greatest influence post-modernism simply vanished.’⁸⁶ Curious, isn’t it; we don’t know what it was, but anyway it may have gone – are we are now in the era of post-postmodernism?

The fracturing of postmodernism is perhaps a logical outcome of the movement itself, and the inherent tensions it contained. In that the modernist universal, one-size-fits-all built solutions often didn’t work very well, the subsequent search for more context-specific answers would cause a lack of identifiable cues of the style or philosophy. Postmodernism’s reaction against widespread uniformity did give increased importance to context (human and geographical), history, culture and individual preference. In a strictly modernist framework, designers would not worry about whether the wider population saw a building as beautiful or ugly – modernism put much authority in the hands of the all-knowing expert. So the postmodern questioning, whether coherent or not, created an incentive for research into individuality and differences.

When lecturing to heritage conservation students on architecture, I stop before reaching the present. Sometime in the 1970s there was a change – modernism weakens as the heroes of the movement themselves leave the scene, although modernism remains a preferred form for many corporations and certain wealthy clients. I point to some buildings identified as postmodern, before moving into the late 1990s. That leaves my students to figure out postmodernism for themselves. In that respect I am fortunate – they are not likely to encounter such buildings as objects for conservation for a least a couple of decades, and one might hope some years of reflection and research might help them to understand what is important to retain. Rybczynski suggested that this confusion results from the enhanced role of architectural historians, ‘... who are undeterred by their lack of knowledge or experience of how buildings are actually designed and built.

⁸⁶ *Matthewman and Hoey, 2006, p.530.*

Out of the hothouse atmosphere of the university seminar room has come a proliferation of isms: rationalism, historicism, postmodernism, late postmodernism, neo-traditionalism, and, recently, deconstructivism'.⁸⁷ And he was writing in the late 1980s.

But of course, architects and managers have to deal with the creation of new buildings and the ideas surrounding them. Now environmental awareness and heritage concerns have become primary design drivers. One can sometimes see the use of symbols such as shading louvres over windows – sometimes on building facades that never receive significant sunlight. One architect friend suggested that these comprised 'architectural jewellery', in other words an ornament, which, due to the far-reaching influences of modernism, has to have some functional justification.

■ Where to now?

Vitruvius and Wotton told us that 'delight' was an important part of an all-round successful building. What standard might be used to determine whether a building achieves this or not? In the early twentieth century architects developed a scheme for it – that if a building was functional, people would find it delightful. Yet much evidence suggests this is not the case in affluent economies. Modernist housing estates have often been poorly treated by the occupants, and suburban housebuilders have increasingly turned to creating dwellings that allude to historical precedents. Heritage buildings are increasingly esteemed and preserved.

A worthy objective is for a project team to establish, before construction, whether a building will delight or not. There are a limited number of possible theories about how delight might be generated:

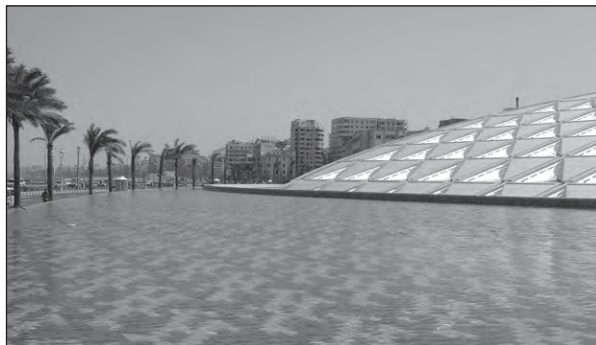
- There may be objective characteristics (such as proportion, colour or specific styles) which, when incorporated into a design, will ensure delight.
- Delight results from a relationship between the building and the people encountering it. History tells us that preferred forms change, confirming that the relationship is not fixed, but is different for different people in different cultural settings.

⁸⁷ Rybczynski, 1989, p.60.

The subsequent possibilities are less clear, especially now:

- experts or educated connoisseurs know what will ensure delight, or
- the people who end up as consumers of the final product should be the key determinant in design considerations that will generate delight.

Considerable amounts of research have shown that any objective characteristics are, at most, very weak in determining building esteem, and they are easily overridden by relationship factors. That leaves us with the alternative – that the primary determinant of the level of esteem for a building or urban space is in the relationship it has with the people who encounter it. Markets exist in segments, and that means that some individuals and organizations will esteem and create forms that are not appreciated by others. The existence of different population groups demands the use of methods that might be used to explore those relationships. The basic methods were developed by the psychologists, and commercial applications by marketing people, and they are both worth considering and employing.



Bibliotheca Alexandrina, Egypt. Snøhetta, Architects. Opened 2002.



CHAPTER 6

The Development of Scientific Approaches – The Beginnings in Psychology

In the twenty-first century we take research for granted, as a way of understanding reality. If we want to know something we can create a hypothesis and conduct an experiment, or carefully observe, record and analyse reality. This seems obvious to us now, but for hundreds of years people looked to the ancients, religion or tradition for explanations. The change has been slow, because in many cases something had to happen first – some theory, a research technique, the mathematics or the ability to grind up significant piles of complex data.

So it has been with psychology, and how it helps us understand the world we inhabit. From the beginnings of the modern discipline of psychology in the nineteenth century explorations have been made in attempts to confirm or repudiate received wisdom about the built environment. Were some proportions inherently more attractive than others? How might the physical environment affect us?

Experimental psychology as a science began to emerge in the mid-nineteenth century, led in part by the work of Wilhelm Wundt (1832–1920), who undertook experiments in an attempt to gain insights into human behaviour; however, often the effects of the environment on behaviour were carefully excluded from these experiments. In *Outlines of Psychology* (1897), Wundt saw red as being arousing, and blue as subduing, again based on his personal biases and very general observations. Others felt that context was important: German-American psychologist Kurt Lewin (1890–1947) in 1936 stated: ‘Behaviour is a function of Person and Environment.’ This survives as ‘Lewin’s equation’.

William James (1842–1920), one of the fathers of modern psychology, saw two levels of response to visual stimuli: a ‘primary’ level, consisting of subtle feelings resulting from ‘harmonious combinations of lines, colours and sounds associated with classical preferences in art’.⁸⁸ The other, secondary, level was coarser, and resulted from more bodily responses – based on memories and associations. The separation was not seen as absolute, with coarser feelings migrating to the primary level with exposure to stimuli. Interestingly, he associated the coarser feelings with preferences for romantic representations. This dichotomy between the classical and the romantic might be expected from an individual brought up in the nineteenth century.

In the twentieth century, as modern psychological theory and computers became available, the formal study of environmental psychology emerged and began to generate clearer results. An early pioneer was Egon Brunswik (1903–1955) who saw that contexts had to receive more attention as they were often key factors in determining human behaviour.

One much-quoted practical study was of the ‘Hawthorne effect’, based on experiments undertaken in the 1920s and 1930s in the Chicago-area Hawthorne Works of Western Electric. The research question was a fairly conventional Taylorist business-functionality one: what were the most effective/efficient levels of lighting in a factory setting? The results were unconventional. Lighting levels were increased and productivity went up. But it was also found that changing the lighting (or other factors) in either direction led to a short-term increase in productivity. To us today, the important part of the study was that it underlined the complexity of human response, and the need for ever more investigation, but also that such work could have many practical applications in the creation of better buildings and spaces. To us, it might underline the importance of paying attention to unexpected experimental results.

⁸⁸ *Cupchik, 1994, p.177.*

After some abeyance, as psychology took other directions, a specific discipline of environmental psychology emerged in the 1950s, with initial efforts occurring in the United States, Britain and Canada. One leading force was Terence Lee (1923–2014) of the University of Surrey, who became involved in applying psychology research techniques to explore the relationship between people and their environments. I met him a few years before his death and, curiously, I had just read his Cambridge PhD dissertation, *A Study of Urban Neighbourhood*, completed in 1954. There is nothing quite like approaching a distinguished senior academic, and being able to tell him that you had just read, and been impressed by, his PhD effort – done a half-century earlier. It included some fairly advanced statistical techniques. He told me he had done them by engaging a small squad of undergraduates for a summer and giving them adding machines. Now it takes a desktop computer a couple of minutes to work through similar computations. It is too easy to forget the mathematical issues that faced researchers prior to the widespread availability of computers, and how this would have slowed the pace of investigation.

As well as natural curiosity and an increasingly analytical approach to a wide range of questions, the early postwar period was one of intensive building in both Europe and North America, including the creation of new towns and town centres, and new neighbourhoods. Works appeared criticising modernism and giving practical insights into the complex relationships between people and the environment, thereby transferring some of the concepts to practitioners. These included Kevin Lynch's *The Image of the City* (1960), Jane Jacobs' *Death and Life of Great American Cities* (1961), Oscar Newman's *Defensible Space* (1972) and David Canter's *Psychology for Architects* (1974).

In 1970, the City University of New York first offered a PhD in environmental psychology, although their work in the area dates back to the late 1950s.⁸⁹ The Environmental Design Research Association (EDRA) was also created in 1968, and the journal *Environment and Behavior* first appeared in 1969.

⁸⁹ Spencer and Gee, 2009, p.180.

In the UK, the University of Surrey first offered an MSc course in environmental psychology in 1973. In 1970, the textbook *Environmental Psychology: Man and his Physical Setting* by Harold Proshansky et al., appeared. Another significant work, from 1971, was Daniel Berlyne's psychological framework in *Aesthetics and Psychobiology*. David Canter of the University of Surrey was involved in the founding of the European-focused *Journal of Environmental Psychology* in 1981. The field became increasingly recognized: in 1976 the American Psychological Association created a division entitled 'Population and Environmental Psychology'. In 1981, IAPS, the International Association of People-Environment Studies, was created to promote and publicize practical, theoretical and applied research.

Through these decades there was an increasing concern with the relationship of people with their environments – both natural and human-made, and this drove much of the development of academic programmes, associations and publications – including in the areas of art, architecture and design.

Advancing mathematical techniques and computer technologies made experiments both easier and more insightful. More research has been undertaken in field settings, and work has been done to verify and build on previous findings.⁹⁰ The immense complexity of the person–environment relationship has ensured that research continues both in academia and in business. Part of this is in the way the environment encounters the individual – Matthew Pelowski of the University of Vienna et al. explain this as 'bottom-up processing' of such things as form and colour, with 'top-down contributions of memory, personality, and context'.⁹¹

One criticism has been that as an experimental science, environmental psychology has missed 'the descriptive, natural history phase of investigation'.⁹²

⁹⁰ Sundstrom et al., 1996, p.488.

⁹¹ Pelowski et al., 2017, p.81.

⁹² Spencer and Gee, 2009.

The implication is that there has been a gap between the experimental results and a full understanding how behavioural characteristics function in the real world, something that has, in part, caused the noticeable gap between research and application in this field. Nevertheless, the past fifty years of research by people working in environmental psychology have left us with hundreds of fascinating papers of potential relevance to those who create the built environments we inhabit.

The research focus has changed over time as new topics have gained attention. The green/sustainable aspects of the built environment and human behaviour have now become one of the primary concerns of the field. This has yielded insights into why people take various environmental positions, and how policymakers can undertake to change them. In part, this evolution is driven by the availability of research funding, so in many aspects of environmental psychology, including those relating to building appearance, the fundamental and perhaps most useful work for the practitioner was done some years ago.

It is also worth looking at advertising, because marketing people have become experts at understanding human preferences and behaviour. Consider airline advertisements. The basic product of an airline is simple. One gets from one place to another, in a confining tube occupied at varying levels of high density. It is faster than walking or swimming. Unlike the pioneering commercial flights of the 1920s and 1930s, it is very safe – one is more likely to die driving to the airport than during the flight. So, how does one sell the product of an airline – particularly to those lucrative first-class travellers? A recent advertisement featured a gorgeous stewardess in alluring national costume, and a rather handsome male – probably a businessman, but with an artsy edge – perhaps an architect? They were contemplating the fine hides used for the aircraft seating. Imagine the actual utility, though – how much more is being paid for a few hours in first class or on a more upscale airline, as opposed to the same amount of time (and distance covered) in steerage class on a budget airline?

Even the discount airline that I use in my transatlantic jaunts has reasonably comfortable leather seating and individual television units (although the major airlines do seem to offer a better selection of movies). How much more is it reasonable to pay for six or seven hours of a bit more leg room, marginally better meals and some sense of exclusivity? One can look at that advertisement and almost smell the fine hides, and revel in the charming view through the window behind. Does actually flying on that airline give you the same enchanted feeling?

Do you respond to advertisements such as the one for that airline? Of course you do, and you respond to buildings and urban spaces too. Although we are individuals, the psychologists and the market researchers can identify patterns in all our behaviours. The market researchers take the next step, and use the knowledge both to modify our behaviour, and to help create products that people will esteem and choose to purchase.



House in suburban Oslo, Norway.



CHAPTER 7

The Contributions of Neuroscience

Let me state something obvious. Everything we are talking about takes place within about 1.5 kilograms of corporeal matter. Merely slicing up a human brain gives no hints as to what it does – or how, or why. It should be humbling to recognize that all of our memories, capabilities and knowledge, including all those firmly held preferences, beliefs and responses to architecture (as well as to music, food and wine) happen in there. How can such a small physical object contain and process all those things? That question should be enough to ensure we take an interest in how that little piece of meat actually functions. Over the past few decades, scanning methods have been developed that enable us to peek inside and gain some insights.

Aristotle thought the brain was some sort of mechanism to cool the blood, and over the centuries various speculations were made about what it was for, and it was only in the 1600s that it was perceived that it had something to do with controlling the human organism. Since that time many researchers have explored its function, often studying people suffering from specific brain disorders and observing how they were affected, thereby offering insights into what parts of the brain serve what functions, and how.

Even with the massive advances in computer technology, our brains still remain uniquely capable of rapidly interpreting large, chaotic sets of information – some of which may be irrelevant to the decision being made, but also other elements that may be critical to our survival.

Functional magnetic resonance imaging (fMRI) allows us a fascinating window into the neural underpinnings of many human responses – including those about built and natural environments. As brain cells use energy as they function, blood is directed to the areas that are active, and fMRI monitors the blood flow and indicates what brain areas are actively processing information. The term ‘neuroaesthetics’ was coined by Semir Zeki of University College London in the late 1990s to describe research into a biological understanding of aesthetics. Neuroaesthetics is based on the notion that things such as design preferences and actions are a result of physiological and neurological processes internal to the human brain, and that these can be explored and mapped – and sometimes even manipulated! Zeki suggested that any theory of design is incomplete without some understanding of the brain’s neural underpinnings, and that the objectives of the nervous system and artists were the same: both attempt to comprehend the nature of the world. Yet it is not surprising that it remains difficult to understand the brain’s workings. It contains over 80 billion neurons, each of which can have connections with thousands of others.

We know that neurological disorders can change the way people produce art, sometimes improving their abilities. For example, people with fronto-temporal dementias (FTDs) can have major problems with organization and social relations, attention and decision-making, but in some cases, the disorder can lead to a propensity to create art. Brain damage can improve artistic abilities, often in very different ways than its impact on other capabilities.⁹³ In my own experience, our ancient band drummer experienced a massive stroke, and it was assumed his life as a musician was over. Surprisingly, while he suffered major vocal and written communications impairment, when he returned, to the astonishment of the rest of the musicians, his drumming was better than ever.

⁹³ Chatterjee, 2010, p.54.

This field is still in a stage of promising infancy as far as what it might tell us about how to create more appealing built environments, and advances continue to occur. In most respects, it seems possible to do that without investigating the actual functioning of the brain. By treating the brain as a ‘black box’ – perhaps the ultimate black box – and by studying the inputs and outputs, it is possible to make inferences about its performance. This is what psychologists have been doing for decades – observing behavioural responses resulting from various inputs (stimuli) – and then making assumptions and propositions about what is going on ‘inside’. Ultimately though, it is interesting, if nothing else, to know how personality traits and other factors are mediated in the brain to produce those preferences and outcomes.

Hence the appearance of a set of neurological explorations⁹⁴ into perceptions of visual stimuli, including art, architecture, cars, product packaging, faces ... those things that are closely associated with subjective response. There are already some tantalising glimpses of how our brains work. In introducing a paper by Uri Hasson et al.⁹⁵ of Princeton University, Luiz Pessoa of the University of Maryland’s Neuroimaging Centre noted: ‘As you watch Clint Eastwood in the 1966 movie classic *The Good, the Bad, and the Ugly*, what is happening in your brain? Is what is happening in your brain the same as what happens in mine? Do we all see the world in the same way?’⁹⁶ These questions can be applied to the built environment as well as the film – whether it might be perceived as good, bad or ugly.

Artificial intelligence is being combined with fMRI and/or EEG to detect patterns in brain scans in order to extract meaning. This technique might ultimately inform designers about how design proposals might be received at more fundamental levels, and enable designs to be tweaked to address deficiencies. Such advances could lead to things we cannot even imagine now.

⁹⁴ Cinzia, and Vittorio, 2009.

⁹⁵ Hasson et al., 2004.

⁹⁶ Pessoa, 2004.

■ We have insights into the nature of a positive response

The philosopher Immanuel Kant commented in 1790 that the sensation of pleasure and displeasure ‘... denotes nothing in the object, but is a feeling which the subject has of itself and of the manner in which it is affected by the presentation’.⁹⁷ We now have a better sense of what creates pleasure in the brain. In the 1950s James Olds and Peter Milner, of McGill University in Montreal, found that rats would repeatedly press levers to cause electrical stimulation to parts of their brains.⁹⁸ Subsequent research indicated that the chemical dopamine, a neurotransmitter, is involved in governing communication in the brain, including controlling the brain’s reward and pleasure centres – interfacing between physical and emotional events. Having too much or too little can lead to big problems, including a propensity to addictive behaviour, or motor problems. Although present in animals, humans evolved to have much higher levels of dopamine. It is also clear that the neural systems that work to create affective reactions evolved in mammalian brains long ago.⁹⁹

It is currently generally believed that all pleasures, regardless of whether they are fundamental, such as food, drink and sex, or higher-order, such as art, architecture or music, involve the same basic hedonic brain systems. This reward-related system is distributed through various areas but the exact functioning of pleasure mechanisms remains hazy. It is known that damage to the orbitofrontal cortex negatively affects a range of pleasure-related functioning – including the ability to make choices.

■ We have some idea about where the relevant brain functions occur

Locating where brain functions occur is the intent of the fMRI technique, and it has been found that any complex process, such as assessing

⁹⁷ Immanuel Kant, 1790, *Critique of Judgement, Analytic of the beautiful: The judgement of taste is aesthetic*, para. I

⁹⁸ Kringelbach and Berridge, 2010, p.579.

⁹⁹ Kringelbach and Berridge, 2010, p.579.

environments, involves many brain components, although we also know that some areas are more important than others. Studies of brain-impaired individuals indicate that preference and choice can occur even when the specific brain elements for an awareness of taste are not functioning.¹⁰⁰

In an investigation of forty studies, Simone Kuhn of the Max Planck Institute for Human Development, and Jurgen Gallinat of the University Medical Center Hamburg-Eppendorf, found ‘... brain regions correlated with self-reported judgements of subjective pleasantness (attractiveness, liking or beauty) ...’ and detected that ‘Positive correlates of subjective pleasantness were found in mOFC [medial orbitofrontal cortex], ventro medial prefrontal cortex, left ventral striatum, pregenual cortex, right cerebellum, left thalamus and the mid cingulate cortex. Negative correlates were found in the left precentral gyrus, right cerebellum and right inferior frontal gyrus.’¹⁰¹ The essential message of this for creators of the built environment is the degree of complexity of the mental processes behind our creation of judgements. While the medial orbitofrontal cortex is associated with positive perceptions, it is only part of a network of brain regions, including those that deal with perception, reward, decision-making and emotion.¹⁰² Kuhn and Gallinat suggest that images of one’s own offspring ‘... could be associated with more complex feelings than purely pleasure’. Indeed, merely instructing in an experiment to judge pleasantness ‘may have an influence on brain activity’,¹⁰³ and incentive structures (such as rewarding subjects in experiments) could influence the way the brain activates when making such judgements. ‘We deduce that there is a sensible biological mechanism necessary to generate evaluative responses towards stimuli in the world surrounding us without being asked for and most likely without the costs in terms of additional attentional resources.’ In other words, *people evaluate their surroundings continuously, even though they are not aware of doing so*. ‘We therefore conclude that the subjective pleasantness judgement is directly related to brain regions that have been described as part of the reward circuitry.

¹⁰⁰ Adolphs et al., 2005.

¹⁰¹ Kuhn and Gallinat, 2012, p.290.

¹⁰² Conway and Rehding, 2013, p.3.

¹⁰³ Kuhn and Gallinat, 2012, pp.291–292.

Furthermore, our results suggest that the evaluation of likability or pleasure is an automatic process that is neither elicited nor enhanced by the instructions to report the outcome of these judgements.¹⁰⁴

We know that the brain processes information both serially and in parallel. So, in one way there is a sequence, whereby different simple aspects of a stimulus are disaggregated and processed in different parts of the brain, yet there is also some grouping to form coherent packages to reduce conflict, chaos and excessive complexity. Several neural networks are utilized in making aesthetic judgements.¹⁰⁵ Finally, the brain seems to ransack itself to find both physical and emotional memories that can assist in the recognition and interpretation of stimuli, including building forms and materials.¹⁰⁶

■ We know that aesthetic judgements are associated with moral judgements

One fascinating finding of neuroimaging studies is that the brain uses some of the same areas to make aesthetic judgements as to make moral judgements. In their investigations, German experimental psychologist Thomas Jacobsen et al. (2006) noted: ‘... present findings indicate that aesthetic judgments of beauty recruit partially overlapping networks with social and moral judgments ...’¹⁰⁷ They found ‘... direct contrasts showed specific activations for aesthetic judgments; these were located in the medial wall (BA 9/10 and inferior precuneus) and bilateral ventral prefrontal cortex (BA 45/47), i.e., regions which have been previously reported for social or moral evaluative judgments on persons and actions ...’¹⁰⁸ They concluded that ‘... aesthetic judgments of beauty trigger activation in a brain network that generally underlies evaluative judgments, and hence share neural substrate with, e.g., social and moral judgments’.

¹⁰⁴ Kuhn and Gallinat, 2012, p.293.

¹⁰⁵ Xenakis et al., 2012, pp.217–218.

¹⁰⁶ Chatterjee, 2010, p.55.

¹⁰⁷ Jacobsen et al., 2006, p.282.

¹⁰⁸ Jacobsen et al., 2006, p.282.

This may be why people will often vehemently defend what would appear to be highly personal evaluations of architecture – often implying that anyone who disagrees with them (especially me) is not merely the holder of a different set of factors behind their own evaluation, but clearly misguided, or even evil. This relationship is understandable. Our brains were not originally designed to make architectural judgements, although our antediluvian ancestors did have to evaluate alternative places to live, and presumably places safe from wild animals or the ravages of the weather would be deemed more desirable. So there is some logic in why we hold that our own beliefs are so important, even though a nineteenth-century debate about neo-classical versus neo-Gothic is not likely to be a life-and-death matter.

In a meeting of the *OAA Perspectives* magazine committee, one member commented about a particular recently completed building: ‘Now I know why not only do I dislike it, but I think it is wrong.’ As philosopher Ludwig Wittgenstein offered ‘... ethics and aesthetics are one and the same ...’¹⁰⁹

■ Preferences can be changed

Is it frightening that neuroscientists have been able to change preferences? Zaira Cattaneo of the Università di Milano-Bicocca and her associates found they could change people’s aesthetic appreciations using transcranial magnetic stimulation (TMS), which is a rapidly changing electric field created by magnetic pulses. They used this in their explorations of differences in preference between representational art and abstract art. TMS causes noise in the neural systems that operate cognitive processes, and can be directed at brain areas associated with aesthetic processing. They found that stimulating the left DLPFC (dorsolateral prefrontal cortex) could increase the appreciation of ‘figurative images’. Applying TMS over this brain area ‘... caused a reduction in liking for the kind of artwork participants generally preferred, but not the other ...

¹⁰⁹ From L. Wittgenstein (1921), *Tractatus Logico-Philosophicus*, Abingdon: Routledge, 2001, 6.421, p.86. Quoted from Coleman, 2014.

Our findings show that activity in the left DLPFC has a causal role in the liking for the sorts of artworks that are generally preferred, independent of whether the object of appreciation is representational or abstract.¹¹⁰ PPC (posterior parietal cortex) disruption also had a small impact in the case of subjects who preferred representational art. Their belief is that aesthetic response is more important for things that we like, than for those things we like less.

This underlines the fact that our preferences are merely manifestations of the electro-chemical operations of our brains. There is nothing entire, absolute or permanent about them.

■ Can neuroscience tell us anything about building design?

It is appropriate to consider what hints neuroscience can offer about building design. The marketing discipline has been quick to exploit this field, for instance in investigations into beer marketing.¹¹¹ Insights into the subconscious preferences of the primary target market (19- to 34-year-old males), suggest that some are so deeply subconscious that they may elude conventional psychological research, and those deep mental processes may be important when it comes to making product selections. Moreover, the 'hidden' nature of the fMRI process tends to reduce pressures on the subjects to respond in certain ways – things that they feel might be politically or professionally correct – a paradox that we might expect in other fields, and I have personally seen in the responses of architects to building design.

We know that the brain produces decisions very quickly – sometimes in nanoseconds, something we have seen in our own experiments. This is why many judgements are effectively made intuitively, and then if required a rationale is developed subsequently.¹¹² That first impression is important.

¹¹⁰ Cattaneo et al., 2014, p.448.

¹¹¹ Shaw, 2015.

¹¹² Lawton, 2015, p.33. Lawton suggests posing a situation that is both offensive and harmless. The reaction will tend to be negative, but the rationale elusive.

One of the issues, discussed by University of Tennessee at Knoxville organizational psychologist Eric Sundstrom, is that the creation of theory, in particular an all-encompassing framework, remains elusive.¹¹³ Much is known about specific aspects of human behaviour relative to their environments, but many factors are involved, which to date have resisted full integration into one theory. The big problem is that we are dealing with people, and they are wonderful subjects, but also distinct individuals and influenced by many factors. Moreover, we act out our lives in many different contexts – to which we respond, but we are also affected by them. In the course of a day we may occupy an office, a school, a house, friends' houses, a shopping mall and perhaps a place of worship.

It is possible that we will never fully understand the workings of the human mind – that parts will remain unmeasurable. Just think of those art students who can create engaging drawings that engage and compel viewers at their deepest levels. We may learn how the mind processes certain things – perhaps the logical and analytical aspects of living, but how the more subtle things, such as the creation process and the resultant emotional responses, operate might remain forever beyond our grasp.

There is rapid ongoing movement in the field, and new findings are appearing quickly. That opens up possibilities, which if responded to by designers and managers, should lead to better environments. One thing is clear. The work of both psychologists and neuroscientists confirms that it is not appropriate to believe that any specific building characteristics are always inherently beautiful. It is always dependent on the relationship between the brain of an individual and the stimulus. What the designer or manager must do when creating buildings or spaces is consider common patterns of how our individual brains interpret and respond to the many attributes of buildings.

¹¹³ Sundstrom et al., 1996, p.489.



The Henry Taylor House, St. Catharines, Canada. c. 1924. Architects Nicholson & Macbeth.



CHAPTER 8

Understanding People – Four Exploratory Experiments

Philosophers, psychologists and neuroscientists have shown that there are reasons for our preferences. A few are innate – things that seem to come with our genetic inheritance – but others are acquired. My father and father-in-law, as members of the generation brought up in North America during the Great Depression and the Second World War, saw little value in anything other than strict functionality. I think they struggled with that, knowing that somehow an appreciation of art and music was associated with being further up on the social hierarchy, but their functionalist preferences were too embedded to be overcome without heroic effort. Dealing with that particular generation's ideas and the buildings they left us, remains a challenge – their functionalist attitudes had rational reasons behind them, and yet in affluent societies in the twenty-first century, those reasons may not be fully valid. How do we, now, understand such mindsets?

To people with any marketing urges or scientific inclination, it should be obvious that experiments need to be an integral part of understanding human response to building design. If we do not conduct experiments and analyse the results, we may revert to the traditional approach of simply using rhetoric (or violence) to argue for what the best design approach might be. Although this method of persuasion has likely been practised since there were people (or even proto-humans), it does not make sense to continue now that we can acquire real evidence. Experiments are feasible, and when one considers the costs, longevity and influence of buildings, the effort required should be justified.

Fortunately, many wonderful experiments have been conducted, with insightful analysis. These populate the pages of the two main journals on the subject, *Environment and Behavior* and *Journal of Environmental Psychology*, as well as other publications dealing with human behaviour, management or the built environment.

It is unfortunate that research articles rarely mention the inevitable associated adventures. It always looks as though the experimenter laid things out flawlessly in advance, and everything went smoothly, from hypothesis, through literature review, into development of specific research questions and methods, and ultimately to analysis, results, conclusions, and the inevitable call for more research. Perhaps some research actually does unfold like that – but none I have ever encountered (my own or that of my various associates and partners). Real-world research seems always to be full of unexpected events and, inevitably, problems of all sorts. Valuable and unexpected ‘Eureka!’ events occur. There is nothing so rewarding as when a subject scolds you for missing something obvious, or, lurking in the data, you find the question for yet another research project.

Any research conducted to understand what might be perceived as being beautiful or ugly faces specific challenges. Context is important, and subjects are usually aware they are participating in an experiment, not casually passing by some building on the street. Often photographic images are used, and although past research confirms the validity of the approach, and that responses to actual buildings and to the photographic images are generally similar,¹¹⁴ it is probably impossible to strip all context from images. Any set of images has practical restrictions. One of my architect subjects commented that no attractive buildings were included, but when asked for a suggestion, proposed something unphotographable. Of course, the use of virtual environments would allow movement through and around buildings, but to date there are cost considerations in setting up such experiments. Obtaining enough appropriate subjects is often a problem.

¹¹⁴ Hershberger and Cass, 1988, and Stamps, 1993 and 1999.

Drawing from our own work, I have chosen four experiments as illustrations that research into consumer preferences is feasible and revealing.

Experiment I: Considering ordinary houses

Summary

This experiment shows how distinct socio-economic groups and age cohorts moving through a housing market can have markedly different preferences.

Background

A major vein of research, extending back to the 1960s, has asked the related questions ‘How do people respond to different types of buildings?’, ‘Do people respond to buildings in the way that their designers intend?’ and ‘Can responses be predicted?’ If designers (such as architects) perceive buildings in ways different from those of the general public, the implication is that ongoing consumer research is required to provide designers with specific information to support their activities – and that the designers should pay attention to it. An experiment¹¹⁵ was created to explore how people regard commonplace and familiar houses of different periods and forms.

In the early 2000s, based on numerous research precedents, a questionnaire was developed asking subjects to respond to photographs of houses found in their own region – the East of England. Most houses selected fell into sets best described by the era in which they were built. In contrast to American house types and communities that have been the focus of earlier studies, such as by Nasar¹¹⁶ and Tobey,¹¹⁷ most streets in the East of England are dominated by repeated examples of one or two house forms which vary only in minor detail.

¹¹⁵ Ellingham, 2002. The full results are available online through University Library, University of Cambridge.

¹¹⁶ Nasar, 1989.

¹¹⁷ Tobey, 1992.

As Franklin Medhurst and Parry Lewis stated: ‘... a description such as “late Victorian villa in south Manchester” or “mid-Victorian terraced house in Oldham” conjures up a fairly precise vision’.¹¹⁸

Process

Photographic stimuli were used. It would be desirable to have people consider subject buildings directly, but this is usually impractical. Fortunately, the use of photographs to explore human responses to buildings has been well established, repeatedly reviewed and verified. These have revealed high correlations between judgements based on actual visits to buildings and photographic representations, and a high level of robustness.¹¹⁹ In this research, the images were modified to remove information about the context of a building, or at least as much as possible. A sky with white, fluffy clouds was used in all images. The houses were selected, or modified, to include landscaping characteristic of their respective types.

To avoid issues of price and size, all houses had two storeys (sometimes with a loft), and would provide reasonable accommodation for a middle-income family with two or three children. The issue of house price was not considered in the selection because prices are highly influenced by location, and, as was subsequently found, by the house form itself. **Exhibit 8.1** shows the housing categories and some of the photographs used.

Ten ‘high-style’ houses were included. These non-standard designs were selected according to the cynical classification proposed by Stamps and Nasar: (i) a ‘soft’ guideline, that the house being considered might be published in an architectural journal, and (ii) an explicit formula:¹²⁰

$$f = 0.73 (\text{roof not gable or hip}) + 0.57 (\text{curved roof}) + 0.53 (\text{large or asymmetric windows}) + 0.38 (\text{non-compact or nonorthogonal footprint})$$

¹¹⁸ Medhurst and Lewis, 1969, p.82.

¹¹⁹ Hershberger and Cass, 1988; Stamps, 1993 and 1999.

¹²⁰ Stamps and Nasar, 1997.

Exhibit 8.1: House classifications used in survey analysis

	Number of individual house photographs utilized
Victorian/Edwardian (termed 'Victorian' regardless) (built 1850-1914)	8 different houses
Interwar developer (built 1919-1939)	7
Interwar council-built (built 1919-1939)	4
Post-Second World War (1950s, 1960s, 1970s)	7
Modern developer (1980s to present)	4
Victorian/Edwardian reproductions	6
Architect-designed 'high-style'	10
Miscellaneous types	8
Total:	54 different houses



Photos of some typical house types used in the survey

The survey questionnaire started with a question (Exhibit 8.2) about the respondent's overall rating of each house (between 1 and 7).¹²¹

Exhibit 8.2: Part of survey form

Before you do anything else: Please consider each of the houses shown on the next page:

Assume each was in an equally convenient location, and offered the same size accommodation. Please indicate the overall rating you would assign to each, as a place in which you would like to live (circle the appropriate rating for each):

Building _____	High 7 – 6 – 5 – 4 – 3 – 2 – 1 Low
Building _____	High 7 – 6 – 5 – 4 – 3 – 2 – 1 Low
Building _____	High 7 – 6 – 5 – 4 – 3 – 2 – 1 Low
Building _____	High 7 – 6 – 5 – 4 – 3 – 2 – 1 Low
Building _____	High 7 – 6 – 5 – 4 – 3 – 2 – 1 Low
Building _____	High 7 – 6 – 5 – 4 – 3 – 2 – 1 Low

A second set of more detailed questions were asked to explore how the overall responses were created. The seven point scales used after the initial responses were as noted in **Exhibit 8.3**.

Exhibit 8.3: Adjective pairs used in experiment

Characterful/Characterless	Light/Dark
Durable/Transient	Impressive/Unimpressive
Comfortable/Uncomfortable	Interesting/Uninteresting
Inexpensive/Expensive to maintain	Friendly/Unfriendly
Up-to-date/Obsolete	Prestigious/Low-status
Useful/Useless	Beautiful/Ugly
Easy to clean/Difficult to clean	Exciting/Boring
Environmentally appropriate/Inappropriate	

¹²¹ Following the methods described in Churchill, 1999, pp.395–398.

Questionnaires were distributed in neighbourhoods around the East of England, ranging from affluent through to impoverished. One questionnaire was left at each house with a free return envelope. Forms were coded according to neighbourhood.

The mail-back forms presented a subset of house photographs to each respondent. This represented some compromise, however; demanding too much from the respondents would have decreased the response rate. The first 133 mail-back questionnaires asked the respondent to respond to four houses; the balance asked for responses to six with a general indication of preference, and four of those using the more detailed scales.

To test the functioning of the survey and to include the oldest cohorts, some interviews were conducted together with the questionnaire. Very few people declined interviews. The usual excuse was that they were old or 'knew nothing about housing' – the interviewer should 'go and speak to some architects' to find out about housing. This probably reflected a willingness of older age cohorts to assign responsibility for decisions to specialists (perhaps those with 'good taste'). The responses of the very oldest individuals (including some aged over 100) supported the use of this sort of cross-sectional study to probe the preferences and attitudes of past generations. Most could clearly articulate their housing experiences and biases of their family formation period, even though some may have exhibited confusion about their current environments.

Key observations about overall responses

Every survey process has limitations. In particular, there are questions about how representative the sample might be. It is unfortunate that so much survey-based research is done using undergraduates – one might get good results from the statistical tests, but the findings may not apply to anyone but students in whatever course was used for the testing (often first-year psychology). My feeling is that it is better to 'get out there', and encounter a diversity of real people, and then classify them into groups that may be of interest. If there are not enough in any one sub-group for proper analysis, you have to get more.

In this particular survey process, responses were obtained from a total of 802 subjects (21.6 per cent of surveys distributed), yielding a total of 6,206 individual analyses of houses, and 67,877 house-adjective responses. The response rate varied widely: one street returned more surveys than were distributed. Presumably some households had internal disagreement and photocopied the survey. The survey process was continued until enough respondents in important age/occupational groupings appeared.

Mailback response rates were observed to correlate with the socio-economic character of areas and the proportion of rental stock. Areas of owner-occupied houses in well-maintained suburbs typically had response rates of around 60 per cent (clearly those people want to share their opinions about houses). In one large, ultra-low-income social housing estate the response rate was 3.8 per cent, presumably reflecting disinterest, a lack of housing choice and widespread functional illiteracy. Barry Goodchild, now of Sheffield Hallam University, found in his earlier experiments that 'an environmental or visual urban image' was of most relevance to middle-class subjects.¹²² That some consumer groups might hold little opinion about the subjective aspects of houses was also supported by reactions from certain individuals from other countries. Four older American academics became verbally abusive in an interview session, perhaps because, lacking insights into housing in the East of England, they were experiencing frustration at being unable to make any meaningful response. Hostility has previously been found to be one possible result of an inability to understand what is otherwise relevant material.¹²³

Exhibit 8.4 results from the dramatic changes in the makeup of the population of the East of England over the course of the past century. Today's consumers work in jobs that demand more thinking, and less lifting, hence the occupational composition of respondents by age cohort has changed with deindustrialization. The number of individual assessments received corresponds to increasing 'service' employment among the younger age groups.

¹²² Goodchild, 1974, p.159.

¹²³ Kaplan and Kaplan, 1989, p.51.

In the UK, males working in manufacturing declined from 6.9 million in 1978 to 2.9 million in 2008, while over that period of time jobs in service industries increased from 14.9 million to 22.6 million.¹²⁴ In the USA, manufacturing employment as a percentage of total employment fell from 30 per cent in 1950 to nine per cent in 2015.¹²⁵ Responses followed this trend.

Exhibit 8.4: Response by occupational group and gender.

OCCUPATIONAL GROUP		GENDER	
High achievers	26	Male	312
Service	286	Female	476
Intermediate	41	Unknown	14
Working class	180	% Male	39.6 %
Student	84	% Female	60.4 %
Artist	28		
Housewives and various	48		
Missing	9		
Total	802		

This classification of respondents is based on a 'shortcut' described by Macdonald and Ridge (1988), modified to divide the 'service' group, with a category of 'high achievers', which included members of high-status professions, such as medicine or law.

Overall house preferences

It can be hypothesized that there has been a fundamental shift in how consumers evaluate buildings, based on generational differences and occupational/social differences. Nutt et al., in 1976, suggested that matters of taste might come to dominate over economic or spatial matters: 'It is suggested that the psychological motivations behind the survival of some urban areas, which by all conventional measures could be expected to decline ... is a matter needing attention.'¹²⁶

¹²⁴ *Social Trends*: www.statistics.gov.uk/socialtrends39 – accessed 30 November, 2016.

¹²⁵ US Bureau of Labor Statistics: *The Conference Board*, but found in *The Economist* as a graph, p.28, December 10, 2016.

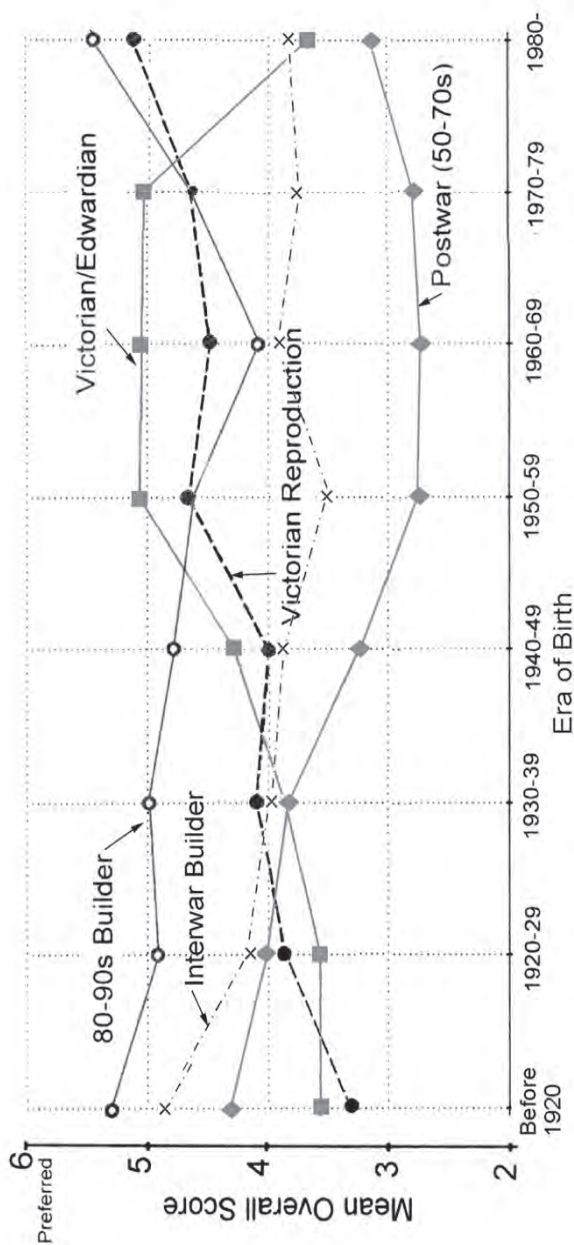
¹²⁶ Nutt et al., 1976, p.23

In 1976, this was a radical thought relative to the terms of the then-prevailing discussions about ‘obsolescence’, the nature of the match or fit between consumer and building. At that time, the focus of attention concerned basic functional aspects of buildings. One of the experiment’s hypotheses was that since the 1970s, the importance of other aspects of buildings, such as their ability to create delight in the minds of consumers, has become more significant.

A key finding from the survey process was how the overall esteem for the various house types had changed. This is particularly important as markets are affected as successive groups become primary consumers over time. **Exhibit 8.5** graphs the mean scores for some house types, relative to the date of birth of the respondents. Statistically significant differences were noted in the way distinct age groups esteemed the various house types, except for the high-style houses and the interwar council houses (with replaced windows), which tended to receive uniformly low scores. The Victorian houses were generally assigned very low scores by the older groups, but successively younger groups assigned higher rankings, including a clear first place among the younger groups. The interwar builder houses received a high ranking from the over-80 age group – they would have been familiar with the houses when they were new, but their overall scores fell with successive cohorts. The functionalist postwar (1950s to early 1970s) houses scored reasonably well among the consumers who might have bought them new, but received low scores from the following generations.

Through the research survey process, in those cases where the researcher was present while the subject was completing the questionnaire, overheard comments gave additional insights into how the responses might be interpreted. One of the most interesting sessions was with an elderly couple. They lived in a plain red-brick house built in the late 1950s as part of an infill initiative in an early twentieth-century Edwardian area. As they completed their surveys they talked about their lives. As a young married couple, they had left London shortly after the Blitz. He was an electrician, and his wife a bookkeeper.

Exhibit 8.5: Mean overall scores for selected house types by date of birth of respondents



During the interview, their grandson, aged about twenty, appeared and listened to their unfolding housing story. Their first abode in that bleak postwar period had been in a basement of a large house (now demolished). Like much of the stock, it had not been maintained through the war years or afterwards. Water flowed down the insides of the crumbling walls – the plumbing and electrical systems were marginal. Their story stunned their grandson. To him, they had always seemed comfortably well-off. They indulged in a discussion: to the grandparents, their modern house was wonderful – everything worked, it didn't leak, it was warm, it was easy to maintain. The grandson's responses (on his survey and somewhat in discussion) were that he thought their house was unbelievably boring. He had never known a house sodden with rainwater and with the toilet at the back of the garden. That a house was dry and convenient was taken for granted, and he expected something more.

Structure of house preference

While simple overall scores are interesting, more detailed insights into consumer opinion can increase understanding about how overall esteem is generated. Theories about choice suggest that it is necessary to understand both how products are evaluated relative to important attributes, and how important each attribute is in formulating overall judgements.

Analysis of the adjective pairs was done by exploratory factor analysis and revealed the emergence of three clear, robust 'dimensions'. These corresponded to the underlying constructs by which the respondents compiled their overall assessments of the various house types. The respondents revealed that their prime underlying judgements were what were framed as 'socio-aesthetic' (to Wotton this would be delight), 'serviceability' (to Wotton this would have combined commodity and utility) and 'cleanliness, lightness and modernness' (this dimension may not have existed in Wotton's time, as few buildings had those characteristics).

The division between an aesthetic/image evaluation and appraisals of functionality was consistent for all groups aged over twenty, regardless of age or occupation. The separation of different types of 'esteem' should be expected: houses fill a simple role by providing basic utilitarian shelter, but also have a role in establishing status and reinforcing self-identity, and have a major financial impact on owners (this was not explored in this project).

It was found that the percentage of variance explained by the various dimensions differed by respondent age and occupational grouping. For example, the 'cleanliness, lightness and modernness' dimension was of greater importance to the older respondents. Conversely, the importance of the socio-aesthetic factors was relatively higher for the younger consumer groups. The 'serviceability' dimension did not show a strong trend by age group. This suggests that older groups express relatively more opinion about the objective standards of dwellings, in particular those associated with cleanliness and lightness, while younger groups' overall judgements are more oriented to subjectively evaluated factors.

Exhibit 8.6: Percent of total variance explained by first three dimensions for occupational groups.

Percent of total variance explained by first three dimensions for occupational groups aged 35-59

	Service	Intermediate	Worker
Number of house evaluations	626	261	293
Dimension:			
Socio-aesthetic	27.7%	25.3%	24.8%
Serviceability	17.5%	20.3%	14.7%
Cleanliness+Lightness	12.2%	13.8%	17.6%
% of total variance	57.4%	59.4%	57.1%

Relative importance of first three dimensions

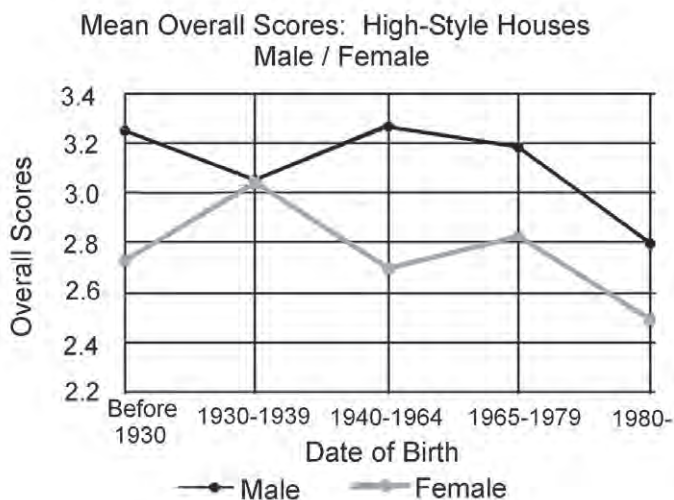
	Service	Intermediate	Worker
Dimension			
Socio-aesthetic	48.30%	42.60%	43.50%
Serviceability	30.40%	34.10%	25.70%
Cleanliness+Lightness	21.30%	23.30%	30.80%
% of total variance	100.0%	100.0%	100.0%

Exhibit 8.6 shows the percentage of variance explained by the adjective pairs, and how the three dimensions differ by the occupational group of the respondent. It can be noted how the socio-aesthetic dimension is more important in the compilation of the overall response, relative to serviceability. Amplifying this is, of course, the increase in service employment, relative to the categories included as 'intermediate' and 'worker'. Of interest is that the 'Worker' group puts more emphasis on the 'cleanliness and lightness' dimension.

Gender

Surprisingly, few statistically significant gender differences appeared. Factor analysis failed to suggest any meaningful difference in the way in which comparable groups of males and females structured their responses, nor did an analysis of variance of overall scores or individual adjectives, with one exception. This involved architect-designed high-style houses: the overall scores were higher from the males than the females, except for one of the older age groups (**Exhibit 8.7**).

Exhibit 8.7: Differences in overall scores for high-style houses by gender



This is an interesting finding, and suggests more research to yield further understanding, as well as tempting a researcher to listen in on some husband-wife discussions concerning the design of a new house.

Reproductions

It is interesting that the data revealed that most subjects could readily identify house vintages and could detect reproductions (**Exhibit 8.8**), but based on their evaluations, they didn't seem to care which was which. Few people in any age group thought the Victorian houses could be new or that the reproductions could be old. While it appears that people over eighty were more capable of assigning a proper era to reproduction Victorians than to authentic Victorians, this group tended to believe all house types were newer than they were. Although some of the sample 1980s-1990s builder suburban houses have forms and details which might be considered to be somewhat historic in nature, they were almost always recognized as 'new'. The dating of the high-style houses was, as might be expected, somewhat variable.

What is significant is that while Victorian reproductions were readily identified, the overall esteem given to them by most respondents was effectively the same as for the authentic Victorians. **Exhibit 8.5** shows that the change in esteem among the cohorts changed in parallel (until the most recent cohort). The more detailed data showed that, as most respondents did detect the reproductions, they recognized that they would be physically more comfortable than the originals.



A reproduction of a Victorian house in the UK. A real Victorian is on the left (albeit with unauthentic replacement windows).

Exhibit 8.8: House age estimates (feasible estimates are underlined)

ALL RESPONDENTS

Estimated Era of construction (by respondent)	Victorian/ Edwardian	Interwar Builder	'Vintage' of House		Reproduction Victorian	High- Style
			50-70s Developer	80-00s Developer		
Pre-1800	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1800-1850	3.4%	0.0%	0.0%	9.0%	0.0%	0.0%
1851-1900	<u>37.2%</u>	0.9%	70.0%	0.0%	5.6%	0.6%
1901-1925	<u>37.2%</u>	<u>7.3%</u>	0.0%	2.3%	11.1%	3.9%
1926-1950	17.9%	<u>60.0%</u>	6.6%	3.1%	13.5%	4.4%
1951-1970	2.1%	27.3%	<u>52.3%</u>	7.7%	11.1%	26.5%
1971-1988	1.4%	3.6%	<u>36.4%</u>	<u>23.8%</u>	<u>21.4%</u>	40.9%
After 1989	0.7%	0.0%	4.0%	<u>62.3%</u>	<u>36.5%</u>	23.8%
Percent feasible	74.4%	67.3%	88.7%	86.1%	57.9%	N/A
Total Observations	110	110	110	110	110	110

Experiment II: Changing perceptions – Window replacements

Summary

This experiment was an extension of Experiment I, and demonstrated that various consumer groups responded to different levels of authenticity in houses differently. Generally people in 'service' occupations (typically more educated and more affluent) valued authenticity more than did people in 'worker' occupations.

Background

Part-way through the previous house experiment, one subject pointed out that the windows had been replaced in one case, something he found made that particular house less desirable. In research one should not take things for granted – so I considered window replacements in the houses I passed by on my daily bicycle trips to the office. It was clear that

many older houses had their windows replaced, and from examining the surveys received to date, patterns emerged. When this situation arises in research, it suggests the need for a bit more investigation. In this case another research question emerged: what is the impact of replacement windows on the way people assess older houses?

Houses of the interwar period were of particular interest because, over the lifespans of the oldest respondents, they had changed from new to not-new or even old (these are all subjective terms). Some of my oldest respondents had moved into them as children when they were new. A long history of opinion was available.

Two common types of interwar houses (built 1919–1939) were considered. Some were ‘*Addison Act*’ council-built houses (interwar council), constructed shortly after the First World War. Originally rented, many had been owner-occupied for decades. The other form was typical developer-built houses (interwar builder), as constructed throughout the UK in the 1920s and 1930s, differing in detail and size, but generally all following a bow-front format. These ‘interwar semis’ were the first houses in the UK built specifically to be owner-occupied: just before the First World War over three-quarters of all households in England and Wales were renters.¹²⁷

As various cohorts of consumers move through the housing market, they can change their dwellings to suit their own preferences, both functional and aesthetic. In this case changing patterns of modifications could be observed. Through the 1970s and 1980s most window replacements were with larger panes of glass – ‘picture windows’, often with silvery natural anodized aluminium frames. In more recent decades replacements tend to be more historically sensitive – authentic.

Process

In the experiment, photographic software was used to create house images that were identical, other than their windows.

¹²⁷ *A Century of Home Ownership and Renting in England and Wales*, Office for National Statistics WebArchive, Released 19 April, 2013.

One version of each house type showed the original windows, and the other typical silver replacement frames surrounding picture windows. They were included as part of the overall house perception survey (Experiment I). In the case of these images, there were a total of 1,475 responses from 386 people.

Interwar houses showing original and replacement windows



Original Windows



Obvious Replacement Windows

Interwar 'Builder' House



Original Windows



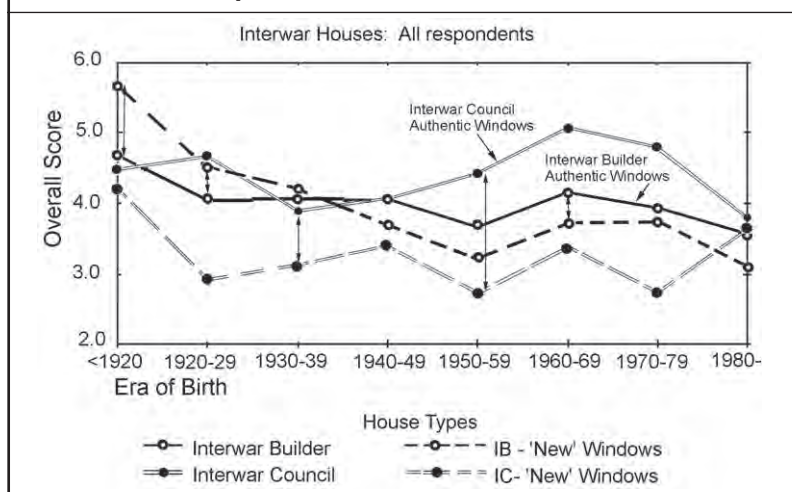
Obvious Replacement Windows

Interwar Council-Built House

Key observations about overall responses

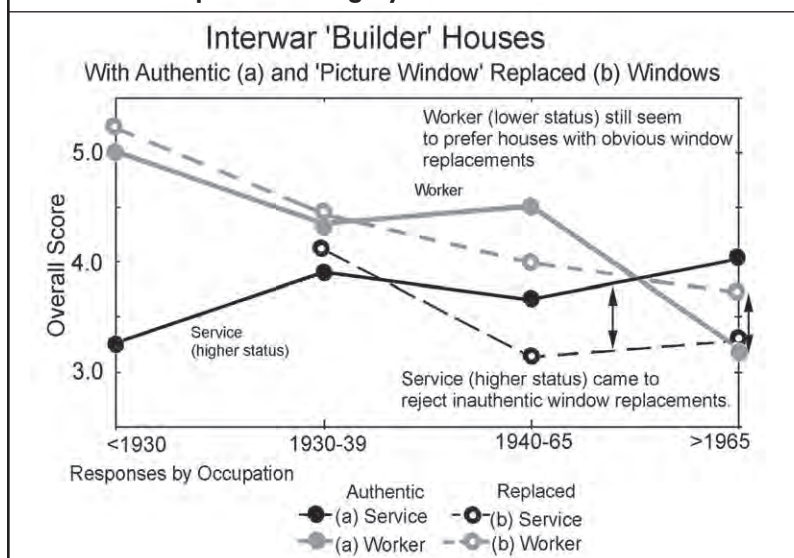
Window modifications clearly changed the reactions (**Exhibit 8.9**). For the interwar builder houses, the younger groups gave higher overall scores to the houses with the original windows or authentic replacements, while the older respondents rated the houses with the obvious replacement windows higher. A somewhat similar pattern appeared for the interwar council houses. However, the lines for the council-built houses did not cross, perhaps because without glazing bars these houses become almost featureless boxes, while the builder houses retain more of their character due to their overall shape, brickwork and bays.

Exhibit 8.9: Overall responses to window replacements in interwar houses by date of birth



It was found that responses were also dependent on both the occupational category and date of birth (**Exhibit 8.10**). Older 'service' and 'worker' respondents scored the interwar builder houses with the replacement windows higher. Younger individuals preferred the houses with the authentic windows. However, among the youngest groups, the 'worker' responses preferred the houses with replacement windows, while the 'service' group preferred authentic windows.

Exhibit 8.10: Overall responses to window replacement by both the occupational category and date of birth



When the survey detail is considered, patterns can be seen in the differing opinions offered by various groups of people. A key adjective pair in the detailed response questions was prestigious/low-status: the older consumers saw the houses with the picture window replacements as more prestigious, while the younger consumers saw them as less so.

For the typical older individual, the esteem assigned to an interwar house was increased when windows were replaced, because 'functionality' was enhanced; they tend to put a relatively higher weighting on the functionality of a house than subsequent generations. People born after the Second World War tend to believe picture windows have a negative impact on the 'prestigiousness' (**Exhibit 8.11**). One might hypothesize that older cohorts tend to believe that having obviously new picture windows displays wealth, or being 'clean', 'light' and 'up-to-date'. To a younger, probably more affluent, individual in a 'service' occupation, prestigiousness derives from some other attribute, perhaps historical authenticity, which is diminished by inappropriate window replacements.

This exploration underlines the importance of being aware that the values of user populations can change. A ‘typical’ respondent born in 1930 was occupationally very different from someone born forty years later. In the survey, the more recent market preference for authentic windows was undoubtedly partly driven by the increasing preponderance of people in ‘service’ occupations. Presumably their increasing affluence and the overall improvement in house quality are both important – functionality can be taken for granted, so is simply less important when assessing a house. Pierre Bourdieu (1930–2002), in *Distinction: A Social Critique of the Judgement of Taste* (1984) supported the opinion that people higher up on a social hierarchy are more interested in ‘overtly aesthetic properties’. This accords with the field observations: in more affluent study areas, ‘service’ consumers appeared to exhibit increasing concern with historical characteristics, renewing authenticity by reinstating original-style windows and removing rendering from brick walls.

Exhibit 8.11: – Prestigiousness by group and age

Overall responses to window replacements in interwar houses by date of birth

PRESTIGIOUS/LOW STATUS EVALUATIONS OF WINDOW REPLACEMENTS		Before 1930	1930- 1939	1940- 1965	1965- 1980
Service Respondents:	Original Windows	3.44	4.07	3.77	3.83
	Replacement Windows	4.14	4.29	3.31	2.87
Working Respondents:	Original Windows	3.93	4.00	4.12	3.55
	Replacement Windows	4.14	3.43	3.80	3.60

N=316

Subjective opinions about whether replacement picture windows are attractive or ugly vary greatly – but opinions rely on knowledge. Most people brought up outside the UK will lack the historical knowledge to even notice the window replacements in the interwar UK housing stock. The Canadian (me) running the experiment stumbled across the phenomenon while analyzing preliminary survey results, and subsequently acquired a horror of inappropriate window replacements.

This lack of relevant knowledge was paralleled in responses from people aged under twenty-two, because, in these experiments, data from them tended to be a chaotic jumble – yet by the time people reached their mid-twenties they exhibited firmly held opinions. Paul Pennartz, of Wageningen University and Marja Elsinga, of Delft University of Technology, included adolescents in their research and found that they were responding on the basis of an ‘immediate sensation of stimuli’¹²⁸ and that scenes suggesting ‘communications/contact with people’¹²⁹ were important, as a result of the importance of peer groups to that age group. The adolescents in their study put a heavier weighting on the presence of natural elements, and colour and light, than did the older groups. All of this supports that house preferences of adults are primarily acquired, not innate, but little is known about the details of how they are formed.

Experiment III: The cues – What are people actually looking at? What we can learn from suburban office preferences?

Summary

This experiment demonstrates that different groups in the population may be using different cues to structure their overall evaluations. It used a technique often used in the market research discipline to understand how people deal with things that have many different attributes. It asks for overall preferences with respect to different designs, and then mathematically identifies what characteristics lead to that overall esteem.

Background

Some years ago, we conducted a study for a developer who was perplexed about conflicting design advice given by the members of his development team.¹³⁰

¹²⁸ Pennartz and Elsinga, 1990, p.675.

¹²⁹ Pennartz and Elsinga, 1990, p.700.

¹³⁰ Some of the results of this project were published as: William Fawcett, Ian Ellingham and Stephen Platt (2008), ‘Reconciling the Architectural Preferences of Architects and the Public: The Ordered Preference Model’, *Environment and Behavior*, 40(5).

This developer created simple one- or two-floor suburban office buildings, a type common throughout the world. Property development processes might appear odd to many managers outside the building industry. A project team, which, depending on the specifics of the project, may include some or all of developers, architects, engineers, estate agents, financiers, surveyors, facilities managers, marketing people, specialist consultants and end users, influences the project configuration. They likely never all meet together. The process includes explicit or implicit debate, usually without hierarchical lines of communication. Focused market research is often not done. What worked in the past is often favoured, as well as what is supported by the best or most persistent debater. It is a festival of instinct, personal experience and bias. Somehow a scheme emerges.

This particularly insightful developer wanted to know whose opinion most reflected that of the end users. The rationale is obvious – there is no point in spending money on things that do not enhance the product, or might detract from it. In a competitive marketplace where all the buildings may be more or less functionally equivalent, and when locations are fixed, what design approaches work best?

Looking back at my own development projects, I was fortunate to be often dealing with ethnic or religious groups, who expressed a preference for building details that, to them, symbolized their traditions. The Finns ended up with white, blue and wood; the Japanese with interior screens, a koi pond, and bamboo in the atrium; and the Dutch with just a touch of gable-work. The preferences of more culturally assorted client groups were not as easy to define.

Process

For the office developer, a survey was undertaken. Subjects were drawn from groups that might be associated with the creation of office buildings, plus a group of typical office users. Fifty-six small, fairly ordinary suburban office buildings were photographed and presented in pairs on a computer screen, to 169 subjects, who were asked, to indicate their preference on a four-point scale (the building on the right or left, and strong or weak preference).

The data was analysed using conjoint analysis, something often used in market research by firms developing consumer products such as soap or breakfast cereal. Such products embed multiple elements that can be used by the consumer in deciding which to purchase – things such as package shape, size, colour and graphics, product price, location on the supermarket shelf, colour of product, sweetness of product, crunchiness

Photographs of some building forms tested



Photographs courtesy of Cambridge Architectural Research Limited.

... In using this approach for small office buildings, the stimuli (in this case photographs of existing buildings) are selected so as to contain the attributes being studied, in varying combinations. This experiment was designed to see how each group responded to three important design attributes – roof form (flat or pitched), exterior material (traditional or non-traditional, typically brick versus something

else), and strength of design (strong or weak). The way a subject responds indicates the weight given to the different product attributes in the process of formulating overall judgements, with the wonderful feature that the subject is unaware of how the overall evaluation is being constructed – it is revealed through the mathematics.

The findings verified previous work about architects, and should be a caution – in particular, the architects reacted very differently than the wider population and many of the other professionals and managers around the project table. Architects should be frightened: the planner, estate agent and investor responses were much closer to those of the user group – in this case, the developer would be prudent to listen to them.

To summarize the results, the assessments of the user group were dominated by roof shape (pitched roof = ‘I like it’; flat roof = ‘I dislike it’). Architects preferred buildings with strong design (the buildings were initially classified into strong and weak design by a panel of architects, so this, among other things, indicates consistency between architects’ opinions); planners preferred pitched roofs but secondarily preferred the traditional ‘weaker’ designs. This created a sign reversal in the data – the architects preferred the strong designs, but the planners disagreed – presumably planners want things to fit into existing settings. In real-world practice, I have found this disagreement between architects and planners to be commonplace.

The time taken by each person to complete each image evaluation was recorded, and the more educated or experienced individuals in the real-estate field took longer to make an evaluation. It is not difficult to understand the reason once the preference structure has been noted. It is

Exhibit 8.13: A building does not have much time to make an impression

Average response time taken per image pair (seconds):

Developers	15.3
Planning consultants	12.9
Investors (bankers)	12.1
Architects	11.3
Estate agents	9.3
Users (wider public)	8.9

easy to assess the roof shape of a building, whereas it is more difficult to assess something more abstract such as ‘strength of design’.

This exercise also demonstrated the connoisseur effect¹³¹ whereby, as people become more knowledgeable, they add more attributes to their evaluation. Relative to urban environments, this was noted by Pennartz and Elsinga,¹³² that when compiling building judgements, architects tended to use more criteria than other groups. This difference was indicated by the amount of time it took for each group in this experiment to assess the buildings shown (**Exhibit 8.13**). Simple evaluations take less time.

Implications

This experiment demonstrates that not only do people perceive building forms differently, but they are likely basing their evaluations on different building attributes. This offers a way to reconcile the differences dividing the preferences of the layperson from those of the connoisseur (typically the architect). The building design preferences of architects and the wider population may not be incompatible, because each of those two groups is likely to be basing their evaluations on different building attributes. This was also found in a study undertaken by Robert Gifford et al., who noted that, in their experiment ‘... the two groups (architects and non-architects) based their emotional assessments on almost entirely different sets of objective building features, which may help to explain why the aesthetic evaluations of architects and laypersons are virtually unrelated’.¹³³ They noted that, of the twelve physical cues studied, ‘only one cue (fanciness) was used in the same way by both groups’.¹³⁴

Generalising the results of the suburban office survey, and other experimental results, a potential model to guide building design can be put forward, based on the following insights:

- the attributes of buildings might be ranked from the obvious to the subtle

¹³¹ Earl, 1986, p.195.

¹³² Pennartz and Elsinga, 1990, p.711.

¹³³ Gifford et al., 2000, p.163.

¹³⁴ Gifford et al., 2000, p.180.

- the preferences of laypeople (non-connoisseurs) are recognized to be dominated by the more obvious (to them) attributes, using simple decision rules (they are essentially indifferent to higher-level attributes), while the preferences of connoisseurs are dominated by the more complex and subtle attributes (they recognize but attach less weight to low-level attributes rendering them unimportant however they may evaluate them)
- a building is likely to be assessed very quickly, especially by non-connoisseurs.

This ‘ordered preference model’ suggests that designs can be developed to appeal to multiple groups. For suburban buildings, pitched-roof buildings with design integrity would appeal to most people. Pitched-roof buildings, as favoured by the user group, tended to have more traditional overall designs – and, for this group traditional wall materials were favoured, underlining the importance of consistent and coherent overall designs.

Experiment IV: Looking at buildings

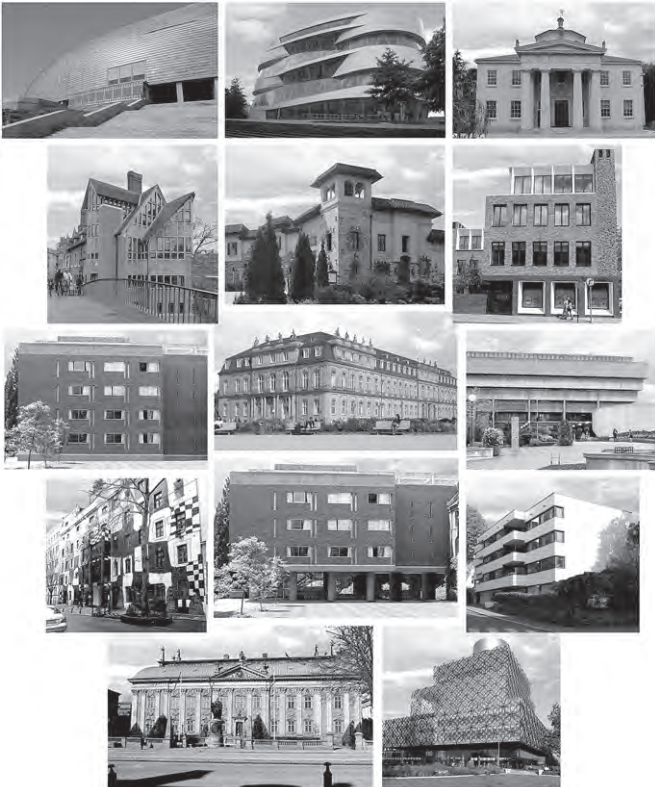
Summary

This experiment explored different groups relative to their overall evaluation of various buildings, how they assign various qualities to them, and how those qualities relate to the overall evaluations. The objective was to demonstrate both the feasibility and necessity of undertaking exploratory research to inform successful project design.

Background and process

While this book was being written, a survey on the preference for different building forms using photographic images was conducted. In keeping with extensive research which indicates that there can be major differences in response between groups (typically connoisseurs versus non-connoisseurs), the subjects were divided into three groups: architects, others in the building industry (developers, estate agents, builders, engineers ...) and people from the wider population.

The initial choice of images was inspired by the collection used by Robert Gifford et al.,¹³⁵ although few of the same buildings were used. The buildings were selected to be all of moderate size, with no high-rises. Street-view images were modified so they had a standard sky; extraneous elements were removed, and references to context were removed or reduced. The reality is that context is important, but issues of experimentation also exist. Without context, the individual subject has to imagine it, infer it or ignore context entirely.



Sample of photographs used in experiment.

See Chapter 19 for consideration of individual buildings.

¹³⁵ Gifford et al, 2000.

In two cases the images were substantially modified to test design alternatives; for example, the real Erasmus Building at Queens' College, Cambridge is elevated – sitting on columns: an alternative was created whereby the ground floor was filled in.

Exhibit 8.14: Total subjects in experiment

Total subjects	
Architects	58
Other building industry	50
Wider population	56
Total	164

For this experiment, subjects were from Canada and Europe. Architects and others in the building industry were accessed through conferences, and

augmented by personal contacts. Architects were defined as holding a licence in some jurisdiction. Subjects from the wider population were accessed as they were available, including through various organizations and acquaintances and people who sat next to a researcher on a plane. This might be criticized as still being a biased sample, in particular relative to income and social status, but it is still superior to using only university undergraduates, with their limited range of age, education and culture.

Initially, each image was presented to the respondents for about fourteen seconds. This time duration was selected as it approximated the longest average time for any of the respondent groups in Experiment III. The one exception was the Library/Coffee shop in Lomma, Sweden (#682), which was always shown first, and given a longer time, so the respondents could understand the task. The other building images were shuffled between sessions. This first stage requested an overall response on a simple negative/positive scale, with no further explanation (**Exhibit 8.15**).

In the second part of the experiment, between six and twelve building images from the first set were presented randomly, with participants responding through a set of adjective pairs – requiring more thought. For this stage, each image was shown for two and a half minutes.

Exhibit 8.15: Part of survey form – The first stage

SURVEY OF BUILDING PERCEPTIONS

Response number _____

Please consider each of the buildings shown:

Assume each was in an equally convenient location. Please indicate the overall rating you would assign to each, on a scale ranging from whether you regard it positively (I like it) or negatively (I don't like it).

Circle the appropriate rating for each:

Building _____ Negative 1 - 2 - 3 - 4 - 5 - 6 - 7 Positive	Building _____ Negative 1 - 2 - 3 - 4 - 5 - 6 - 7 Positive
Building _____ Negative 1 - 2 - 3 - 4 - 5 - 6 - 7 Positive	Building _____ Negative 1 - 2 - 3 - 4 - 5 - 6 - 7 Positive
Building _____ Negative 1 - 2 - 3 - 4 - 5 - 6 - 7 Positive	Building _____ Negative 1 - 2 - 3 - 4 - 5 - 6 - 7 Positive

Answers were made on a paper survey form, requiring responses between pairs of adjectives (semantic differential scales¹³⁶), on a scale of 1 to 7 (Exhibit 8.16).

Exhibit 8.16: Second stage of survey – Adjective pairs

SURVEY OF BUILDING PERCEPTIONS

Response number _____

For each image consider every pair of adjectives and circle the number that corresponds to how you feel about that building.

Building number: _____

Uninteresting 1 - 2 - 3 - 4 - 5 - 6 - 7 Interesting	Low-status 1 - 2 - 3 - 4 - 5 - 6 - 7 Prestigious
Cold 1 - 2 - 3 - 4 - 5 - 6 - 7 Warm	Dark 1 - 2 - 3 - 4 - 5 - 6 - 7 Light
Depressing 1 - 2 - 3 - 4 - 5 - 6 - 7 Uplifting	Boring 1 - 2 - 3 - 4 - 5 - 6 - 7 Exciting
Friendly 1 - 2 - 3 - 4 - 5 - 6 - 7 Unfriendly	Awkward 1 - 2 - 3 - 4 - 5 - 6 - 7 Elegant
Agreeable 1 - 2 - 3 - 4 - 5 - 6 - 7 Unsettling	Familiar 1 - 2 - 3 - 4 - 5 - 6 - 7 Unfamiliar
Ugly 1 - 2 - 3 - 4 - 5 - 6 - 7 Beautiful	Modern 1 - 2 - 3 - 4 - 5 - 6 - 7 Old-fashioned

¹³⁶ Developed by Charles E. Osgood (1957), *The Measurement of Meaning*, Urbana: University of Illinois Press.

Key observations: First stage

Differences between the way the buildings are assessed can be readily noted, as well as how the three groups may agree or disagree.

One result, confirming other findings and anecdotes, is that in general architects don't like buildings as much as do other population groups.

Exhibit 8.17 shows the mean response for all buildings for the three groups. On a seven-point scale, this half-point difference is relatively large. In discussion, it appears that the usual reason for this is that, when

considering any building, an architect is likely to think that they would have done something different as might others in the building industry.

This difference means that statistically significant differences between the architects and the wider

population (which were found for 55 per cent of the buildings) are of only moderate interest. The rank ordering of the buildings by the groups is more interesting.¹³⁷ **Exhibit 8.18 A and B** shows the mean scores and rankings for the overall positive/negative responses for the three groups used in the survey. The items in boxes are noteworthy contrasts (**Exhibit 8.18 B**).

For example, the Queens' residence on the ground (746) shows a large difference in ranking by the groups. The architects ranked it **seventh**, and the wider population as **twenty-first** (last place). The Stuttgart Mercedes-Benz museum was ranked **third** by the wider population, but only **eleventh** by the architects.

Exhibit 8.17: Overall mean responses of subject groups

(1-7 scale, with 7 being most esteemed)

Architects	4.02
Other building industry	3.91
Wider population	4.51

¹³⁷ Statistical significance is that there is a small likelihood that the difference will have appeared through chance. For more explanation, reference might be made to any basic statistics text.

Generally, half the time there is disagreement between the architects and the wider population, and it is reasonable for designers and developers to be able to understand such differences.

Exhibit 8.18 A: Building Overall Esteem Scores

N=			Architects	Other Building	Wider Population
562	63	Colaneri Estates Winery, Niagara	4.50	4.13	5.44 +++
604	129	Suomi-Koti, Toronto	2.95	2.87	3.51
615	139	Retail/offices, Vienna	3.62	3.54	3.83
620	106	Domus Museum, A Coruna, Spain	4.47	3.74	3.94
621	113	Kunsthau Graz, Austria	3.60	3.31	4.18
624	153	Riddarhuset, Stockholm	5.24	5.35	5.65 ooo
627	95	Disney Building, Burbank	2.69	3.18	4.26
628	47	Disney NoDwarfs	4.57	4.43	4.31
635	151	New Birmingham (UK) Library	3.25	3.72	4.71
637	151	Kunsthau, Vienna	3.96	3.59	4.93
642	147	Old Birmingham (UK) Central Library	3.91	3.65	4.09
655	153	Jerwood Library, UK	4.88	5.04	5.42 +++
669	133	MIT residence, Boston	4.00	4.13	4.49
682	149	Lomma Library/CoffeeShop	3.80	4.07	4.11
718	104	Neues Schloss, Stuttgart	5.25	5.17	5.33 ooo
724	124	Mercedes-Benz Museum, Stuttgart	4.42	5.07	5.43
729	98	White Modern, Oslo	5.05	3.58	3.98
738	78	Hills Rd Offices, Cambridge, UK	4.62	4.27	4.49
745	70	Queens' College Cambridge-Basil Spence	2.82	2.50	2.88
746	42	Queens' College-OnGround	4.57	2.67	2.26
778	72	Downing College Library	4.72	3.92	4.86 +++

ooo Historical building

+++ Quasi-historical or Replica

Exhibit 8.18 B: Building Rankings Within Groups

Image No.	Other Architects	Wider Building Population
562 Colaneri Estates Winery, Niagara – Reproduction Italian town	9	7 2+++
604 Suomi-Koti, Toronto – White, complex, modern	19	19 19
615 Retail/offices, Vienna – Modernist, hard to define	16	16 18
620 Domus Museum, A Coruna, Spain – Modern, abstract	10	11 17
621 Kunsthaus Graz, Austria – Modern, abstract	17	17 13
624 Riddarhuset, Stockholm – Historical	2	1 1 000
627 Disney Building, Burbank – 1990s modern	21	18 12
628 Disney, Modified – NoDwarfs	7	5 11
635 New Birmingham (UK) Library – Techno	18	12 8
637 Kunsthaus, Vienna – Modern, abstract	13	14 6
642 Old Birmingham (UK) Central Library – Brutalist	14	13 15
655 Jerwood Library – Trinity Hall – Modern, neo-Tudor	4	4 4+++
669 MIT residence, Boston – Modern, abstract	12	8 9
682 Lomma Library/CoffeeShop – Modern	15	9 14
718 Neues Schloss, Stuttgart – Historical reproduction	1	2 5 000
724 Mercedes-Benz Museum, Stuttgart – Modern, abstract	11	3 3
729 White Modern, Oslo – White international style	3	15 16
738 Hills Rd Offices, Cambridge, UK – 2010s brick modern	6	6 0
745 Queens' College Cambridge – 1950s brick modern	20	21 20
746 Queens' College – Modified, OnGround	7	20 21
778 Downing College Library – Reproduction Classical	5	10 7+++

000 Historical building

+++ Quasi-historical or Replica

Major differences in ranking

Alternative forms of buildings

The historical buildings, and those that appeared to be historical, ranked near the top for all groups. This suggests that, for such buildings, the unfiltered initial response by architects may not be much different than that of the wider public. What is different is in the next stage, when more time is given for a more detailed evaluation. In some post-survey discussions, the architect subjects were told that some of these buildings, in particular the Neues Schloss (New Palace) in Stuttgart (718), and the Downing College Library in Cambridge (778) are reproductions. This is important – even though in discussion sessions most architects could not identify 718 as a reproduction, when they were told, their perception of the building changed dramatically – but it depends on exactly what information they had. If they thought the original had been destroyed during the war and reconstructed on the same site (it was), that was generally acceptable; if it was a few streets away, that was not good, and if it was in Australia, the building became highly unesteemed.

In the first stage, given the limited time available for the eye to transmit the information, the brain to sort through it and tell the hand to circle an appropriate number on the form, not much is left for a detailed evaluation of the subject buildings. The result is therefore a fast, overall assessment – which may conflict with a second, more considered, opinion. One of the most interesting response sets relates to the Jerwood Library at Trinity Hall, Cambridge (655), completed in 1999, designed by Freeland Rees Roberts Architects, of Cambridge. It is obviously not historic, but has historical references, and was esteemed by all groups. I enjoy it when something unexpected happens – and that occurred with the architects assessing the Jerwood Library. In one session with eleven architects, after the survey I asked questions about various buildings, including the Jerwood Library. One architect vehemently stated that he thought the building was one of the most horrid he had ever seen, and offered several reasons why. Another person muttered agreement, and the others seemed to agree. Yet when their esteem responses were counted, it was one of the highest ranked buildings – by everyone in that group. In another session with architects, someone denied his own evaluation – suggesting that he would never have assessed it positively.

In that group, I could get no one to openly admit that they actually liked the building – it went against everything they had been taught in the architectural education process. The survey results for the first stage (**Exhibit 8.19**) show that, indeed, architects have a greater propensity to agree with each other than do the other groups. Both the ‘other building

Exhibit 8.19: within groups for overall scores

Standard deviation around overall means

Architects:	1.42	More agreement
Other building industry	1.54	Less agreement
Wider population	1.52	

industry’ and the ‘wider population’ consist of individuals with varied backgrounds, so less agreement might be expected.

Key observations: Second stage

In the second part of the survey, participants had to work through the list of adjectives, and decide how each one might apply. It is important that they were asked for the detail after having made an overall assessment. As individuals, we don’t consciously evaluate every building we pass by, but if we are initially interested in a building, we may stop and give it a bit more time, something forced in this survey process. After understanding the survey method, most people made the responses reasonably efficiently.

The second-stage results are more complex, but it is interesting to consider the correlations between the various adjective pairs and the overall evaluation. The adjective pairs probe into the elements of personal analysis that lead to a composite overall evaluation. **Exhibits 8.20 and 8.21** summarize the relative importance of the adjective tested relative to overall esteem.

The highest adjective correlation for the wider population between the overall assessment score and the various second-stage scales was Beautiful/Ugly at **0.697**. This is not surprising, but it indicates that, of the collection of factors, most people tend to regard beautiful buildings positively in an overall sense.

Exhibit 8.21: Ranking of Correlations with overall esteem – top seven for each group

Rank	Architects	Other Building Industry	Wider Population
1	Beautiful/Ugly	Beautiful/Ugly	Beautiful/Ugly
2	Interesting/Uninteresting	Interesting/Uninteresting	Uplifting/Depressing
3	Elegant/Awkward	Exciting/Boring	Prestigious/LowStatus
4	Uplifting/Depressing	Prestigious/LowStatus	Elegant/Awkward
5	Exciting/Boring	Uplifting/Depressing	Interesting/Uninteresting
6	Warm/Cold	Elegant/Awkward	Exciting/Boring
7	Agreeable/Unsettling	Warm/Cold	Warm/Cold

Accordingly, beauty should be regarded as an important design objective for the wider population. This was followed by Depressing/Uplifting at **0.599** and Prestigious/Low-status at **0.555**.

In contrast, the architects exhibited a different assessment profile, although Beautiful/Ugly was still in first place (at **0.551**). However, after that the structure between architects and non-architects diverge, with Interesting/Uninteresting in second place (**0.547**) and Awkward/Elegant in third (at **0.525**). This suggests, again, that the connoisseurs are making more complex evaluations, and weighing a greater number of factors. Interesting/Uninteresting for architects was in second place, while the wider population put it in fifth place, also behind Depressing/Uplifting, Low-status/Prestigious, and Awkward/Elegant.

The Boring/Exciting scale was interesting in that the ‘other building industry’ group associated it highly with the overall evaluation, in third place, while both the architects and the wider population relegated it further down. That suggests that clients might have a greater interest in having an ‘exciting’ building (whatever that means), relative to the architects or the wider population.

Some other differences appeared. Low-status/Prestigious shows differences between groups, with the wider population putting the correlation in third place in importance, the other builders in fourth, but the architects in eighth. This could be a contrast between the expectations of users and designers – the users may feel that the role of a building relative to personal status is important – both relative to other people and as enhancing an individual's self-image. As well, architects are more likely to be seeing buildings as projects they might create, rather than buildings they might personally use or own. This is something that designers should respect – the notion of status is more important for their clients than themselves.

As a design hint, for all groups, the Warm/Cold axis had a higher level of correlation with the overall evaluation than did the perception of Light/Dark, which is interesting given the long history of attempts to make buildings 'light'. This suggests more attention needs be given to the concept of warmth. Overall, the warmest building was the Colaneri Estates Winery, which resembles an Italian village, a warm climatic reference. Curiously, the image of the fourth warmest building (the Riddarhuset, or 'House of Nobility') was taken on a very cold January day in Stockholm. Other 'warm' buildings included the Kunsthaus Wien (Vienna Art House), the Jerwood Library, the neo-classical Downing Library and the Disney office building (both with and without dwarfs).

One of the fascinating contrasts was between the two stages of assessment by the architects. This supports the comments from the architects about certain buildings that contradicted their initial survey assessment. Taking two factors that had a high correlation with overall esteem, being Awkward/Elegant, and Depressing/Uplifting, this difference can be noted.

In particular, some buildings were obviously subject to a second, more considered thought, that yielded a very different answer. Some of these interesting differences were as shown in **Exhibit 8.22**.

**Exhibit 8.22: Relative ranks for architects:
Initial vs. second evaluations – selected buildings**

	INITIAL Overall Esteem	SECOND STAGE Awkward/ Elegant Depressing/ Uplifting	
Jerwood Library, Downing College	4	14	6
Kunsthau, Vienna	16	15	4
Queens' Residence (elevated)	23	12	13

	INITIAL Overall Esteem	SECOND STAGE Awkward/ Elegant Depressing/ Uplifting	
New Birminham Library	9	3	2
Kunsthau, Graz	16	2	10
Kunsthau, Vienna	7	7	1

It is also possible to classify buildings relative to their characteristics, and relate overall assessments to those characteristics. This was again done on a seven point scale. In some cases this is not difficult. Roofs are either flat, steeply pitched, or pitched somewhere in between. Some are somewhat subjective (Ornateness), while others are highly subjective (Legibility and Elegance). This experiment was not designed to make these associations (Experiment III was), but exploring relationships correlating building features against assigned esteem does yield some tantalising hints for future research. For the wider population and the others in the building industry, the highest correlation with a physical building characteristic was roof shape, while the architects put it in last place, supporting the results of Experiment III that found that for non-architects pitched roofs were very important in comprising overall building assessments by the wider population (but unimportant to architects). Another significant difference was relative to bilateral symmetry, with the architects ranking it tenth in importance, and the wider population in fourth position.

Implications

This exploratory investigation shows that experimentation with real subjects is both feasible and potentially revealing. Market research has many techniques that can be used to explore the preferences of various elements of the wider population. They present an opportunity for people who create buildings to understand their audiences better.

Summing up the experiments – what do the results mean?

The experiments we undertook confirmed, yet again, that experimentation with real people is practical, and can yield useful insights into how buildings are evaluated. Every experiment can be criticized in some way or another, but it is reasonable to say that some experimentation is usually better than no experimentation. In the case of these four experiments, the outcomes are generally consistent with the work of other researchers. They offer some refinements, and suggest directions for even more research into this complex subject.

Much of the complexity is caused by the fact that people are individuals. Each human has inherited a specific array of genes, and was brought up in a specific way. Cultural setting, education, parenting, occupation, friends and other life experiences all influence the way individuals respond, and each response to the survey is likely unique (there are about 7×10^{28} different possible responses to Experiment IV). However, patterns exist; some are common to all people, while others relate to shared backgrounds. For example, differences in age cohort and occupational/educational/social status were noted to align with differences in preference in Experiments I and II.

In particular, the preference differences between design connoisseurs and the wider population was again confirmed, both in the overall sense and in the way connoisseurs compile their analyses. However, some results suggest that the initial, instinctive response by one group of connoisseurs (the architects) may not be as different as their second, more analytical response.

The results of Experiments III and IV show that architects tend to agree with each other, as was also found by Brown and Gifford.¹³⁸ Go to an end-of-year exhibition at a school of architecture, and consider the work as the years ascend. By the time one reaches the final years it can sometimes be difficult to see where one student's work ends and another's begins. Although schools of architecture tend to see themselves as radical innovators, repeated studies, such as those by Nasar, Stamps and Gifford, suggest that they are hotbeds of conformity within certain terms of reference.

Some buildings and building types seem to have broad appeal. Experiment IV suggests that buildings with broad appeal have certain characteristics. In particular, traditional building forms (real or reproduction), and those with historical references appear to be popular. Additional experimentation is likely to be fruitful.

One observation in these investigations was that male-female differences are usually minimal, which is something usually found in similar experiments. However, in Experiment I, males ranked the 'high-style' modernist houses higher than did the females. This is indeed fascinating, and suggests a need for both discussion and further experimentation. Of course, it is probably not necessary to mention that the modern movement in architecture of the early twentieth century was male-dominated.

A few thoughts and anecdotes might help you understand differences. Are you a traditionalist? I am. I prefer living in traditional old houses that reference the past. I keep too much old stuff around, and hold on to cars until they disintegrate. An *Economist* Schumpeter column offered some interesting insights into the creation of new products that play on the traditional: 'Some traditional businesses are thriving in an age of disruptive innovation'¹³⁹ and discussed the survival of things that logically should have disappeared as a result of new technologies: mechanical Swiss watches, fountain pens, tweed jackets, leather-bound books, vinyl records and sailboats.

¹³⁸ Brown and Gifford, 2001, p.95.

¹³⁹ Schumpeter, 2014.

Attention was drawn to the mechanical Swiss watch, something that from a purely functional perspective has no reason to exist – quartz watches are cheaper and more reliable. What has happened is that there has been a redefinition of the product's value and meaning. And one message used to sell them is that the expensive Swiss watch you buy now can be passed down through the generations. Something for the traditionalist.

Do you like shiny new things?

A few years ago, I had a discussion with a Toronto retailer of gas fireplace inserts. He had two shops – one in the city centre (an area called 'The Annex' – the lair of Jane Jacobs), and another in more suburban Scarborough.

He carried different stock in each, explaining that city-centre people preferred black fireplaces, while the shiny brass fireplaces sold better in Scarborough. The Annex is inhabited by reasonably affluent and educated individuals, while Scarborough is an area of recent immigrants, many from

developing countries. Often, in their old countries and cultures, only the wealthy could afford shiny things – so as immigrants to Canada they select them when they can. Having had this pointed out to me, I have noticed this effect. Do you agree? Where do you fit in?



The Henry Taylor House, St. Catharines, Canada. c.1924. The architects Nicholson & Macbeth created many fascinating houses, many built in the 1920s.

For example, are you a functionalist? A friend spent some time working at a Cambridge college, during which she had to allocate student rooms. Some accommodation was centuries old, while some of it was built quite recently. She told me that, after some helpful advice from her predecessor, and a couple of terms' experience, she managed to do the allocation in a way that satisfied most people. Likely preference could be predicted by

the national origin of the student. People from certain countries want the full Cambridge college experience, even if that means living in a cramped medieval attic with minimal heating, while students from other cultural backgrounds usually prefer more modern buildings with better amenities.

Are you a connoisseur? Experiment III revealed some of the differences between those who have knowledge and those who do not. Wine is again a nice analogy. It can be assessed in a number of ways, ranging from the utilitarian (level of intoxication), through a variety of more ephemeral levels. When you attend a reception, the usual question is whether you want white or red wine. It is a simple evaluation, and almost anyone can make it. At your next reception, ask the server what the wine actually is – the usual result is a stunned look and a scurrying around to try to find out. The simple red or white evaluation contrasts with how a wine connoisseur evaluates wine. More knowledge is required to tell a Merlot from a Syrah. The connoisseur inspects the colour and the meniscus, swirls the wine, smells it and, ultimately, tastes it – reflecting on it continuously. They use a specific vocabulary to describe the subtle nuances of taste and aroma – I particularly like the use of the word ‘petrol’ as a flavour description (and contrary to what the non-connoisseur might expect, whiffs of gasoline are not necessarily repellent). Detailed knowledge adds to the richness of an analysis, much as understanding the history of architecture and of the origins of a specific building or city can be added to the factors used in the evaluation of an individual building. Becoming a connoisseur can be expensive, however – one becomes less satisfied with cheap plonk.

As individuals receive training or gain experience, they add attributes to their evaluation, and take longer to make their assessments (although few act out a performance like that of a wine connoisseur). Architects (and developers) will consider more aspects of buildings than will the layperson, so should be aware that judgements made by others may relate to only a few factors – and they may be factors to which the connoisseur assigns a low weighting. Subtle features such as ‘design strength’ may have little importance to most of the population.

Do you react against the things your parents engaged with? One of the ongoing forces that drives opinion for many people appears to be a reaction against the forms associated with their parents (or that generation), but an acceptance of those of grandparents. Fellow of the Royal Institute of British Architects, Arthur Butler (1888–1965), writing in the 1920s, speculated that opinion about architecture completely reversed periodically.¹⁴⁰

What are your fundamental personality characteristics? A number of ways of categorising personality types exist, and explorations of personality type go back to the 1930s.¹⁴¹ One frequently referenced is the ‘Big Five’, developed by Costa and McCrae in the 1980s. This measures personalities on five axes: openness to experience, conscientiousness, extroversion, agreeableness and neuroticism. Generally, it has been found that many aspects of individual belief and behaviour are correlated with the Big Five dimensions, and that both genetics and environmental factors influence them. It is beyond the scope of this book to administer personality testing; however, as a secondary exploration, you might try one of the online tests and see what it reveals, and speculate on how your personality type might relate to your architectural preferences. Among the personality traits, it should not be surprising that ‘openness to experience’ (which is associated with intellectual curiosity, new experiences and creativity) has frequently been found to be linked with stronger preferences for art, in particular for abstract, non-representative art.^{142/143} The other traits have also been shown to have only weak associations with such preferences. Chamorro-Premuzic et al., confirmed that generally while the ‘Big Five’ as a whole is only a weak predictor of artistic engagement, ‘openness to experience’ can be good predictor.¹⁴⁴

As is usual in such research, there was no true longitudinal study, so although different age groups were probed, it is difficult to separate cohort effects from those of ageing. A very distinct group grew up in the period

¹⁴⁰ Butler, 1926, p.15.

¹⁴¹ Burt, 1933.

¹⁴² Basic-Sontic, 2018.

¹⁴³ Furnham and Avison, 1997.

¹⁴⁴ Chamorro-Premuzic et al., 2010, p.202

of war and economic uncertainty, so their personalities and preferences were formed by that stressful period. In the case of North America, this was typically between 1929 and 1945, but in the UK, due to postwar austerity, it extended at least another decade. The functionalist attitudes of people brought up then are therefore understandable. Even if they did not personally suffer hardship, they saw people who did. The ‘delight’ factor of Wotton’s description of the formula for good building is apparently largely missing from that generation’s framework of analysis. As a baby boomer, I am able to recall numerous encounters with the members of ‘that generation’ – people born in the 1920s and 1930s. Some years ago, we moved into a rather interesting house – the gatehouse to a large estate originally built by a member of a wealthy and influential retailing family.

The exterior was stone and half-timbered and built to a very high standard, but the interior was basic, as it had originally been servants’ quarters. One stepped from an exotic courtyard into a rather plain entry hall. I found this lack of consistency to be unpleasant, so I installed two wooden beams in the entry hall to bring the exterior ambience to some of the interior. I showed my work to my father-in-law when he came to visit. He wondered why we had bought a house that obviously needed structural reinforcement. When I tried to explain the design intent, he simply did not understand it – a socio-aesthetic dimension seemed not to exist within his personality. Even though brought up in reasonable affluence, he had seen the suffering of the Great Depression and the Second World War, so it had not developed. His own home, which he had built in the late 1950s, was ruthlessly functional, as was characteristic of the time – but strangely, actually not that easy to live in. As a result of its 1950s-ish efficiency and rationality it lacked the acoustic and spatial privacy of more traditional houses.



CHAPTER 9

Assessments and Evaluations – Preferences and Familiarity

■ Why do we have preferences?

Most people have some favourite work of art – a painting, a piece of music, a kind of wine or something to eat: something that is known well, and when it is seen, heard or tasted it never fails to delight. But why do we have preferences at all?

A usual explanation for why we humans act as we do is that our habits, beliefs and behaviours have been passed down from our ancestors, governed by the forces of natural selection, as theorized by Charles Darwin. Evolution has favoured those individuals with appropriate attributes for survival, because they were the beings who passed on their characteristics. In the twenty-first century, this logic is even being applied to the rules governing computing.¹⁴⁵ Darwin himself considered the reasons for emotions and affective expressions, and suggested that they are a response to environmental conditions. Such qualities can be described as ‘fitness indicators’,¹⁴⁶ which evolved to promote our survival as individuals and as a species. A trait that confers even a small survival advantage will tend to be perpetuated. These appropriate attributes presumably included our cognitive capabilities and preferences.

¹⁴⁵ Kane, 2016, p.44.

¹⁴⁶ Mather, 2014, p165.

In humans, one curious trait that has emerged is aesthetic preference. Darwin proposed that this had a role in the survival of a species, noting that many animals used display of colours and forms, songs and even dance to attract mates.¹⁴⁷ According to this proposition, creatures of the opposite sex perceive these displays as indicators of good health and fitness. The role of human female beauty has been repeatedly discussed, with the identification of a set of preferred characteristics, such as a waist-to-hip ratio of 0.7, although these factors apparently vary over time and in different cultures.¹⁴⁸ While applying this logic to human preferences and behaviour remains controversial, it is a tenable explanation of why we prefer the things we do. Essentially, the preferences and behaviours that our successful ancestors exhibited have been preserved in modern humans, even if they may not contribute to success in the twenty-first century. One proposition is that we create art as a way of advertising our fitness as potential mates. If nothing else, being able to create (or buy) artefacts with no obvious utility expresses the fact that one has the time and resources to do so. Being able to select promising environments to inhabit is also of value, so one trait is to prefer places that have the right features to support survival (or be perceived as desirable to potential mates), and avoid those that don't.

The impact of this long process has been to establish numbers of traits. We tend to be negative, cautious, conservative and risk-averse. Animals (including our ancestors) live in dangerous environments. They can be eaten by other animals, poisoned by eating the wrong things, attacked by other tribes and die of exposure. Meanwhile humans learned to avoid certain things. One proposition has been that since sharp things (like thorns) tend to be more dangerous than rounded things, we avoid them and prefer rounded objects.¹⁴⁹

But humans are capable of higher-level thought. The result of this package of tendencies is a split: we seem to switch between rapid judgement and more rational, logical thought – things explored by Amos Tversky and

¹⁴⁷ Darwin, 1871, *The Descent of Man, Parts II and III*.

¹⁴⁸ Conway and Rehding, 2013, p.3.

¹⁴⁹ Carbon, 2010; Bar and Neta, variously 2006. But the overall results seem inconclusive.

Daniel Kahneman. They proposed two systems: the first acting quickly and automatically, and a second which ‘... allocates attention to the effortful mental activities that demand it, including complex computations. The operations of System 2 are often associated with the subjective experience of agency, choice and concentration.’¹⁵⁰ But considered thinking is more time- and energy-intensive than a simple reaction, and evolution pushes us to energy-efficiency, so the default action is to use a simple mental heuristic when the matter is routine, not of enough consequence, or if we are overloaded, stressed, overtired or intoxicated. These shortcuts make modern life possible – grocery shopping, driving a car, washing dishes ... we don’t think about every step, we just do what we did before, knowing that the results were acceptable, even if not optimal.

Much important work relative to beauty and ugliness in buildings was done by Stephen and Rachel Kaplan, of the University of Michigan. Through the 1970s and 1980s they devised the ‘informational model of environmental preference’, embracing a variety of specific design elements, and how they relate to human preferences. Over the decades, numerous experiments have probed questions of preference in different ways, but collectively tend to support Kaplan and Kaplan’s fundamental propositions.¹⁵¹

This long-standing search for inherent factors in buildings that could be relied on to create beauty now seems a peculiar quest. Would those same factors be appreciated by sentient beings living on another planet? Or do they only apply to humans living on Earth? While that might lead to an interesting debate, it does appear that there are actually some factors that seem to appeal to most humans, regardless of cultural background. Whether or not they are universal on a cosmological scale will have to be the subject of future experimentation when suitable research subjects are available.

¹⁵⁰ Kahneman, 2011, pp.20–21.

¹⁵¹ Herzog, Kaplan and Kaplan, 1982.

This lack of good knowledge about what drives preferences is not limited to matters of the built environment. It appears whenever a specific experience offers numbers of complex properties that have to be integrated into an overall assessment. Music is another field where the underlying structures that drive preference are largely unknown.¹⁵² Why do some people like heavy metal and other people like opera? And, why do some people like both? Individual differences abound, but we know that there are patterns and reasons. In music, Cambridge academics Peter Rentfrow et al., note that it is widely held that ‘... music preferences are manifestations of explicit psychological traits, possibly in interaction with specific situational experiences, needs, or constraints’.¹⁵³

One thing we do know is that initial judgements can be made very quickly – often only a fraction of a second is taken between becoming aware of a stimulus and deciding how to react to it. There is some logic to this: in the wilderness our ancestors inhabited, identifying risky situations instantly would often have been the difference between life and death.¹⁵⁴

There are underlying factors that we apparently all tend to share, simply because we are human. Experimental evidence suggests that symmetry, naturalness and the presence of ornamentation are reasonably universal factors that tend to generate positive responses. But it also appears that architectural preferences are on a continuum running from the innate to the acquired, and multiple factors combine to create an overall assessment of a building or urban environment in the mind of the onlooker.

■ Typicality/Familiarity (preference-for-prototypes)

One of my favourite pieces of music is Beethoven’s Seventh Symphony. I can sing (or at least hum – no words, of course) virtually the entire work, and when it comes on the car radio my spirits are lifted. I had a school music teacher who spent what seemed at the time to be months dismantling it, analysing the elements, and then reassembling it.

¹⁵² Rentfrow et al., 2011.

¹⁵³ Rentfrow et al., 2011, p.1140.

¹⁵⁴ Hietanen and Korpela, 2004, p.561.

It is extremely familiar, and from that familiarity comes a sense of deep-rooted pleasure. The intellectual part of me doesn't actually like it more than, say the Sixth Symphony, but there is just something about the familiarity.

Familiarity and knowledge allow us to increasingly enjoy many experiences after our first encounter with them. What is often termed 'typicality' has been experimentally verified to be one of the most important factors behind how people undertake aesthetic evaluations.¹⁵⁵ This relationship has been expressed sometimes as the 'preference-for-prototypes' theory.¹⁵⁶ Essentially, the human mind attempts to associate any newly encountered stimulus with something in its existing bank of knowledge. Those 'prototypes' enable us to make inferences about things we might encounter.

Harvard mathematician George Birkhoff (1884–1944) attempted to create a comprehensive theory of aesthetics in *Aesthetic Measure* (1933). In contemplating the reasons for aesthetic esteem, he commented, 'In many cases of aesthetic perception there is more or less complete identification of the percipient¹⁵⁷ with the aesthetic object.'¹⁵⁸ He used the term 'empathy' and saw it as contributing to the overall esteem accorded to a work. Not surprisingly, identification is stronger when the object conforms to what the individual perceives as the key attributes of the class to which it belongs. The evidence for this goes back over a hundred years to Francis Galton (1822–1911), who in his 1907 book *Inquiries into Human Faculty and its Development* offered experimental insights to support this basis for preference. Without supporting evidence, a century and a half earlier David Hume categorized this process,¹⁵⁹ creating a model whereby the mind made multiple associations sequentially. Now with a better understanding of brain functioning, we theorize a constellation of connections occurring at once, most unconsciously.

¹⁵⁵ Verzyer and Hutchinson, 1998, for example.

¹⁵⁶ Whitfield and Slatter, 1979.

¹⁵⁷ percipient: ...n. a person who perceives, esp. something outside the range of the senses. The Concise Oxford Dictionary, 9th edition.

¹⁵⁸ Birkhoff, 1933, p.6.

¹⁵⁹ Hume, 1748, *An Enquiry Concerning Human Understanding*.

The marketing discipline sometimes lays this out in concept maps, whereby some product, such as a breakfast cereal, might be found to be simultaneously associated with existing personal concepts about such things as taste, freshness, healthiness, origins and price (and then they try to use these linkages to encourage us to buy the product).¹⁶⁰

Cognitive psychologists term these processing frameworks ‘schemas’. Patterns and associations are fundamental to our comprehension of almost everything we encounter. When we go to the mall we have an expectation that it will contain a certain variety of retailers, and this is why it is so jarring when we find something else inside: we draw on existing schemas to assess buildings. I recall going into a mall on the fringes of a declining American city. It contained a church, a couple of charity shops, a tattoo parlour, the regional offices of the Boy Scouts, a pawnbroker and quite a bit of vacant space, and it felt very disorienting because it did not conform to my mental model of what malls contain. Cues are often arranged to direct the individual – and marketers use them. People already have a good idea about what they are likely to find under two golden arches or behind Gothic windows.

Stephen and Rachel Kaplan noted that ‘Being familiar means being less dependent on new information received from the environment. One need not be as sensitive to feedback because one knows what is there, knows what to expect. Decisions can be made without waiting, without careful testing.’¹⁶¹ Experiments with both rats and people have yielded results consistent with this explanation: rats will respond more quickly to familiar shapes – even if the shapes have been modified somewhat, again presumably because their brain has formed a rule for one type of shape and it carries over to similar shapes.¹⁶² One explanation for this is that our efficiency-seeking brains prefer things that are close to mental prototypes, because it requires less effort to manufacture a suitable response. The brain is a very energy-expensive human asset.

¹⁶⁰ Grebius and Bruhn, 2011.

¹⁶¹ Kapan and Kaplan, 1983, p.5.

¹⁶² Ede, 2008, p.85.

While it represents only about two per cent of the body weight, it consumes about 20 per cent of total energy use, and strenuous mental activity does require some extra energy consumption, although the results of experiments are contradictory.¹⁶³ It is also constrained by available blood flow, again putting a premium on efficiency. Whatever the physiological mechanism, Kumar and Garg, researchers into consumer behaviour and motivations, note that ‘In general, any deviations from the typical can potentially increase the attentional resources that the consumer would need to expend.’¹⁶⁴

“Our brains try to relate a newly encountered object or experience to an existing prototype. If the deviation from the prototype is too great, and does not represent either a significant threat or opportunity, the object may fail to be recognized – or may be regarded as irrelevant.”

More recently, neuroscientists such as Semir Zeki, of University College London, have explored schemas, and have confirmed that memories are important in the way we make judgements, although there are still many questions about how we store and access those memories, stating that ‘Memory is important, people recognize stuff and attach meaning to it.’¹⁶⁵ Isabel Bohrn of the Freie Universität Berlin and her associates are quite blunt: ‘... prior experience with a stimulus is known to be a main predictor of individual differences in aesthetic judgments ... In many cases familiarity and beauty judgments will converge: people tend to like what they know ...’¹⁶⁶ Even modernist Bauhaus architect Walter Gropius (1883–1969) agreed: ‘We do not get our sensations from things around us but the sensations come from us. Since they do not come from the immediate environment (the present) and obviously cannot come from the future, they come from the past. If they come from the past they must be based on experience.’¹⁶⁷

¹⁶³ Jabr, 2012.

¹⁶⁴ Kapan and Kaplan, 1983, p.5.

¹⁶⁵ Yong, 2011, p.41.

¹⁶⁶ Bohrn et al., 2013, p.2.

¹⁶⁷ Gropius, 1943/1970, p.31.

In the music world, repetition is a common technique. Musicians of all eras have used repetition as an important tool. Variations on themes work to engage listeners – the variations create interest and challenges, and build on the foundation of familiarity.

Research Professor Leonid Perlovsky, of Northeastern University, proposed a hierarchy of ‘matching’ to prototypes – that recognizing and classifying a refrigerator is a low-level sort of aesthetic emotion.¹⁶⁸ In contrast, more effort must be exerted to deal with ‘higher level’ matters, in particular abstract concepts, or objects that contain many attributes – such as buildings. He notes that we tend to become frightened when we cannot classify things – effectively a remnant from our ancestors’ days on the savannahs of Africa, when things that they could not identify were probably dangerous. This may help to explain the architectural conservatism found in most people.

■ Structure, creation and evolution of prototypes

Repeated exposure has been shown to increase liking for a stimulus,¹⁶⁹ and, from an evolutionary/survival interpretation, the more often we have encountered something, the less likely it is to be dangerous – if only because we have survived the experience.

Swiss psychologist Jean Piaget (1896–1980) described adaptive behaviour (primarily in children) in terms of ‘assimilation’ and ‘accommodation’. In brief, assimilation is when novel experiences and objects are incorporated into pre-existing sequences or schemas. Accommodation is when pre-existing schemas are modified to solve problems arising from the new objects and experiences. This creates an evolutionary process of adaptation to a new environment. Even as adults, when one encounters a new building form, one will tend to want to have it embraced by pre-existing mental frameworks, but those frameworks will also change in the process.

¹⁶⁸ Perlovsky, 2015, pp.1–2.

¹⁶⁹ Zajonc and Markus, 1982, p.125.

One body of research has attempted to understand how useful prototypes are formed. ‘Goodness-of-example’ or ‘goodness-of-fit’ is apparently of importance – how we use prototypes to form categories into which we place newly encountered stimuli.¹⁷⁰

Emotion appears to have a role in the development and functioning of schemas. Emotional states are attached to the memory of experiences, so as well as seeking specific ‘images’ in memory, the mental decision-making mechanism (or ‘cognitive agent’) will also be dealing with emotional states that might align with the current stimulus.¹⁷¹ This underlines the interactions between the various elements involved in the assessment and response process, which can lead to associations, for example between a building facade and a pattern on a favourite pair of shoes.

According to this model, every individual has a unique mental database of numerous prototypes to be drawn on when assessing a new stimulus, but much remains to be explored on how our personal inventories of prototypes develop. Individual sets of prototypes will obviously vary depending on life experiences. Robert Bornstein, Professor of Psychology at Gettysburg College, explored the research on the subject and found that, in general (one notable exception was for abstract art), there was a reasonable level of correlation between amount of exposure to various stimuli and a preference for them.¹⁷² Interestingly, Helmut Leder, of the University of Vienna, found in his own experiments that repeated exposure to Van Gogh’s paintings correlated with judgements; however, when the subjects were told the paintings were forgeries, ‘... the correlations were strongly reduced’.¹⁷³ Chris Janiszewski of the University of Miami Business School, found experimentally that having a mental prototype does not require the subject to recall having ever seen the prototypical stimulus, implying that the creation of prototypes can be an unconscious process – mere incidental exposure can work.¹⁷⁴

¹⁷⁰ Whitfield and Slatter, 1979, discuss these concepts.

¹⁷¹ Xenakis et al., 2012, p.213.

¹⁷² Bornstein, 1989.

¹⁷³ Leder et al., 2004, p.496.

¹⁷⁴ Janiszewski, 1993.

Other experiments have suggested that subconscious stimuli may actually have greater impact than those that are more consciously identified.

“We perceive and evaluate the world around us in relation to our existing experience and beliefs. To do otherwise would be extremely difficult, if not impossible.”

If exposure leads to the creation of prototypes, it is perhaps an obvious inference that experts in a field will likely have developed more and different prototypes than the lay population. Architects will have accumulated a large, complex and more specific set for buildings and building details – one of the reasons that they evaluate the built environment differently than other people. A.T. Purcell found that ‘goodness-of-fit’ was more important to the wider population than to the architecture students in a study sample.¹⁷⁵ Such students might be expected to have this wider and more complex set of built environment prototypes.

■ Developing and exploiting prototypes

A couple of years ago, our seventeen-year-old son had to write an essay on a piece of music. He chose Olivier Messiaen’s *Trois petites liturgies de la présence divine*. It dominated our house for a few weeks. Initially, to all of us, it sounded like a jumble of unrelated and sometimes curious sounds. After some time, we found it started to make sense, and even become a pleasurable and spiritual experience. By then we had heard it dozens of times and had read some good programme notes, so were able to understand the intent and techniques employed. One of my least favourite architectural phrases about unfamiliar forms is ‘it makes a statement’. But without any mental prototype or a set of programme notes to provide hints about what the statement might be, many (if not most) people would be as lost as we were when we first listened to *Trois petites liturgies*. This also underlines that preferences are not always there to be simply uncovered; constructing them can be important too.¹⁷⁶

¹⁷⁵ Purcell, 1984.

¹⁷⁶ Payne, Bettman and Schkade, 1999, p.244.

Providing information is one way in which marketing people direct our preferences. We often don't know we want some product until we are instructed to want it. Some knowledge comes from labels. This has been explored through studies such as those by Keith Millis of Northern Illinois University, who found, experimentally, that when explanatory labels were added to items of visual art they were rated higher – regardless of whether the subjects believed the labels were true or false, or whether the content of the artwork was obvious.¹⁷⁷ This makes sense according to the prototypicality-schema concept, because the individual uses easy-to-find and easy-to-use information to help them structure an analysis. It may be obvious the image is of a cow or a tree, but a label underlines that fact and helps the subject activate an appropriate prototype. It makes the process easier – but Millis offered some qualifications: that titles should be 'elaborative', not just descriptive: although simple descriptive titles still had an effect, the best labels increased coherence.

If one is shown architecture from a different culture, it usually takes time to understand it. Kaplan and Kaplan noted that 'People who share a system of thought or perhaps a language (or dialect) and pass these along from generation to generation would presumably experience the environment similarly and might have some common preferences.'¹⁷⁸ Individuals have their own inventory of prototypes, embedding a sense of what features are important in determining the extent to which a single stimulus (such as a building) conforms to any particular class. Jack Nasar speculated that one reason for the patterns he demonstrated experimentally, using American common house forms, was the associations people were making with precedents.¹⁷⁹ While there will be similarities within cultures, individuals within them do have different life histories, and that will lead to differences of opinion.

¹⁷⁷ Millis, 2001.

¹⁷⁸ Kaplan and Kaplan, 1989, p.86.

¹⁷⁹ Nasar, 1989, p.253.

Behavioural economists offer something similar – the ‘endowment effect’ noted in the 1960s, but more fully described by Amos Tversky, Richard Thaler and Daniel Kahneman.¹⁸⁰ Endowment effect is the concept that people ascribe more value to the things they possess – only because they possess them. The same good (or service) is not valued as highly if they do not own it. The experimentation in that area was done with such physical goods as coffee mugs and chocolate bars. One might suspect that concepts can be ‘possessed’ concepts in the same way.

■ The implications for our built environment

There are immediate and practical implications of our use of prototypes. David Peace observed that an individual local city councillor, when considering building designs ‘... is likely to approve the designs of the kind of house he is accustomed to see around him – and in which, very likely, he himself lives – and to reject whatever is unfamiliar’.¹⁸¹ American urban planner Kevin Lynch, author of the influential book *The Image of the City* (1960), and a researcher into perception and forms, proposed a three-step process in the way people evaluate communities: first, they identify specific objects, such as buildings and streets, then they recognize patterns within and between those objects, and then they generate some sort of meaning.¹⁸² In almost any ‘people’s choice’ architectural award, refurbishments fare very well – people like them. Those buildings already exist, so they have acquired meaning.

Historically, without theory or evidence, during the Industrial Revolution when new building uses were emerging, architects often based their designs on previous forms. Conventions emerged and were followed, so over time, new prototypes would have formed in people’s minds. Throughout the developed Western world, banks came to look like banks, libraries to look like libraries, churches to look like churches, government buildings to look like government buildings, and prisons to look like prisons, reinforcing the prototypes.

¹⁸⁰ Tversky and Kahneman, 1974.

¹⁸¹ Peace, 1958.

¹⁸² Lynch, 1960.

Each building prototype is likely to have accrued a collection of associations, something that has been experimentally demonstrated. For example, Ann Devlin of Connecticut College found people associated quality of medical care and comfort with the exteriors of medical facilities.¹⁸³ Her subjects ‘... rated facilities of the Large Medical type to be highest in both quality of care and expected comfort’, possibly associating such facilities with serious hospitals rather than cottage clinics.

Sometime in the last quarter of the twentieth century the expected role of prototypical ‘styles’ appeared to weaken. Unlike the neo-classical and neo-Gothic, or even the International Style, which can all be expected to exist as prototypes in most people’s minds, many recent buildings are harder for the viewer to assess – as Leder et al., expressed, these require

‘... the perceiver to invest great effort to extract meaning, that the aesthetic experience can be understood as a challenging perceptual problem-solving process’.¹⁸⁴ The viewer is forced to evaluate the building in a fundamentally different way – using other tools than associating the design with known precedents.



The capital buildings in three English-speaking countries. London, Washington and Ottawa. What are the differences and similarities of meaning?

¹⁸³ Devlin, 2008, p.307.

¹⁸⁴ Leder et al., 2004, p.499.

Some people may find this extra effort rewarding, but studies¹⁸⁵ have shown that representative art (representations of familiar things such as cows, streams, trees and suchlike) is processed differently than abstract art (usually difficult to associate with known precedents). This in part explains why an appreciation of abstract art is associated with (let us say) a higher level of cultural sophistication.

When visiting a Florida theme park several years ago with our six-year-old son, we could not avoid the central feature. The guide told us it was a castle, something our son immediately contested. To him, it was clearly not a castle. Having spent almost all of his life in England, he knew what castles were – and they were made of stone, not fibreglass. To a child growing up in North America, the idea of a castle would probably be about overall form – gained from photographs, cartoons, videos and video games. To a child growing up in a place where castles abound – often as ruins with ambiguous overall form – the material is an important cue. After all, he tended to see castles at child level when running around (and sometimes colliding with) the stone walls. A plastic castle would fail to conform to the essence of his particular personal prototype. Not only was it of the wrong material, but the essence of ‘castle-ness’ would be different: our son, having seen numbers of the real thing, would have attached certain meanings to them.

This is something that a designer should recognize – that different people will attach different associations to forms and materials. I have seen examples of children’s environments that were built from an adult’s perspective – but children are shorter, move differently and may have a very different notion of how things fit into their rapidly forming sense of object classes. All of us perceive and evaluate things based on our personal backgrounds. Cupchik and Gebotys demonstrated, using paintings, that artistically naive people’s approach to art is largely based on their ability to identify people or things – it is effectively based on basic everyday perceptions.¹⁸⁶

¹⁸⁵ Such as by Cattaneo et al., 2014, and Winston and Cupchik, 1992.

¹⁸⁶ Cupchik and Gebotys, 1988a and 1988b.

The more educated or experienced ‘connoisseur’ undertakes a deeper analysis, and may seek such things as ‘... color, tone, texture, and so forth’.¹⁸⁷ A person with minimal background in art will identify things in the image – trees, watercourses, cows, buildings, people ... but other things happen when someone has more expertise.

One concept is that of the ‘peak-shift’ effect.¹⁸⁸ This is when some object exaggerates certain essential aspects of objects in order to stimulate stronger responses through reference to mental prototypes. This is what cartoonists do to politicians – often their hairstyle, mouth or nose is emphasized to underline the connection of the drawing to the real politician. Architects sometimes attempt to do this – extracting the essence of the prototype and accentuating it in the design. While this might invoke some prototype in a positive manner, the reverse might also happen, with unfortunate results – so it must be done with care, and exploratory research.

Finally, some observations might be made here, that should be of use to the designer:

- Familiarity is an important factor in determining what people will esteem.
- Different people have different mental prototypes, and will attach different meanings to them, and these can vary from culture to culture. Understanding local cultures and common mental prototypes and associations can help in the creation of esteemed products.
- Reused or reproduction buildings are likely to be better received than anything new, because of their high conformity to existing prototypes – including themselves.

¹⁸⁷ Cupchik and Gebotys, 1988b, p.48.

¹⁸⁸ Ramachandran and Herstein, 1999.

- Beware of expert opinion or that of more sophisticated connoisseurs – they might have very different prototypes than most of the people who will use and be exposed to buildings.
- Identification of the specific cues different people might be using to associate a proposed building with their specific mental prototypes could be informative.

“ **Generally: higher levels of recognition/association with existing mental prototypes ⇒ greater preference.** ”



Multi-unit residential building in Egypt.



CHAPTER 10

Recognition and Legibility

A key, and perhaps obvious, aspect to ensuring that people are pleased by the appearance of a building relates to its legibility – that an individual can readily comprehend it. If the viewer cannot make sense of it quickly, they are unlikely to connect it to any mental prototypes, so the stimulus is likely to be assessed negatively or ignored. This has been confirmed experimentally, where subjects will respond more positively to messages offered in an easy-to-comprehend way, such as with a clearer font or other presentation – those communications that induce less cognitive strain.¹⁸⁹

We noted earlier that it is widely accepted that people make sense of their environment by relating new stimuli to whatever they carry as established prototypes. The designer should not make the process of relating a building to some (hopefully positive) prototype too complicated. If something takes too much effort to process, the brain may very well feel that the assortment of information emanating from the stimulus is just not worth dealing with for the meagre return on offer, and reject it. The result is that the viewer might ignore the building, or simply regard it as ugly.

One model is the ‘temporal sequencing’¹⁹⁰ of assessment, whereby there is an initial, subconscious reaction, and that evaluation determines whether or not the individual will continue to evaluate the stimulus – effectively underlining the importance of first impressions. If the first impression is one of confusion, the reaction will not be the one the designer desired.

¹⁸⁹ Banerjee et al., 2011.

¹⁹⁰ Kumar and Garg, 2010, p.487.

Artists frequently have to ensure that legibility occurs with a minimum of cues. Peter van Sommers, of Macquarie University, discussed prototypicality and legibility together,¹⁹¹ pointing out that there are certain attributes so associated with such things as cars, that few people, even children, would ever draw a car without wheels, as wheels are so important to the identification of the prototype. The requirement is to convey the necessary information so the viewer can make an appropriate association and have the intended response. He did also discuss how prototypes can evolve, noting that once, an image of an aircraft inevitably included a propeller. An illustrator almost always includes such key elements in an illustration, even if they may not always be seen (van Sommers talks about handles on teacups). It is the nature of our internal prototypes that makes us link the recognition of a newly encountered building to a style, perhaps assigning a meaning to it (i.e., pointed arches = church, classical columns = democracy, castle-like forms = prison), and have an associated response.

As with many of these building characteristics, there is interaction between the factors, making experimentation complex. For example, legibility strongly interacts with coherence.¹⁹²

A set of rules about how to make a building legible might be proposed. With a modest bit of interpretation of the thoughts of Kaplan and Kaplan,¹⁹³ this might comprise:

- a limited palette of materials, patterns and colours
- simplicity
- easy-to-understand forms
- not too many different forms
- defined lines, textures and edges (much art deals with the definition of edges, including those that may not even be there in reality, such as in the case of a painting of a white dog shown against a snowy background – edges need to be emphasized).

¹⁹¹ van Sommers, 1984, pp.123–130.

¹⁹² Herzog, 2003, p.459.

¹⁹³ Kaplan and Kaplan, 1983, p.18

According to this list, the pyramids at Giza should be among the most enduringly popular edifices in the world – and perhaps they are.

■ Legibility I: Not too many materials

Not long ago I stood in front of a building that some people, both architects and non-architects, had said they didn't like. There was an obvious legibility problem – the building was confusing. I started counting materials and the ways in which they had been handled. It was not an easy task: is ribbed brown siding used both vertically and diagonally one material or two? Regardless of exactly what one counted, the facade incorporated at least ten different materials. I had problems classifying the assortment of bits and pieces – no wonder people thought it was ugly. In the usual contradictory way, one person I spoke to said he liked the building – and then told me how he liked the view of it from a certain coffee shop: I visited the coffee shop and found that from that vantage point one could only see part of the building – a bit that had a simple form and used two materials.

Some historic buildings, such as the otherwise complex Beaux-Arts buildings, are visually very busy, but there is a limited palette of materials – only one, two or three, plus glass (again depending on how you count things).

“*Generally: fewer materials ⇒ greater preference.*”

■ Legibility II: Simplicity/Complexity in form

One possible element that has been shown to influence building assessments has been termed ‘simplicity’, and its opposite, ‘complexity’. Generally, the term complexity is used to express the amount of ‘diversity’ or ‘visual richness’ in an environment. Regardless of the term used, this factor is one important variable that designers can control, and has been the subject of speculation and numerous experiments going back to the 1920s.

Prolific experimenter Arthur Stamps defined complexity as: 'How much is going on in the scene, how much there is to look at, how much 'the scene contains a lot of elements of different kinds'.¹⁹⁴

Harvard mathematician George Birkhoff (1884–1944) analysed such objects as vases and coffee pots when exploring the impact of order and complexity. His proposition was that beauty was maximized when a high level of order (a systematic structure) was created by a minimum of elements. Something made up of a great number of different things would be less likely to create beauty.

Birkhoff offered an equation:¹⁹⁵ that: $M = \frac{O}{C}$

Where M is the measure of aesthetic value,

O is the amount of order, and

C is the level of complexity of any object of the class under consideration.

According to this perhaps overly simple formula, 'complexity' is the level of effort associated with attention, with 'order' being the amount of harmony or symmetry in what is being viewed. Of course, defining or quantifying either is not easy.

Birkhoff, as a mathematician, tended to formulate and speculate, and his work has been followed by considerable research, testing a variety of stimuli – exploring the relationship of complexity and preference. Numerous experiments have confirmed that intermediate levels of complexity are associated with overall preference.^{196/197} On a scale of complexity, what has been found is that low complexity results in boredom – while too much, although interesting, can be overwhelming and difficult to interpret.¹⁹⁸ However, not all complexity is the same: complexity can be with or without order. Chaotic, disordered complexity will tend to decrease the legibility of the building or streetscape, and make it more difficult to assess.

¹⁹⁴ Stamps, 2004, p.2.

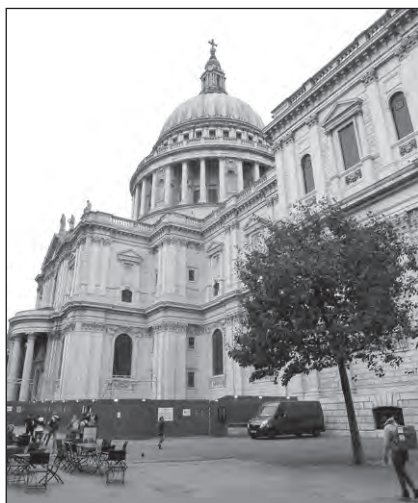
¹⁹⁵ Birkhoff, 1933, p.4

¹⁹⁶ Referenced in Leder et al., 2004, p.495.

¹⁹⁷ Nasar, 1994, p.387.

¹⁹⁸ Kaplan and Kaplan, 1983, p.83.

This was shown, relative to historic facades in Malaysia, by Amir Hassein Askari et al., of the Universiti Putra Malaysia, who noted the detrimental effects of chaotic articulation of elements – effectively complexity without order.¹⁹⁹ Their photographic set suggests that signage and poor maintenance has an impact too. In contrast, ordered complexity can be described as visual richness. Nasar and Cubukcu, in their experimental work, varied streetscape complexity by modifying the amount of variety in building height, facade details, street surfaces and vegetation.²⁰⁰ Akalin et al.,²⁰¹ using Turkish students, found that building facades of intermediate complexity were favoured over both less and more complex facades, even though their subjects generally indicated that more complex facades were the most impressive. Again in Turkey, Arslan and Yildirim considered how their subjects related to the facades of mosques and found an inverted U-shaped relationship between complexity, as it relates to preference, impressiveness and stimulation, three factors that they found were effectively parallel with each other.²⁰²



St. Paul's Cathedral, London, Completed c.1711.
Sir Christopher Wren, Architect.

“***In things to be seen at once, much variety makes confusion, another vice of beauty. In things that are not seen at once, and have no respect to another, great variety is commendable, provided this variety transgress not the rules of optics and geometry.*** Christopher Wren²⁰³”

¹⁹⁹ Aksari et al., 2014.

²⁰⁰ Nasar and Cubukcu, 2011, p.391.

²⁰¹ Akalin et al., 2009.

²⁰² Arslan and Yildirim, 2017, p.520.

²⁰³ From the *Parentalia: or, Memoirs of the Family of the Wrens*, referenced in Ker, p.30.

Paul Hekkert and Piet van Wieringen, of the Free University in Amsterdam, undertook a set of experiments with Cubist paintings and again generally confirmed that the relationship between beauty and complexity tends to follow an inverted U-shape, although as the ‘categorizability’ of a stimulus increases (it becomes easier to relate it to a prototype), the effect of complexity becomes weaker.²⁰⁴ This is logical: if we don’t know what it is, the level of complexity becomes more important in our overall evaluation – and we more clearly prefer intermediate levels of complexity. Such studies indicate that not enough complexity leads to boring and unstimulating environments, whereas an excessive variety of elements confuses the senses of the viewer, making association with a mental prototype difficult.

Some experimental results have been less conclusive, and are sometimes dependent on the specific stimulus used, suggesting that the effect is weaker when less artificial stimuli are used – perhaps because the association with pre-existing mental prototypes tends to be of greater consequence. It gets complicated.

Interviewing people in central Boston, Lynch and Rivkin concluded that ‘They seemed to search for, or try to create, a sense of order and continuity in what they saw.’²⁰⁵ Their subjects appreciated urban areas which could be ‘easily organized as a distinct entity’.²⁰⁶ They summarized that people appear to attempt to sort what they encounter into meaningful patterns that can be easily assessed, and when they had difficulty interpreting things they were puzzled and experienced discomfort. Jack Nasar pointed out that complexity is not an absolute: people ‘... might judge the complexity in a recognizable style as lower than a similar level of complexity in an unrecognizable style’,²⁰⁷ explaining the acceptance of riotous Baroque-era extravaganzas.

But beyond the characteristics of wide population groups, there is still considerable individuality – something that still needs additional research.

²⁰⁴ Hekkert and van Wieringen, 1990, pp.491–492.

²⁰⁵ Lynch and Rivkin, 1976, p.363.

²⁰⁶ Lynch and Rivkin, 1976, p.373.

²⁰⁷ Nasar, 1994, p.384.

For instance, a strand of research has considered personality and response to complexity. Again considering Costa and McCrae's 'Big Five' personality traits, it has been found that more 'open' individuals have a greater preference for higher levels of complexity than less 'open' individuals.²⁰⁸ It appears that extroverts seek the arousal that complexity can offer. At the other end of the scale, Sussman and Chen proposed that Le Corbusier was somewhere on the autism spectrum, and had issues with human contact and overstimulus; therefore he sought simple forms, as well as limited relationships with people.²⁰⁹ They explain how the brains of such individuals will attempt to avoid eyes and faces and concentrate on simpler details, and propose that this carries over to how buildings are perceived. This, in itself, is frightening: the possibility that one person, with very unusual personal preferences, was capable of influencing society to the extent that many buildings were created reflecting a specific disorder.

Summarising complexity and order, Peter Bloch noted that 'According to Gestalt theorists, humans delight in order.'²¹⁰

This encompasses the rhythmic forms we see in so much architecture – one only needs to think of the repeating forms on the architraves (the beams that sit on top of the columns) of classical and neo-classical buildings and the repeated swirling forms of the Baroque. Even modernist architecture often offers repeating patterns.



*San Carlo alle Quattro Fontane, Rome.
Francesco Borromini, Architect. Completed c.1667
Legible because it follows a recognizable, familiar
and coherent style.*

²⁰⁸ Furnham and Avison, 1997.

²⁰⁹ Sussman and Chen, 2017, p.3.

²¹⁰ Bloch, 1995, p.21.

Of course, one might still debate what exactly comprises complexity or order in a building, and how they interact with other factors. Baroque churches are extremely complex, but nevertheless it is possible to understand them – one can sit back in a pew and be dazzled by the riot of form, colour and gilt, but also appreciate the unity of design. Complex indeed, but also ordered and understandable, at least to people who can fit such buildings into their conceptual framework. Complexity and coherence interact – a designer might undermine the coherence of a building or streetscape while pursuing complexity. Each has a role.

This leaves a caution relative to such architectural styles as Deconstructivism, where an explicit attempt is made to destroy the order and coherence of a design. This is likely to induce rapidly felt negative feelings in many viewers: a designer who elects to design in such a form would be well advised to compensate for disordered complexity by paying careful regard to other important generators of overall esteem. A designer venturing into such extreme architectural forms is likely risking popular rejection of the final product because too much complexity compromises legibility. If it is novel, simplicity is probably a good thing.

The human brain is a remarkable instrument for making sense from the piles of input it receives continuously. It is not surprising that it prefers easy tasks to difficult ones (don't we all?). Building designs that are easy to interpret are more likely to be esteemed.

“ Generally: moderate levels of complexity ⇒ greater preference (too little complexity will contribute to boredom, too much and people will find it confusing or illegible). ”



CHAPTER 11

Constructing Our Preferences – Some Inherent Design Factors

Even though building preference is an individual matter, there is considerable evidence that we all tend to respond well to buildings that embrace certain design characteristics. American art philosopher Denis Dutton pointed out that every human culture seems to engage with ‘artistic interest’²¹¹ in some way or another, although not all cultures embrace all the arts. He further suggested that there are ‘underlying universal features’²¹² that exist cross-culturally.

Although the philosophers have argued about why universality must exist, their arguments are often difficult to translate into ordinary building matters. Fortunately, empirical researchers have given us some suggestions.

■ Symmetry

There is considerable evidence that symmetries, for most people, contribute to an overall positive response. Caution must be observed, as the word ‘symmetry’ has multiple meanings. It has its origin in Greek, and definitions include ‘1a. correct proportion of the parts of a thing; balance, harmony. b. beauty resulting from this’.²¹³ Possible synonyms include balance, harmonious, accord and well-rounded.²¹⁴ In common modern usage it usually refers to reflectional/mirror symmetry, but is not limited to that form, and includes other forms of repetition.

²¹¹ Dutton, 2001, p.203.

²¹² Dutton, 2001, p.203.

²¹³ The Concise Oxford Dictionary, Ninth Edition.

²¹⁴ Cambridge English Dictionary Online, accessed 8 August, 2019.

Reflectional/mirror symmetry has been explored by many researchers. For example, Thomas Jacobsen, of the University of Leipzig, used abstract graphic forms and found that preference was associated with mirror symmetry, something that dominated their results, as well as ‘regular composition’.²¹⁵ It is only necessary to stroll through almost any settlement in the world to realize that throughout history, in a wide range of cultures, people have built mirror-symmetrical buildings and building elements. Ancient temples, tombs and monuments, houses and public buildings of almost all cultures tend to have this symmetry, even though the functions housed therein may not suggest a symmetrical exterior. Evidence suggests that this preference is innate, found in almost all people to one extent or another, and appears within the first year of life.²¹⁶

Of course, people do create non-symmetrical buildings. In the case of medieval or traditional Western European buildings, many are not symmetrical on an overall basis, with many building exteriors of that period configured to follow interior function, the most obvious feature being windows poked through the fabric based on the functional needs of the interior. However, further inspection of individual elements, such as gatehouses and spires, often reveals mirror symmetry, even when the overall building composition is not symmetrical. We can never experience buildings as the medieval populace did, but it seems likely that they



St. John's College, Cambridge. Built 15-16th century. One example of a building with reflectional symmetry in its parts, but not in the whole.

cognitively disaggregated elements more than we do – seeing a building more in terms of individual elements, and less as a whole. When theories about beauty were refined in the Renaissance, mirror symmetry was almost inevitably seen as an element making up an attractive building, with window location determined by exterior appearance.

²¹⁵ Jacobsen and Höfel, 2002.

²¹⁶ Evans et al., 2012.

While, relative to buildings, we usually think of mirror symmetry, mathematically (and in buildings) other forms exist. Rotational symmetry is usually found in plan, not elevation. Domes are an example of rotational symmetry, and one need think only of the great cathedral domes to recognize how patterns can be repeated about an axis.

Another common, but less obvious, form of symmetry is ‘patterning’ or ‘translational symmetry’, which is ‘... the displacement of a group of objects arranged in a way that demonstrates a subject-imposed rule-governed activity or consistent relationship.’²¹⁷ In this common form of symmetry, patterns repeat, creating a reinforcing visual redundancy – rather like the complex pattern on the almost riotous Baroque exterior of the Vienna State Opera House – it is this patterning that helps keep the facade from becoming illegible. Even though the small-scale elements might be difficult to evaluate, at the larger scale this patterning, or repetition, creates clarity and unity. The repetition is one reason that it does not overtax the viewer’s brain.



St. Peter's Basilica, Rome. Assorted architects, including Donato Bramante (1444-1514) and Michelangelo di Lodovico Buonarroti Simoni (1475-1564). Domes are the main example of rotational symmetry.



Vienna State Opera, Opened 1869. August Sicard von Sicardsburg and Eduard van der Null, Architects. Translational symmetry: The repeating pattern of the bays keeps the intricate design detail from overwhelming the viewer.

²¹⁷ Farenga and Ness, 2007, p.71.

Interestingly, when it was completed in 1869, the Vienna State Opera House was not generally esteemed – but we have had time to get used to this building, and accept it as a historic, familiar and flamboyant form of performance venue.

Symmetries are common – even pervasive – in nature. Marcus du Sautoy sees symmetry in nature as a form of communication.²¹⁸ The accomplishment of symmetry requires resources – so, in nature, there must be a reason for it. He points out, for example, that the symmetries of flowers are a sign to bees – signalling where food can be found: ‘The bumblebee prefers mirror symmetry, such as the symmetry of the orchid, pea or foxglove.’²¹⁹ Du Sautoy sees a strong evolutionary relationship between bees and flowers. Of course, mirror symmetry offers simpler benefits – an animal that is the same on both sides can run better, so is more likely to be able to catch dinner or escape from predators.

There is considerable research dealing with symmetry and human response. Andreas Gartus and Helmut Leder, both of the University of Vienna, confirmed, using abstract shapes, the importance of symmetry, and found that ‘... even a small decrease of symmetry has a strong effect, such that patterns with slightly broken symmetries were significantly less liked than fully symmetric ones’.²²⁰ Their text suggests that they had originally expected the increase in complexity associated with ‘breaking’ symmetry to increase preference, but it did not. Jacobsen and Höfel, in their electrophysiological explorations of the brain, found a strong association between judgements of beauty, and mirror symmetry.²²¹ In fMRI brain scans of reactions to abstract images, and reviewing experiments by others, Jacobsen et al. concluded that ‘... symmetry was found to be the most important stimulus property determining participants’ aesthetic judgments’.²²²

²¹⁸ du Sautoy, 2008, p.11.

²¹⁹ du Sautoy, 2008, p.11.

²²⁰ Gartus and Leder, 2013, p.352.

²²¹ Jacobsen and Höfel, 2003.

²²² Jacobsen et al., 2006, p.279.

In general, participants found symmetrical and regular pictures more beautiful than others without these characteristics, and the authors concluded that 'In many individuals aesthetic judgment is ruled by symmetry.'²²³ Again, things are never that simple; they also found that aesthetic judgements are processed somewhat differently than symmetry judgements – although both are factors in constructing overall preference.²²⁴

The links between subjective, behavioural and neural processes relevant to the general preference for symmetry were explored by Gary Evans and Janetta Mitchell McCoy, both of Cornell University,²²⁵ who confirmed a relationship between symmetry and happiness, and asymmetry and disgust. Through the recording of cortical brain activity, they showed that the preference for symmetry appears to be formed in fundamental neural activities.

On one level it is curious that symmetry should be so preferred because to achieve it, resources often have to be expended, but many sources argue that in nature symmetry acts as a signal of genetic superiority.²²⁶ The factors in facial appearance that serve to entice suitable mates have been long debated, and have been shown experimentally to be important relative to human attractiveness. Carl Senior of the National Institute of Mental Health, in Bethesda, Maryland, USA, referenced numbers of studies which support that there is an innate preference for symmetry in faces that apparently relates to a desire to select healthy mates who will enable us to pass on our genetic material, and that asymmetrical faces can be associated with development stress in utero.²²⁷

If any factor is universal relative to evoking a positive building response, it appears to be bilateral symmetry. It is perhaps not surprising that dictionary definitions indicate that the word 'symmetry' refers both to a specific design characteristic in one case, and also a wide definition that embraces harmony, balance and even beauty.

²²³ Jacobsen et al., 2006, p.284.

²²⁴ Jacobsen and Höfel, 2002.

²²⁵ Evans and McCoy, 1998.

²²⁶ du Sautoy, 2008, p.12.

²²⁷ Senior, 2003, p.525

Acquired factors, some cultural, seem able to override this at times. One example is the Victorian Romantic movement, in which overall symmetry was put aside and many designers worked to appeal to associational preference factors, some of which may have been specific to that time and culture. In general, however, the demonstration of the importance of symmetry suggests that if a designer chooses an asymmetrical design, they need to be aware that careful attention needs to be given to other factors. Symmetry seems to be an easy way of moving away from ugliness, and there should be good reasons if a designer is going to give up a simple design property that tends to make people esteem a building design.

“**Generally: reflectional and translational symmetry \Rightarrow greater preference ... but even slight divergences from pure symmetry can detract from overall evaluation.**

”

■ Naturalness

People like natural settings, and that is one reason why, even in intensely urban settings where land is expensive, we have gardens and parks: people demand them. John Ruskin suggested that beauty was associated with natural forms, that architects should echo natural forms in order to create beauty. One strand of research has solidly indicated that natural elements are seen in a positive way – something often termed ‘biophilia’. This has taken a number of directions, but confirms that generally settings containing natural (green) elements are preferred over non-natural/non-green streetscapes. Among the findings are that natural views have a positive influence on emotional state, hold the viewer’s interest and have positive effects on various aspects of human emotion.²²⁸ Emma White and Birgitta Gatersleben, of the University of Surrey, confirmed that in general, houses with ‘building-integrated’ vegetation received better responses than those without.²²⁹ In architecture and planning, it is desirable to include natural elements in order to achieve aesthetic pleasure,²³⁰ in particular trees and water.

²²⁸ Ulrich, 1981. Interestingly, Ulrich found that the effects were stronger for the females in his study.

²²⁹ Considerable research is reviewed in White and Gatersleben, 2011.

²³⁰ Menatti and Casado da Rocha, 2016, p.1.

There is evolutionary logic about why we might prefer green vistas. Our primitive hunter-gatherer ancestors would have found food and shelter associated with vegetation and calm water. Other aspects of nature we learned to avoid – cockroaches, snakes (most primates fear snakes), thorns ... Over tens of thousands of years, our brains evolved to recognize promising environments – again, from an evolutionary perspective, those people who could readily and quickly identify food (flowering plants are usually good) were more likely to survive and pass on their genetic inheritance. It has been observed in experiments that the most popular forms of natural vista include elements that are characteristic of the savannahs of Africa where humans lived for hundreds of generations: trees with low trunks and broad canopies.²³¹ Of course, it is impossible to know exactly why this preference has evolved in the way it has, but it is reasonably clear that a preference for natural vistas seems to be common in all cultures.²³² Experiments have shown that people generally feel more positive after viewing scenes of nature than urban vistas.²³³ One caution is that nature can include dangerous plants and animals, so people (as well as many animals) modify their environments to make them safer and more productive. Green environments in shopping centres are usually safe.

Trees have been shown to have a very positive effect on expressed preferences. Relative to shopping, Kathleen Wolf of the University of Washington found that having trees present changes perceptions of such seemingly unrelated factors as ‘willingness to pay for parking’, ‘product value’, ‘product quality’, ‘merchant responsiveness’ and ‘price acceptance’, and that people would travel a greater distance to shop at a place with trees.²³⁴ Her work quantified the effect: that in shopping situations with trees, people would spend nine to 12 per cent more money than if trees were not present.²³⁵

²³¹ Joye, 2007, p.308.

²³² Joye, 2011, p.31.

²³³ Korpela et al., 2002, p.636.

²³⁴ Wolf, 2007.

²³⁵ Wolf, 2013, p.26.

The findings also suggested that the presence of trees had a larger effect in bigger cities – possibly because they are rarer in large cities, so are appreciated more. Other experimental findings confirm that views of vegetation will cause people to enter shopping malls and be more inclined to explore the facility and interact with other people. This sort of finding should not surprise you: imagine a typical city centre shopping street with and without trees. As Wolf pointed out, ‘... gardeners and philosophers have celebrated the pleasures of trees and nature for centuries, noting the role of plants in aesthetics, cultural symbolism and therapy’.²³⁶ Evidence collected in quantified research has confirmed their value.

The view of natural features from hospital rooms has been shown to support faster recovery of post-operative patients, and for them to have fewer complications and take fewer painkillers.²³⁷ This has led to a body of research about ‘restorative environments’. One proposition is that vegetative nature refreshes our ability to focus or direct attention. If our ability to focus or direct attention is diminished, a number of undesirable results unfold, including reduced cognitive capabilities, behaviour-control issues, and poorer interpersonal relations. Restorative environments help to reverse these problems. The ‘attention restoration theory’ was developed by the Kaplans,²³⁸ and is essentially the renewal of the ability to focus, typically after a period of intense concentration. This narrow definition has been expanded to more than just matters of attention, to include stress reduction and attention restoration.²³⁹ This area has been extensively researched, and considerable information is available on the physiological and psychological benefits of restoration in natural settings.

Other interesting research includes that by Meredith Berry of Johns Hopkins University in Baltimore, whose team explored the question of ‘delay discounting’ – effectively, impulsivity. They found, among other things, that their subjects (undergraduates again) exposed to natural vistas were less impulsive than those who viewed human-created scenes.

²³⁶ Wolf, 2007, p.39.

²³⁷ Ulrich, 1984.

²³⁸ Kaplan and Kaplan, 1989.

²³⁹ Menatti and Casado da Rocha, 2016.

Their sense of time was also observed to be different.²⁴⁰ Work conducted by Netta Weinstein of Cardiff University et al. found that community cohesion was increased in the presence of ‘local nature’, and was associated with lower crime rates.²⁴¹ Studies such as these continue to confirm the significance of natural elements relative to human perception, behaviour and wellbeing and, obviously, the need for more exploration in this area.

“ **Generally: higher levels of natural features or references to natural features ⇒ greater preference.** ”

■ Ornamentation

The consideration of the widespread attractiveness of nature, and how it can be integrated into buildings, leads into the matter of ornamentation. Where real nature or windows into it cannot be employed, vicarious experience can be used to refer to desirable natural features,²⁴² although the real thing remains most desirable. This explains why, through history, naturalistic forms have been used as ornament. As previously noted, photographs have long been used to simulate responses from experimental subjects, and it has repeatedly been shown that photographs function well as proxies for actual environments. References to nature have long been a part of architectural ornament. One might consider the swirling shapes of Islamic or Gothic architecture, or the curving enrichment of ‘form follows function’ Chicago architect Louis Sullivan, or the works of Catalan architect Antoni Gaudí. Ancient Egyptian buildings included columns reflecting natural forms.

The drive to visually enrich environments – often with naturalistic representations – appears in most cultures, in most epochs.²⁴³ People have ornamented their spaces (and their bodies) for millennia. Caves at Gibraltar contain evidence that their Neanderthal occupants of 40,000 years ago were painting patterns on the walls.²⁴⁴

²⁴⁰ Berry et al., 2015.

²⁴¹ Weinstein et al., 2015.

²⁴² Joye, 2011, p.20.

²⁴³ Jones, 1868/2008.

²⁴⁴ Callaway, 2014.

Christopher Alexander summed this up in the simple phrase ‘All people have the instinct to decorate their surroundings.’²⁴⁵

Stephen Kellert of the Yale University School of Forestry and Environmental Studies recommended ornamentation based on ‘... simulation and mimicking of shapes and forms found in nature, such as leaves, shells (characterising water), trees, foliage, ferns, honeycombs, insects ...’²⁴⁶ He explained further, that there are higher relationships between humans and nature: ‘Basic inclinations to affiliate with nature’, hence inducing such things as ‘... the feeling of being in a coherent and legible environment, the sense of refuge and prospect, the simulation of living growth and development, or the evocation of various biophilic values’.²⁴⁷

It is worth considering some of the buildings in the dense urban setting of Chicago’s Loop. In the case of the Carson, Pirie, Scott and Company Building, designed in 1899 by Louis Sullivan, most of the upper floors are simple unornamented modernism, but the lower floors, the parts that passers-by can actually experience, include expanses of swirling, naturalistic cast-iron ornamentation. As Sullivan demonstrated, ornamentation with naturalistic themes is one way of softening the impact of stripped-down modernist architecture, perhaps adding a bit of delight to an otherwise functionalist structure.

Yet through most of the twentieth century, architecture as a discipline was unable to come to terms with the concept of ornamentation on and in buildings. By common consensus, some sorts seemed to be allowed, in particular those that could be rationalized as expressing building structure. Others, in some ways no more contrived, such as applied naturalistic ornament, were apparently prohibited. The greats of modern architecture had offered reasons why there was something wrong with applied ornamentation, ideas I encountered in architecture school, but they seemed to lack substance, and were empirically unsupported.

²⁴⁵ Alexander, 1977, p.1147.

²⁴⁶ Kellert, 2012, p.171.

²⁴⁷ Kellert, 2012, p.167.

Not knowing exactly where the boundaries lay, or how each individual lecturer might regard the situation, it was best for the student to avoid anything that could be construed as ornament.

Strangely, there are functional reasons to use ornamentation – one being the simple fact that ornamentation can ameliorate the realities of building construction and deterioration. Much architectural theory wants to ‘honestly’ reveal steel and concrete, yet it often costs more to achieve a nice finish on concrete or steel than to cover and ornament it. Oriental carpets persist, even in modernist buildings – you cannot see where the red wine was spilled. Cornices and other mouldings can throw rainwater away from the face of the building, and buildings without them often exhibit prominent streaking from rainwater, and faster deterioration.



Clare Hall, Cambridge. Completed 1969. Ralph Erskine, Architect. In this case, the dripping of water from the seams in the flashings has seriously stained the brickwork of this landmark building.

While the exact style and manner of utilization of ornamentation varies from culture to culture and time to time, as does the degree to which it is representational or ‘abstract’, it does appear that people tend to prefer some degree of visual richness – that the building is more than just a plain box,²⁴⁸ and ornament is one way of achieving this without expensive contortions of the building fabric.

²⁴⁸ Herzog and Shier, 2000.

Even when people have minimal shelter and are living at or close to subsistence level, they will undertake ornamentation. The Darwinian theory of 'fitness indicators' suggests that the drive for successful reproduction is strong enough that people will advertise their fitness through artistic ornamentation, even in otherwise austere settings.

Ill-considered ornamentation can overwhelm the overall design intent, reduce legibility and confuse the viewer. Designers historically have often emphasized windows and doors with ornament, because they are important design elements, but also because they are expected connections of a building to the outside world. In many North American cities, increasing affluence has led to the appearance of the 'monster house', some of which have levels of unthoughtful ornamentation that undermine the legibility of the building with excessive disordered complexity. I smile at these houses: the builder-owners have obviously been the recipients of the advice of some architectural ornament salesman who went away with a full order-book.

A reasonable proposition is that humans have a fundamental preference for ornamentation. This suggests that a relentless drive for basic functionalism is likely to fail in the longer term. It is only necessary to look at the fate of some of the modernist functionalist developments to see how the individual drive to ornament/decorate/personalize can affect such buildings. Again, the architect/non-architect divide arises – most architects evaluate building design in a different way than the wider public.

While naturalistic themes run through time and through ornament, and representations of nature can act as proxies for the real thing,²⁴⁹ one question, largely unresolved,²⁵⁰ is the extent to which more symbolic and abstract representations of natural features will evoke the same responses as exposure to real natural vistas. Exactly what elements in an abstract representation of nature provoke the response? One notion is that the fractal geometry of much of nature may be part of it, whereby the overall

²⁴⁹ Kellert, 2012.

²⁵⁰ Joye, 2007, p.313.

structure or pattern is the same at different scales. Some experiments tend to refute this hypothesis, although, as occurs in other areas such as proportion, it is possible that something exists, but it is likely a weak effect and overridden by other factors.²⁵¹

It does seem inherent in people (and some animals) to demand more than just mere utilitarian function – a desirable building is something more. This apparently basic human instinct means that Sir Henry Wotton and his predecessors were right: good architecture does need all three factors to be ‘well building’. Of course, while inclusion of ornament or perhaps even ‘decoration’ appears to be an important factor in the achievement of a wholly satisfactory building, what people regard as positive decorative factors is culturally acquired. For example, nicely detailed classical columns might help to delight those who were raised in European-based cultures, while other cultures may find the neo-classical or Gothic unfamiliar, and perhaps illegible.



Examples of naturalistic ornamentation – all within sight of each other in Toronto.

In the twenty-first century something else is going on that makes ornamentation make even more sense, and that is the ability to create it faster and cheaper, a situation not dissimilar to that condemned by Arts and Crafts philosopher William Morris in the mid-1800s. Technological advances in 2D and 3D printing have occurred.²⁵²

²⁵¹ Stamps, 2002.

²⁵² Ijeh, 2017, p.32.

For example, in the restoration of stonework on historic buildings, elements can be computer modelled, and then printed as polyurethane foam models, which can be used to create moulds in which to cast fibre-reinforced concrete elements to replace deteriorated stone. Our local sign printer keeps offering to create a Michaelangelo ceiling for our house using one of his giant printers. This ability to readily create ornamentation using new digital design and manufacturing technologies is an opportunity to add elements to buildings that will appeal to wider groups in the population, even though it conflicts with traditional modernist architectural philosophy. It is unfortunate that ornament is also one of the easiest things to remove from a design to achieve economies.

“ **Generally: ornamentation \Rightarrow greater preference**
... but many people will reject what they consider to
be ‘too much’ ornamentation
... and ornament with natural features can act
as a proxy for real nature (a good thing). ”

Obviously, it is not that simple, and it is necessary to look further into how we deal with these fundamental factors, as well as looking into the more personal aspects of how a set of ‘ingredients’ can be assembled into an overall recipe for a non-ugly building.



Ornamented entrance. Jerónimos Monastery, Lisbon, Spain. Built 1501 - c.1600. Diogo de Boitaca, first Architect.



CHAPTER 12

Personal Factors – Looking Further Into Design

There are many factors that the individual can use in compiling an overall evaluation of a stimulus, be it a building, a painting, wine or a piece of music. The fascinating aspect is the similarity in how we assess these multi-attribute forms of expression, which means that we can use insights derived from other areas to assist in understanding architecture. The uniqueness of most pieces of architecture, together with their longevity and cost, means that research in other areas can be easier to undertake.

■ Novelty, newness and originality

If association with pre-existing mental prototypes (familiarity) was all that was of consequence, it would be obvious what a pleasing built environment should be more of what we have seen before. As usual, it is never that simple. Repeated experiments have shown that novelty, sometimes the opposite of familiarity, is also a major factor in the determination of a positive assessment of building design, as long as there is not too much. The Kaplans in their research found that if the familiar descends to the boring, the overall evaluation becomes less positive. But what exactly is novelty? Simply, and obviously, it is the quality of being new, original, unique, unusual or unexpected, all of which has the potential to arouse and excite us.

It is easy to understand how some degree of similarity between an existing mental prototype and a new experience can indicate whether the new is likely to be safe or dangerous, but why would humans come to value novelty?

One proposition is that novelty-seeking also emerged when humans and their predecessors were hunter-gatherers.²⁵³ Initially, one could think that under such conditions, novelty would be dangerous – there might be that lion lurking, or that plant might be dangerous to eat. But those of our primitive ancestors who were biased towards novelty would have been better able to engage with new opportunities. Those who did not would have tended to be less adaptable, so when their environment changed they would have been more likely to perish, because they could not cope with the new conditions or undertake to move elsewhere. Novelty can come with varying levels of risk, so a successful ancestor would have been able to assess the risk using mental prototypes as a reference, and weigh it against the dopamine high (or more food) that might be received from engaging with some novel situation.²⁵⁴ It is interesting that this theory aligns with recent management opinion about real options, where the possession of sets of options in uncertain environments enhances project value. If conditions unfold a certain way, exercising an option can be beneficial, but if events go a different way, the option can be left unexercised. The possession of options creates advantages: hence the benefit to individuals who can identify and value them. While many real options can be evaluated using mathematical techniques, people often act unconsciously in response to the presence of options.²⁵⁵

Newness is often used as a hook in marketing – as can be observed in advertising campaigns. Designers of consumer products often use novelty to differentiate their products from competing goods.²⁵⁶ The very act of interacting with something novel can be a reward in itself, as has been scientifically investigated in the marketing literature.

Experiments have shown a preference for both typicality and novelty – essentially a conflict to be resolved. A set of experiments by Paul Hekkert, Professor of Form Theory at the Delft University of Technology, and his associates, explored the relationship of novelty and typicality,

²⁵³ Wittman et al., 2008, p.967.

²⁵⁴ Wittman et al., 2008.

²⁵⁵ Ellingham and Fawcett, 2006 and 2013.

²⁵⁶ Kumar and Garg, 2010, p.488.

using sanders, telephones, tea kettles and cars. They noted that ‘... “typicality” (operationalized as “goodness of example”) and novelty are jointly and equally effective in explaining the aesthetic preference of consumer products, but that they suppress each other’s effect’.²⁵⁷ Their experiments showed that ‘... people prefer novel designs as long as the novelty does not affect typicality. Preferred are products with an optimal combination of both aspects.’²⁵⁸ Each of these predictors is correlated with preference, but they interact.

One task of the designer is to resolve this conflict, and it is not necessary to invoke fundamental innovation.²⁵⁹ In particular, a designer can invoke an older form, such as when a manufacturer deliberately includes familiar features typical of an earlier period – perhaps the 1950s or the Jazz Age. Consider women’s fashion – which, on an ongoing basis, makes historical ‘retro’ references.

Novelty might lead to a positive initial response, but that positive response can be subject to erosion over time, or as the design is imitated, or simply becomes associated with the styles and attitudes of a previous era – perhaps those of your parents (ugh!). Therefore a pressure exists to continuously create novelty, which causes styles to change.²⁶⁰ Apparel can change annually, and is less of an investment than are buildings, and most consumer products have short lives, so what people think of them when they are a few years old is rarely important, but the long and unpredictable lives of buildings complicates things. The interaction of familiarity and novelty can work to the designer’s advantage, if the design becomes familiar as its novelty wears off. American marketing academic Peter Bloch pointed out that ‘classic design’ offers a number of possible advantages.²⁶¹ Such designs are likely to remain popular over a long period by invoking symbolic meanings and respecting ‘prototypicality’, and may fit with any ‘innate form preferences’, such as for symmetry.

²⁵⁷ Hekkert et al., 2003, p.111.

²⁵⁸ Hekkert et al., 2003, p.111.

²⁵⁹ Bloch, 1995, p.25.

²⁶⁰ Dutton, 2001, p.207

²⁶¹ Bloch, 1995, p.25.

Consider the appearance of tail fins on cars in the 1950s. While it was innovative to attach fins to cars, the wider population would readily identify the fins as something associated with jet aircraft, and mental prototypes of both existed in the minds of potential purchasers. Be-finned cars were not much different than what came before, a gasoline-burning reciprocating engine in the front driving the back wheels, with the people in the middle, and slowed by abysmal brakes. Nothing fundamental was new, but novelty was created.

Differences between individuals seem to be manifested relative to the decades-old research on differences between connoisseurs and the wider population. Experts do have different opinions and preferences. Uzzell and Jones, in reviewing past research, commented: 'There is evidence that the handling of deviation from these object schemata varies as non-experts tend to prefer buildings which are similar to their norm and experiences, whereas experts prefer innovation and the unusual.'²⁶²

Matters are more complex than just familiarity/typicality and novelty working against each other. This is, in part, because buildings (and many other objects) have multiple characteristics. The material, perhaps brick, might be familiar, but perhaps used in an unfamiliar way. So a wall, or a building, can be both familiar and novel at the same time. This can result in a situation where a high level of typicality in one respect is accompanied by a high level of novelty in another aspect.²⁶³

A novelty cycle can be observed in the architectural forms of Western Europe. Simplifying things, the classic forms of the Renaissance progressed to the more ornate Baroque as architects and their clients increased up the novelty factor, then to the more extreme Rococo, with each step involving increased ornamentation and experimentation. Novelty was thereby progressively introduced, enhancing overall esteem for newly created buildings – but within familiar frameworks. It is also likely that the law of diminishing returns applied – the first bit of novelty supported the overall design well, but as more was added the return per extra element declined,

²⁶² Uzzell and Jones, 2000.

²⁶³ Hekkert, 2003, pp.112–113.

leading to riotous and bizarre designs. After that point, a reaction set in and a simpler neo-classical asserted itself (novel then in itself), only to be followed by the novelty of nineteenth-century complexity.



Extreme Baroque in Rome. Creating original novelty within a familiar Baroque framework (left). Façade and detail (right).

In the twentieth century, architectural thought tended to reject the concept of evolutionary design (and the nineteenth-century extremes), thereby unconsciously negating the benefits of typicality/familiarity. The curious result is that the work of such architects as Quinlan Terry²⁶⁴ has been seen as radical – because it follows traditional precedents. Yet to build what the consumer has already found pleasing is a low-risk strategy, so creating be-columned facades can make sense, as the general response will likely be favourable, no matter what the design community thinks. Why should originality be valued above outcome? It would be difficult to believe that a novel building which almost everyone finds repulsive is somehow superior to a reproduction that is widely regarded in a positive way. Novel design incurs risk – the designer is unlikely to know what the consumer response will be, unless careful experimentation is done in advance.

Like so much of this area, experiments often contain enigmas. What might be perceived as novelty varies between people, generations and cultures.

²⁶⁴ Downing College Library, Cambridge



That is one reason why matters of building appearance are so elusive and a full understanding of them will likely evade people for centuries to come.

*Maitland Robinson Library at Downing College Cambridge. Opened: 1993.
Quinlan Terry, Architect.*

“ **Generally: higher levels of novelty ⇒ greater preference (provided that the novelty does not conflict excessively with familiarity/prototypicality).** ”

■ Mystery

Another factor that has been experimentally demonstrated to be significant is mystery. It has often been seen as an attribute of a scene that invites further investigation – perhaps by moving towards it to resolve the mystery.

One can understand the links between novelty and mystery, as both tempt the observer, inviting them to give additional consideration to the scene. Mystery has been found to be a very consistent indicator of preference.

Interpretations of this concept indicate that it is essentially the situation in which new information is promised. The Kaplans noted: ‘The more preferred scenes are very likely to give the impression that one could acquire new information if one were to travel deeper in the scene.

They provide partial information concerning what might lie ahead.’²⁶⁵

This, they explained, is very significant in outdoor vistas such as streetscapes, but has also been demonstrated to apply to building facades. Musicale Ikemi, of Nihon University in Tokyo, conducted an experiment in which the edges of photographs of dwellings were progressively obscured, and, for his subjects – yes, students again – when the edges were more concealed the subjects rated the facade more highly.²⁶⁶ Although the

²⁶⁵ Kaplan and Kaplan, 1983, p.84.

²⁶⁶ Ikemi, 2005.

complexity of conducting this sort of experiment was acknowledged in explaining some of the enigmas, the interconnectedness of factors found in the results was also discussed.

Nasar and Cubukcu undertook a cross-cultural study of mystery in urban streetscapes (using virtual reality),²⁶⁷ by comparing the responses of students (yet again) in Turkey and the United States, who rated streets for interest and visual appeal. Their results confirmed that curved streets were seen as more mysterious than straight streets, with a greater effect offered by the Turkish subjects than the American subjects. Such studies can be useful in responding to questions about how much response is due to culturally acquired factors – in this case, one

might suspect that Turks are more familiar with mysterious streets than Americans. They added a further element – to understand how the subjects responded when the mystery was resolved – by varying a revealed environment when the subjects turned a corner. Using a seven-point scale they had the participants rate the approach and the revelation of the next stage of the journey through the virtual streets they constructed. While it is, as usual, worth reading the full paper, they confirmed that ‘... preference increased with mystery and surprise’. Perhaps expectedly, when the surprise was of a less desirable vista (low complexity and less openness)²⁶⁸ the response was negative. The research also considered the frequency of exposure – how many times one encountered the virtual streetscape. They found that repeated exposure ‘... affected the preference for mystery’ but not surprise.



Mystery in Vienna – What is around the corner? Are you drawn to it to find out?

²⁶⁷ Nasar and Cubukcu, 2011.

²⁶⁸ Nasar and Cubukcu, 2011, p.411.

They reflected on the two variables and noted: 'The rating for mystery depends on what individuals see and expect to experience, whereas the rating for surprise depends on a comparison between what individuals see and what they saw a few seconds before.'²⁶⁹ Interestingly, they found that the 'Visual Appeal' of the more mysterious curved street tended to survive repeated exposures to it, but relative to 'Interest' they noted a deterioration over repeated exposures. In both cases the results for exposures of over four times became somewhat enigmatic. Clearly more research is in order.

Think of your own reactions. You are walking along a street, or through a space. It is commonplace: you turn a corner and there you see something completely unexpected – perhaps a cathedral, or a castle, or a beautiful park. You certainly notice it, which encourages you to evaluate it. Musical composers often work to create a sense of anticipation. The music suggests it is going somewhere, and then the musician can variously fulfil or contradict the expectation, undertake variations or lead on to another musical phrase that generates yet more expectation. Jane Jacobs noted that mystery keeps things from being boring.²⁷⁰

Mystery is a curious concept, because in some cases it can be associated with danger: the lion that might be lurking or, in more modern times, the thug with the bat. But something good might be revealed – food or shelter perhaps – or that unforgettable coffee shop/bookshop we came across in Copenhagen. Curiosity seems to be part of human nature, and we seem to prefer things that are not completely obvious. What is fascinating is that through evolution humans found it more advantageous to be attracted to visual mystery than to be repelled by it. It is similar to the importance of the journey relative to arrival, or the anticipation created by the growing pile of wrapped presents under the Christmas tree. We sometimes want to prolong the sense of anticipation – perhaps that is why people put presents under trees well in advance of opening them. The delight of anticipation is destroyed by the unwrapping – perhaps revealing just more socks.

²⁶⁹ Nasar and Cubukcu, 2011, p.406.

²⁷⁰ Jacobs, 1962, p.396.

Similarly, if the designer can create a sense of mystery, the curious onlooker will tend to be enticed to engage with the building or streetscape more, perhaps being drawn further down the street or into the interior.

Of course, it is important that mystery does not compromise legibility.

“**Generally: higher levels of mystery \Rightarrow greater preference**
... but too much may induce fears, or compromise legibility.”

■ Scale, proportion and other relations

Historically, theories of beauty often related to the scale of buildings or their proportions. It has often been suggested that certain proportions or numerical ratios are inherently more pleasing than others, and enhance the appeal of buildings and other artefacts. Fascination with numbers is probably as old as counting. In Western thought, we have ratios called out in the biblical Scriptures, in cubits, including those of Noah's Ark (300 length by 50 beam by 30 high), the Ark of the Covenant (2-1/2 length by 1-1/2 breadth by 1-1/2 height), and for various parts of Solomon's Temple (60 by 20 by 30 cubits high).²⁷¹

One source of proportional wisdom was Leon Battista Alberti (1404–1472), who publicized the notion that certain relationships between numbers will create beauty. He offered the advice ‘The very same numbers that cause sound to have that *concininitas*, pleasing to the ears, can also fill the eyes and mind with wondrous delight’, but he only partly mapped architectural schemes on to musical ones. Lionel March, the first director of the Centre for Land Use and Built Form Studies at the University of Cambridge, noted the fundamental difficulty in doing this, but also its persistence in architectural thought: ‘The musical analogy has been overstated and over-used by protagonists to the detriment of continued, searching inquiry into Renaissance architectonics, or the practice of design and computation in the age of humanism.

²⁷¹ A cubit was an ancient measure of length, but varied from place to place and over time, making it difficult to express these dimensions in modern terms.

Only proselytizers of the monotheistic dogma of the golden section have had a more deadening and corrupting effect on serious study.²⁷² Following on from Vitruvius, Alberti also studied the human body, but, as March pointed out, perhaps more to confirm pre-existing beliefs than to undertake what would now be regarded as unbiased research.

The search for magical numbers has been surprisingly persistent. Prominent nineteenth-century Scottish anti-Gothic architect and lecturer Alexander 'Greek' Thomson (1817–1875) '... sought to understand those laws which, to him, were an aspect of the Divine'.²⁷³ In protracted discussion he pointed to 'eternal laws' and 'divine harmonies' of ideal proportions which, he believed, could be found in Greek buildings and which he sought to replicate in his own designs. This can be contrasted with the picturesque aspirations of his contemporary Victorian architects (and their clients), who generally saw '... that the beauty experienced in certain forms were "associational"'²⁷⁴ – essentially rooted in the familiar, be it real or imaginary.

As it appears so often in historical and contemporary musings, the golden ratio (also termed the golden mean, golden section, divine proportion, golden rectangle ...) is worth consideration. It appears in some of the earliest surviving architectural writings and still persists, suggesting that there should be something meaningful in the concept. Simply put, it is the division of a line so that the ratio of the shorter segment to the longer segment is the same as the ratio of the longer segment to the whole line. The result is an irrational number:

$$\phi = \frac{1 + \sqrt{5}}{2}$$

... approximately 1.6180339887. This number frequently appears without human intervention.

²⁷² March, 1998, p.102.

²⁷³ Stamp, 1999, p.7.

²⁷⁴ Stamp, 1999, p.7.

Lines drawn inside a pentagon (five-sided figure) divide each other into the golden ratio (the longer segment being 0.618 relative to the shorter one of 0.382), and enthusiasts point to its frequent appearance in nature – spirals in shells and so forth.

In a 2012 article in *OAA Perspectives*, Christopher Green of York University noted that, contrary to much discussion, there is no firm historical evidence that the ancient Egyptians, Greeks or Romans consciously incorporated this ratio into their designs. The ancient Greeks did know about it, but ‘... their interest in it seems to have grown primarily from their consuming fascination with the problem of irrational numbers generally’. With respect to it contributing to physical beauty: ‘That idea seems to have been an invention of Renaissance artists themselves, though to give it extra intellectual “heft” they often re-imagined it as the legacy of their Ancient forebears.’²⁷⁵

In the nineteenth century the golden ratio was given increasing weight. Early experimental psychologists toyed with it.²⁷⁶ German physicist/philosopher/psychologist Gustav Theodor Fechner (1801–1887), who was interested in consciousness, undertook a set of experiments, among his first, about aesthetically pleasing objects, using laypeople,²⁷⁷ attempting to determine the preferred rectangular shape. He found that people seemed to prefer rectangles with proportions close to the golden ratio, but replication of his results has proven challenging.²⁷⁸ In an effort to verify those results Holger Höge, of the Department of Psychology, Oldenburg University, was unable to confirm a preference for rectangles based on the golden ratio.²⁷⁹ People today regard Fechner’s work with some suspicion. Although applauded as the father of experimental psychology, he may have cherry-picked results to support his various hypotheses.

²⁷⁵ Green, 2012, pp.12–13.

²⁷⁶ Green, 1995, p.939.

²⁷⁷ Noted in *Vorschule der Asthetik*, 1876.

²⁷⁸ Phillips et al., 2010, p.265.

²⁷⁹ Höge, 1995.

Quality experimental evidence about the intrinsic beauty of objects that somehow incorporate the golden ratio continues to be weak. Green noted that the ‘... outcome is not wholly consistent. It comes and goes – not regular enough to command assent, but not so infrequently as to be definitively refuted.’²⁸⁰ The effective conclusion of experimentation is that if there is an underlying preference for objects involving the golden ratio, it is a weak one that is easily overcome by other competing factors. Green offered the suggestion that ‘... the traditionally held aesthetic effects of the golden ratio may well be real, but if they are, they are fragile as well. Repeated efforts to show them to be illusory have, in many instances, been followed up by efforts that have restored them, even when taking the latest round of criticism into account.’²⁸¹ Other experiments have shown that simpler ratios can be preferred, such as squares and 2:1 rectangles.

Cultural matters also intrude. Daniel Berlyne undertook cross-cultural studies and found differences between Japanese and Canadian subjects and concluded that people with a Mediterranean-based cultural background might favour the golden ratio, but not necessarily people from other cultures.²⁸² Perhaps, after a few centuries of Western architects incorporating the ratio into their designs, have people viewing the buildings come to prefer it, not because it is preferred in itself, but because the ratio has become familiar?

Looking at one of the oldest propositions about beauty one might conclude that while there may be some innate preference for buildings and components that incorporate the golden ratio, at least in some cultures, it is at best weak and easily overridden by other factors. It remains a fascinating curiosity, but it is reasonably certain that incorporating the golden ratio into designs is not a way to avoid ugliness.

Another possibility is that positive responses to buildings result from some relationship with the human form. It seems self-evident to relate buildings to the human form; after all, most are meant to be used by people.

²⁸⁰ Green, 2012, p.13.

²⁸¹ Green, 1995.

²⁸² Berlyne, 1971

Doors and ceiling heights by necessity relate to the human stature, and most (but not all) people would agree that floors are best if somewhat level.²⁸³ Howard Robertson, British architect and President of the Royal Institute of British Architects (1952–1954), discussed the concept of scale, pointing out that a building that is ‘big’ in scale does not have to be a big building, ‘... but it will be composed of elements unusually large and bold compared to the human figure or objects near it, such other buildings, natural features, etc.’²⁸⁴ He believed scale to be a relative, not an absolute, measure. Sometimes very large interiors, such as St. Peter’s in Rome or St. Paul’s in London, only appear large when there is something to define their immense size – typically the congregations that periodically inhabit them. Most buildings exist near measures of scale, often other buildings or trees, so are easy for the onlooker to evaluate. When this measure fails, and it sometimes does, the onlooker may feel disoriented. This effect can appear when a large-scale building meets the urban street, and there is nothing within sight that the onlooker can use to assess the building’s size.



Boston City Hall, Boston, USA. Completed 1988. Kallmann, McKinnell & Knowles, Architects. The Boston City Hall has, on occasion, been voted as one of the world’s ugliest buildings.

Human relationships have been manipulated for thousands of years, with monumental forms used to impress the onlooker, communicating with doors suitable for giants and overwhelming columns.

²⁸³ The works of Friedensreich Hundertwasser (1928–2000) do include areas with floors that are effectively rolling terrain. They are intriguing, but probably create problems in furniture placement, and one does wonder what the building insurers make of them.

²⁸⁴ Robertson, 1924/1963, p.94.

Such domineering buildings one might hope reached their apogee in the fascist works (found not only in totalitarian countries) of the mid-twentieth century, but have many precedents in ancient Rome and Egypt.

The concept of beauty being related to the human form goes back at least to Pythagoras (560–480 BC). Ancient Greeks noted that for the male human form, when arms and legs are stretched out, and a circle superscribed, the centre of the circle is at (or near) the navel. Subdividing the figure was possible, to create more relationships. Vitruvius (c.75 – c.15 BC) in his *De architectura* believed that, ‘... without symmetry and proportion, no temple can have a regular plan; that is, it must have an exact proportion worked out after the fashion of the numbers of a finely shaped human figure’.²⁸⁵

Generations of thinkers have attempted to make buildings, streetscapes and interiors reflect the physical form of people, by mushing numbers and the human form together. A substantial investigation was undertaken by Lionel March of these perpetual ‘numbers games’.²⁸⁶ March criticized ‘the mathematics of beauty’ that were followed by the ancients, noting the ways in which some force-fit adjustment always appeared necessary to combine mathematical models with the human form.²⁸⁷

Among the more recent attempts to codify beauty (and functionality) was the development of ‘the Modulor’ by Le Corbusier (1887–1965). It emerged, in part, from his desire for some sort of numerical harmony – and, again, had its roots in the drawings of antiquity and of the Renaissance that related proportions to the human figure. He proposed a set of proportions based on the human body, with the intent of improving the visual and functional aspects of buildings. The system evolved through the 1940s, having been originally based on the height of a typical adult French male, being 1.75 metres (5 feet 9 inches).²⁸⁸ This was increased to 1.83 metres (6 feet) apparently on the basis that more handsome men were that height,

²⁸⁵ *The Ten Books on Architecture* (c.25 BC) III,i.

²⁸⁶ March, 1998, p.vii.

²⁸⁷ March, 1998, pp.103–104.

²⁸⁸ The system formed the basis for a book, entitled *Le Modulor*, published in 1948, and followed by *Modulor 2* in 1958.

and with some refinement and an upraised arm, the fundamental measure became 2.262 metres (7 feet 5 inches). Women were apparently seen as less harmonic, so did not figure in the system. From this, a series of rectangles and squares were developed to create visual pleasure.

Over the course of decades Le Corbusier measured many buildings, including those of antiquity, and found compelling ratios to support his propositions. Today, we would probably regard this as data mining – we might suspect that he obsessively measured buildings, but only paid attention to the ones that supported his theories. And, of course, there was no experimentation to confirm that following the system actually led to pleasant buildings or spaces. Indeed, using the Modulor in some cases led to curious results – it suggested ceiling heights to be considerably lower than commonly accepted in Western culture. One might wonder whether the primary impact of the system was the rather pleasing graphic representation – much as we are still charmed by Leonardo da Vinci's man in circle and square drawing.

Of course, ratio-based systems result from an old tradition in architecture as well as other sciences – it was based on a rhetorical logic – that buildings are all about people, so a good building should logically reflect humans. Yet the enigma about this is that while it acknowledges the importance of people, experimental verification is not seen as necessary. In Corbusier's *Modulor 2* there is some call for experimentation,²⁸⁹ but also the comment 'We have acquired certainty.' Science cannot achieve certainty – even Newton's venerable laws remain subject to questioning.

But 'human scale' may be seen to encompass more than just the notion of building sizes. Jane Jacobs argued that, contrary to previous widely held wisdom, a high intensity of street use tends to be appealing, not 'overwhelming or disturbing'.²⁹⁰ Think about your own experiences. There is something pleasing about being in spaces where there are other people. You probably do not want to be alone: often spaces in which there are no other people seem to be, and can be, dangerous.

²⁸⁹ Le Corbusier, 1958, p.15.

²⁹⁰ Jacobs, 1962, p.396.

Sussman and Hollander, in their book *Cognitive Architecture*, saw scale as being important relative to how people navigate their way through space.²⁹¹ If a building or space does not relate to us as humans, in particular the ways in which we see and move, navigation can become difficult and energy-intensive, resulting in confusion and a possible sense of reduced personal safety. They pointed out how shopping centres often duplicate forms that echo traditional shopping precincts. They also proposed a set of distances that work for various scales of human interaction – from social fields (about 100 metres), through ability to discern facial emotion (35 metres), to more personal scales (4 metres and less). Their point is that scale is important, and relates to how we might be functioning in any particular setting (auditorium, shopping precinct, social down to personal). The scale has to match the function.

Considerable work has been done in the field of wayfinding – how people navigate cities and buildings. This is another area where such things as paths and landmarks are important as relating to the human condition – perhaps not in terms of just physical size, but connecting to our mental and spiritual scales. Such physical features anchor our very being, by defining who we are, where we are, and sometimes even why. Consider: what buildings are significant to you, and why? In the nineteenth century era of civic boosterism, local governments vied to build impressive city halls –

buildings that proclaimed the vitality of their cities. They often occupy significant sites to this day – Toronto’s ‘old’ city hall, done in the Richardsonian Romanesque, and completed in 1899, still dominates Bay Street, the city’s financial hub.



Non-human scale is not uncommon in recent buildings.

²⁹¹ Sussman and Hollander, 2015, pp.26–28.

The ‘new’ city hall, completed in 1965, is equally a monument to the spirit of the city and its citizens, albeit in a more recent era. It includes what is now a well-used and loved civic square.

Even for monumental landmarks, it is best that they do relate to people, especially at ground level. Developers and designers should consider this particular issue. How should a building relate to the individuals who encounter it – physically, emotionally and spiritually?

“ Generally: there is little evidence to indicate that mathematical proportion is important, but it is not a bad thing either. It is most likely dominated by other factors.

However, attention should be paid to the practical aspects of human scale, particularly at ground level. ”

■ Warmth

In the results from my group of subjects (Experiment IV), the cold/warm aspect was found to be associated with positive overall evaluations. Esteemed buildings tend to be seen as ‘warm’. What is surprising is that the warm/cold scale was more associated with overall esteem than was light/dark, which has been seen as being of primary importance in design for a long time. In considering what factors might lead to buildings being perceived as warm, in the experiment, warmth was strongly associated with historical buildings and historical reproductions – perhaps familiar things are felt to be emotionally warm. In a study of virtual residential environments, Anosha Zanjani, of the University of Toronto, found that ‘walkthroughs’ in spaces seen as warm were more familiar, relaxing, secure, private and ‘evoked more personal memories’ – all good things contributing to a positive evaluation of a space or building.²⁹²

²⁹² Zanjani, Hilscher and Cupchik, 2016.

One of my favourite articles in *OAA Perspectives* was written by Renée Tobe, of the University of East London.²⁹³ She advanced the proposition that in film, the bad guys often inhabit modern architecture. I watched some movies critically, and saw her point – just think of the lair of a typical Bond villain: it tends to be modern, high tech and icy cold. Meanwhile, James Bond's bosses often work from antique, panelled, warm spaces. How movie directors use places and people is worth respecting. The length of movies is short in comparison with books, so their creators use familiar images and symbols rather than long explanations to convey meaning, and these include buildings and occupations. If you want a boring character you make them a bookkeeper – that is in keeping with the popular image of a bookkeeper. It seems that if a movie-maker wants something to portray a ruthless villain, a cold, modern building is used. Think about this the next time you see a movie with a building that might be perceived as cold.

In her work, Zanjani noted that environments perceived as warm were ‘... expressive with yellow or red-centered color schemes’, while the cooler spaces ‘were characterized by a high-tech, futuristic, austere and geometrical design with a blue-centered color scheme’.²⁹⁴

The attainment of some level of perceived warmth seems to be one way of increasing the esteem of a building or space. Research into this area might be fruitful, and some questions might involve the direction of the relationship: to what extent are buildings assessed as warm preferred, or do we assign warmth to buildings we esteem? There is also the obvious question about the visual, and perhaps other, characteristics that lead to buildings being assessed as warm.

“Generally: buildings that viewers regard as ‘warm’ tend to be esteemed. How a designer can create a sense of warmth in building design needs ongoing exploration.”

²⁹³ Tobe, 2007.

²⁹⁴ Zanjani et al., 2016, p.57.



CHAPTER 13

Unity/Coherence/Balance/ Order/Elegance/Harmony

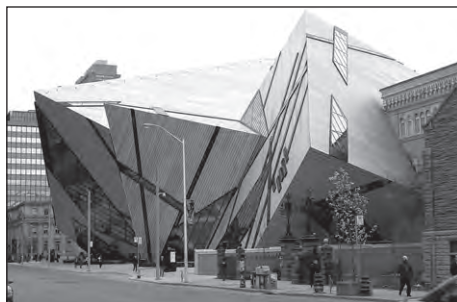
It is tempting to believe that it might be possible to poll people, identify preferences and merge them to produce a design that would create buildings people would assess positively. Such efforts, as were done for paintings by ‘conceptualist artists’ Vitaly Komar and Alexander Melamid,²⁹⁵ have shown that a democratic mixing of things that people prefer into one work can lead to curious results – including bizarre, disjointed creations that are likely to be widely negatively perceived. Even considering the evidence of specific human preferences, the designer is faced with myriad ways of assembling design variables in such a way as to evoke a positive response. This factor is important because it works to tie the more concrete factors together, yet is difficult to define, in contrast to such things as familiarity, ornamentation, symmetry and visible entrances. This very flexibility enables us to avoid monotony in the built environment – the challenge is the infinity of possibilities.

Unity/Coherence/Balance/Order/Elegance/Harmony are difficult to define, but there is no shortage of commentary on these related terms. Arthur Stamps offered a definition for coherence: ‘How well a scene hangs together. How easy is it to organize and structure the scene?’²⁹⁶ If a first-time viewer immediately perceives an object as a coherent whole, legibility is enhanced because the viewer does not have to assemble a comprehensive understanding from a multitude of individual and perhaps conflicting elements.

²⁹⁵ Woodward, 1994.

²⁹⁶ Stamps, 2004, p.2.

We seem to have an innate desire to merge things into a whole, which is logical, as it makes it easier for the brain to evaluate the stimulus.²⁹⁷ A logical understanding of this might be, somewhat following Peter Bloch,²⁹⁸ that a building is usually encountered as a whole and, if sufficiently interested, a person will then consider the elements. Of course, buildings are often first seen in pieces. For example, when walking by you tend to see the ground-level elements first, so initial impressions may be dominated by specific elements. This might be why some monumental ‘architecture’ is so unappealing: such buildings often concentrate on overall form, with the elemental view at street level being left to chance.



Royal Ontario Museum, Toronto, Canada. Completed 2007. Daniel Libeskind, Architect. Spectacular from a distance, but how is the pedestrian supposed to react? Does the streetscape relate to the overall form?

Thomas Aquinas (1225–1274) in *Summa theologiae* commented on beauty: that it resulted from wholeness (or perfection), harmony and clarity (brightness). The Kaplans called it unity: that the structure is ‘a coherent entity’.²⁹⁹ In (non-architectural) product design it is well known that there should be a congruity

between the elements of a product, so they work together as a harmonious and orderly visual whole. Expressed in yet a different way, it is a ‘feeling of rightness’ that ‘originates deep in our cognitive architecture’.³⁰⁰

Numbers of studies have shown that harmony is preferred to chaos by most people.³⁰¹ It is well known that people seek patterns – that is the reason why we see the man in the moon, images of saints in toast, and faces on some buildings.

²⁹⁷ Kumar and Garg, 2010, p.488.

²⁹⁸ Bloch, 1995, p.19.

²⁹⁹ Kaplan and Kaplan, 1983, p.35.

³⁰⁰ Lawton, 2015, p.31.

³⁰¹ Bell et al., 1991.

Our brains try to make things fit together in an effort to make sense of the world – and if they don't fit together as a whole, we will tend to reject the whole. This relates to familiarity and legibility: we like vistas that are easy to interpret and make sense of; that are unified.

“... *beauty is the child of the coherent relationship between parts.*”³⁰² Alain de Botton

Some research has considered the relationship between colour and other design factors. Slatter and Whitfield, albeit using interior spaces and having a small sample size, found that ‘... appropriateness may be a major determinant of evaluative responses to interior color. They provided support for the more general hypothesis that evaluative responses to color are partially dependent upon the object with which the color is associated’.³⁰³ Whitfield, again using interior spaces, found that differences between some styles (Modern versus Georgian or Art Nouveau) had an impact on the selections of appropriate colour. Lazreg and Mullet used colours and two-dimensional shapes and found that their subjects used ‘... a complex rule in which the weight attributed to one element depends on the value of the other element’.³⁰⁴ They also found that the results did not depend on whether the subject was a connoisseur or not. In other words, what architectural colours are preferred is highly dependent on what they are being used for, and where – with all of this underlining the need to consider how factors interact to produce a harmonious whole.

This need for unity can be explained in practical terms. For example, if some good or service is to be marketed as an upscale product, its elements must support this sort of balance or unity. It is not difficult to find violations of this rule. I recently visited a building purporting to be at least somewhat luxurious – one entered into the lobby through an impressive set of wooden doors. Yet the next doors, from the lobby into the building, were ordinary painted steel doors – something usually seen on mechanical rooms. The elevator lobby was nicely panelled, but the

³⁰² de Botton, 2006, p.218.

³⁰³ Slatter and Whitfield, 1977, p.1070.

³⁰⁴ Lazreg and Mullet, 2001, p.530.

elevator interiors themselves were obviously the cheapest one could buy. The intended elegance of this building was undermined by the mixed messages offered – was it a luxury building, or something more pedestrian? The extra money spent on the main doors was largely wasted as a result of the cheap second set of doors. It is necessary for the designer to make trade-offs between elements, but it has to be done with consistency. Buildings are very complex products, but it is desirable that the overall goals of the project (commodity, firmness and delight) be respected in these trade-offs in order to achieve a project that has coherence, and so the messages it offers are reasonably comprehensible to the layperson.

Building design aspects often interact. Yannick Joye of the ISM University of Management and Economics in Lithuania pointed out that desirable housing forms combine both complexity and order.³⁰⁵ People seem to want that balance; however, when complexity is higher, a designer has to be cautious not to reduce coherence and legibility.³⁰⁶

There are analogies between the appreciation of visual design and the appreciation of fine food and wine. Wine writer and connoisseur Hugh Johnson, in trying to explain favourite wines, suggested: ‘Wines that stand out for their boldness, freshness, sweetness of savour: ideally a balance of all these.’³⁰⁷ At a wine-tasting session a noted French-Californian winemaker³⁰⁸ offered his insights into what makes a wine ‘elegant’. His notion was that it largely related to initial impact – that, on first tasting, if you perceived the wine as a pleasant whole, then it was elegant. If the first response was to perceive details, it failed the elegance test. No matter how good the individual details might be it was the unified impact of the whole assemblage that defined a great wine. He further commented: ‘Complexity but unity. Not aggressive. A great connection with your body. You can create diversity in the elements, but have to blend them ...’

³⁰⁵ Joye, 2007, pp.310–311.

³⁰⁶ Herzog and Shier, 2000, p.572.

³⁰⁷ Johnson, 2006, p.91.

³⁰⁸ Philippe Bascaules of Inglenook winery in the Napa Valley of California at a IWFS Niagara session in November 2015.

Think about those words: a great building should be like a great wine. From an architectural perspective, Louis Sullivan (1856–1924), the eminent Chicago architect, agreed, stating that the decorative elements (the small scale) should exist in harmony with the overall form of the building.³⁰⁹

Relative to urban settings, Jane Jacobs offered the opinion that visual order was important. She did not see the complexity of cities as being art, but stated that it was desirable that urban environments should avoid offering conflicting impressions, thereby reducing the likelihood of being seen as confusing and disordered.³¹⁰ That does not mean that everything should be the same – that would lead to a boring prospect. Jacobs suggested that city streets need ‘visual interruptions ... visually heightening and celebrating intense street use by giving it a hint of enclosure and entity’.³¹¹

For the designer, ‘elegance’ occurs when the various design elements are integrated into a meaningful whole, and should be a primary objective. It is likely that people sense elegance in the Parthenon (and its many imitators) not because of the specifics of proportion, but because it reads as a harmonious whole. They see and understand the repetition of column and lintel (translational symmetry), together with its ornamentation (column capitals, mouldings, embedded sculpture ...). And, of course, the Parthenon itself is the fundamental prototype for many people’s understanding of a pervasive form of design.

Experiment IV probed the role of elegance, by asking for a response to the stimulus buildings on a scale from Awkward to Elegant. It was found to correlate with overall esteem. Buildings that were generally seen as elegant (first or second place for all groups), were the Jerwood Library (second for the wider population, but only fourteenth for the architects’, and the Mercedes-Benz museum (third for the wider population, but eleventh for the architects). As this factor was within the control of the designer, it is also worth noting the inelegant buildings: the MIT residences in Boston (effectively in last place, being seen as awkward by all groups),

³⁰⁹ Sullivan, 1896.

³¹⁰ Jacobs, 1962, p.392.

³¹¹ Jacobs, 1962, p.393.



Riddarhuset (House of Nobility), Stockholm. Completed 1660, Simon and Jean de la Vallée. In Experiment IV ranked as a most elegant building.

Suomi-Koti, and Kunsthaus Graz (but seen as much more elegant by the wider public than by architects and others in the building industry).

What did the respondents think constituted elegance?

There is the historical

simplicity and design consistency of the Stockholm Riddarhuset and the Jerwood Library, but also, the high-tech simplicity and consistency of the Mercedes Benz museum. Although the Stuttgart palace ranks highly in overall esteem, it is lower in elegance (except to architects), possibly due to an exterior configuration that is less clear and more 'heavy-handed' than the Stockholm building. The Colaneri Estates Winery, among the wider population came in second place overall, but ranked eighth among that group for elegance. Presumably the romantic familiarity of its Italian village demeanour more than compensates for the complexity (and multiple materials) of the facade. That elegance is in the minds of the individuals, and can vary by group, is suggested by the contrast in elegance assigned to the Vienna Kunsthaus – the wider population saw it seventh in elegance, while the architects ranked it fifteenth.

This complex design matter obviously needs further interpretation and exploration. Unity/Coherence/Balance/Order/Elegance/Harmony is a difficult concept to experiment on. But the concept offers significant clues about why a building might be rejected as ugly. A building consisting of disjointed elements that do not relate to an overall theme would be at risk. This was brought to my attention while cycling down a pleasant residential street in a suburb. One new house offered a very mixed set of messages. The house had a problem with unity – although the gables were symmetrical, the windows underneath were defiantly asymmetrical.

The facing material was grey brick combined with a rougher, almost-white stone, something that most people in the area would have problems associating with any known prototype. The painted trim was brown – but some panels were painted grey, apparently to match the brick. In addition, the facade was obviously skin deep: the very-visible sides of the house were clad with low-cost pre-finished panels. The result is that the onlooker is confronted with many disparate messages emanating from a small building. In this case, the first glimpse is likely to lead to an unpleasant



Small suburban house with conflicting elements.

sense of confusion. The creator might suggest that these mixed messages were there to challenge the viewer, but is that a major role for an otherwise ordinary American suburban house?

A foodie friend once offered a criticism of a meal: that while the chef had prepared splendid individual elements, they didn't go together. One course consisted of braised beef that fell apart deliciously as it was eaten, accompanied by crunchy lightly cooked dill carrots – each wonderful alone, but sadly discordant when served together. My friend commented that the chef was young, and would learn. This is where the magic of the capable designer is important – the parts of the whole building come together with some magic that raises the spirits and delights the onlooker.

It might be expected that good results are more likely to occur when the design approach is considered in advance: whether the intent is to have the finished product regarded as beautiful, challenging, romantic or sublime. Or taking it further into a multitude of possibilities, perhaps proud, piquant, overwhelming, gentle or authoritative. Having an explicit design intent should lead to more positive outcomes.

“Generally: higher levels of unity/coherence/balance/order/ elegance/harmony ⇒ greater preference. This is a very important factor – how the designer combines things to create an esteemed design.”



Hotel Elisabeth, Mechelen, Belgium. (2014)



CHAPTER 14

Architecture Does Not Stand Alone – Context

Most research into human responses to the built environment is static – researchers usually survey individuals once, in search of relationships. This, unfortunately, means that any variability of response in an individual may not be detected, and we do know that evaluations are context-dependent.³¹² Think of the written word ‘does’. Alone the word, like so many, is ambiguous, but when inserted into a sentence has a clear meaning – presumably either as a verb which indicates that someone undertakes some action, or as a plural noun describing female deer or rabbits.

Similarly, buildings, parts of buildings, and streetscapes do not exist in isolation. If we assess a building form relative to a street of expensive elegant structures, it will be seen differently than if shown on a street of dirty, neglected edifices. Is it the biggest or smallest structure on the street? Context is important in influencing assessments of appearance. Not even the most exquisite building or streetscape will be evaluated positively all the time, even by a single individual.³¹³ Surroundings matter. We may encounter a building or streetscape when it is cold and raining, or while we are frustrated, confused or ecstatic, and that changes things.

■ The physical setting

Many people in the UK love to holiday in the South of France. It is usually sunny and warm, a nice contrast from the wet, gloomy weather so common in the UK. These people have wonderful memories of sitting in ancient

³¹² Faerber et al., 2010.

³¹³ Bloch, 1995, and Blijlevens et al., 2012, p.184.

courtyards, beneath verdant boughs, sipping the stunningly cheap and glorious local wines. Many buy a case or two of the wine and take it home, but, somehow it just doesn't taste the same in England. Although it is exactly the same wine, drinking it in the confines of your draughty interwar semi-detached house while it drizzles outside is a very different experience.

In one sense, it is easy to regard familiarity as a somewhat objective property of a stimulus relating to some specific population group, who have the same inventory of prototypes. Yet, it has been shown experimentally that 'typical', easy to assess stimuli will be seen by respondents as more typical and more appealing when presented in an atypical context.³¹⁴

Context/Setting has at least two aspects. First, the stimulus (building, building detail, interior or streetscape) sits within a physical context, and this can affect factors of assessment, including typicality. But people face contexts too – the mood one is in when the stimulus is encountered is also very important in how judgements are formed.

Many of us might appreciate the appearance of Italian hill villages, but if you took one of the houses and put it into a North American suburb among 1960s split-levels, most people would probably find it unsettling,



Pena Palace, Sintra, Portugal. Completed 1854. A holiday house for a royal family. Novel and perhaps exciting, but they did not have to live in it all year.

or at least unfamiliar. Indeed, in US-based research about preferred house designs, Jack Nasar found that Mediterranean-style houses were not as esteemed as other forms, ranking below such local indigenous American forms as colonial.³¹⁵

³¹⁴ Blijlevens et al., 2012.

³¹⁵ Nasar, 1989.

It is possible that we have a greater appreciation for novelty when we are away from our usual environments – perhaps on holiday. Novelty may work differently when we see it when on holiday – rather than encountering it day after day. Perhaps a subject for some future research?

In the *OAA Perspectives* feature that inspired this book, one author sent a photograph of the Kunsthaus Wien (Vienna Art House) as an example of an ‘ugly’ building. This building was created based on the ideas of Friedensreich Hundertwasser (1928–2000), and completed in 1991. Our editorial committee did not disagree with the assessment of the contributor. A couple of years later, when in Vienna, my wife and I had the opportunity to see the building. It involved a fairly long walk across a large park, over some bridges, through a shopping district, and then through several city blocks. When we found the building, it was no longer ‘ugly’, and, to us, it made some sort of sense. Why? Walking through the neighbourhood provided a framework in which the building could be understood. It had many similarities to the buildings we walked by. The windows were typical of the neighbourhood in size and structure, the building sat directly on the street, and the overall height and floor-to-floor heights were essentially the same (it was a renovation of a former furniture factory). It offered a welcome contrast to the older buildings of the same general form, and was certainly more interesting than the boring stripped-down postwar functionalist versions. Moreover, the ground floor was open and welcoming. There was a nice sense of novelty provided by the quirky columns at the entrance. In an isolated photograph with no context, our editorial committee saw it as ugly, but when viewed in its setting, especially having arrived on foot, it became quite appealing (at least to us). After the walk, there was a framework in which the building could be placed – it was typical of the neighbourhood so the passage had imbued us with a prototype to which we could relate. Yet it was novel too – and certainly not boring. How would you personally interpret that building? You will have to visit it to find out – but make sure you make the final approach on foot. Relative to prototypicality, when I showed a photograph of this building to a young woman in Canada, she said she rather liked it. I asked her why,

and she said that she had a pair of shoes with the same sort of black and white pattern, and she liked the shoes, illustrating that newly encountered built forms may be mentally associated with very different things stored in our bank of prototypes. One might wonder how she would have assessed the building had the shoes been uncomfortable. This linking process allows us to deal with something novel in terms of the familiar – identifying and using shared properties in the evaluation. Otherwise, as pointed out by Hofstadter and Sander,³¹⁶ we would be perpetually as newborns, without ‘analogical reasoning’, seeing each new situation with nothing to use to interpret it.



Kunsthau Wien (Vienna Art House), Completed in 1991 based on the ideas of Friedensreich Hundertwasser (1928–2000). The building and the mental prototype!

Building elements exist in context too. One can occasionally see a new shopfront chopped into an otherwise coherent facade. Perhaps the intent was to create a new and contemporary image for the

business, but caution must be exercised so that passers-by are not confused. Such a shopfront will be seen in the context of the overall building and/or streetscape, and the results might not be positive.

■ Providing labels and programme notes

Additional information can reduce ambiguity or confusion about how to interpret a building or space. A fascinating set of findings resulted from the work of Martina Jakesch and Helmut Leder of the University of Vienna, who undertook experiments to gain insights into how ambiguity might

³¹⁶ Hofstadter and Sander, 2013, p.30.

affect the appreciation of art, in particular abstract art, which often has unclear meanings.³¹⁷ They found that when titles are assigned to artworks, viewer appreciation is enhanced – that, in general, additional information helps people to find meaning and reduces the tension associated with uncertainty, so increases the appreciation of artwork. While this might be expected in the case of abstract art, curiously it also seems to apply to representational art. Even though the painting may be obviously a cow, a tree or a stream, people were shown to prefer a painting with a label stating the obvious. What this suggests is that giving people information about things is a good idea, rather as concert-goers will usually be presented with a programme describing the pieces to be performed and the names of the musicians. Wine bottles often note what flavours the consumer might experience. More traditional forms of architecture frequently offer cues, and the Victorians were good at providing them – churches were usually Gothic, banks often reassuringly neo-classical, prisons grim, and factories satanic. The entrance was usually obvious. Unfortunately, much contemporary architecture lacks similar hints as to use and design intent.

For novel forms of buildings for which many/most viewers do not have a mental prototype, it is beneficial to have ‘concert programme’ notes available, essentially explanations of what people are viewing, and this will work to overcome the tendency for architectural conservatism – risk is reduced. This may be why the dramatic work of superstar architects can find acceptance – they are able to promote and explain it.



Naples Market Scene, 1931. G. Calvich. Do you like the painting better with information about the location and the painter?

³¹⁷ Jakesch and Leder, 2009.

■ Cultural and economic context

The economic-cultural setting will affect how people respond. Some of my work (another part of the research described in Experiment I) explored how much people are willing to pay for different house forms, and has several implications. In the study, those who had been brought up in the years of deprivation – through and immediately after the Second World War, had different opinions of the various vintages of housing – viewing functionality (the firmness and commodity) as relatively more important than the aesthetic aspects (the delight) than did the cohorts before and after them. This was reflected in the relative changes in house prices over decades, as the well-built but boring houses of the 1950s and 1960s fell in price relative to nearby Victorian dwellings that had less commodity and firmness, but offered more delight. Abraham Maslow's hierarchy of needs might help explain this. People from poorer economies value the fundamentals. As people become wealthier and more secure, they assume that a house will offer commodity and firmness, so pay more attention to other aspects – including those that endow delight. In the developed world, house builders have moved away from the stark functionalist products of the immediate postwar period, and their products now reference, to differing degrees, historical precedents. Of course, many custom houses follow the modernist style, and feature in the magazines – but they often use expensive materials and have expanses of glass, so are not truly functionalist either. In that case they can be seen as symbols of wealth and (presumably) of the owners' self-image of some sort of personal sophistication.

■ Movement

Movement through space creates another context. Most studies have the subject fixed in space – the subject looks at an image of some sort, but we don't usually encounter buildings and spaces that way. A building encounter is usually part of an ongoing sequence of events, much as our walk to the Kunsthau Wien provided a context for an encounter with it. How is a building encountered, and how does that sequence unfold?

It makes a difference if one first sees it when walking the dog, cycling or driving past it, or in a magazine. Do you come on it suddenly or first see it from a distance? A recent paper by Margherita Brondino, Jack Nasar et al., studied movement between simulated offices to explore the role of ‘surprise’, finding that ‘Both arousal and pleasantness increased from low to moderate surprise, but decreased from moderate to high surprise’³¹⁸ – yet again demonstrating that some factors follow inverted U-shaped curves: some is good, but too much is a negative. The tools to simulate movement in controlled research situations are becoming more accessible, so more research is likely to appear in the near future.

■ State of the viewer – mood and affective state

Moods and affective states modify interactions with stimuli. Schindler et al., of the Max Planck Institute for Empirical Aesthetics, noted that ‘Aesthetic perception and judgement are not merely cognitive processes, but also involve feelings.’³¹⁹ These are seen as generally negative or positive. Moods are shorter-lived than affective states, which are, in turn, shorter-lived than personality traits, although personality traits predispose individuals to certain moods. Schindler et al., lumped a number of these factors into one category they call ‘aesthetic emotions’.

Again, think of that wonderful bottle of wine or cup of coffee you drank in that Paris restaurant or Italian villa. You usually encounter those places while you are on holiday in some warm, intimate place, away from the pressures of work, your preoccupations with the day’s tasks, whatever the children are up to, and your wintry climate. You stroll along the street, actually looking at the buildings, and have the time to go into some appealing shop or cafe and enjoy the experience. It might be in a foreign place, in which the buildings are of unfamiliar design and materials, so it is harder to take them for granted. It is very different than approaching a building while anxious about an important meeting.

³¹⁸ Brondino et al., 2019, p.47.

³¹⁹ Schindler et al., 2017, in abstract.

Such physical factors affect your response. A chair is likely to achieve a much higher sale price in an antique shop than in a jumble/boot/garage sale. One famous experiment contrasted the money collected by a famous musician performing in an underground subway station with that collected in a concert hall.³²⁰ Same musician, instrument and music.

Differences in context create different ‘affective states’, and this, in part, can determine how much pleasure an individual might derive from the music. In a concert hall we have been prepared. We have dressed, perhaps had a nice dinner ahead of time, and are accompanied by a spouse or friends. We sit, read the programme notes and the performer appears – perhaps dressed in formal attire. In the underground subway we are going somewhere, buffeted by a crowd and in workaday apparel. We are

simply not in a state to receive the music, so will not give the time and effort required to understand or appreciate it. If the context is one that suggests excellence in ‘art’, such as a gallery or concert hall, the response is different. Hence the swarms of visitors to Frank Lloyd Wright buildings, oohing and aahing. Normally they might give architecture little



The Robie House. Completed 1910. Frank Lloyd Wright, Architect. Without the label and preparation, how many people would walk by the Robie house in Chicago without noticing it?

thought, but the trip to the building, the anticipation, prior research into the building and the guide’s talk have prepared them to look more carefully and to appreciate the building (or at least say they do).

■ Self-image

Early in my career I was involved with a financial institution that invested in major office buildings. It had, over the years, moved to building them, rather than buying them. It was clear that having the company own and

³²⁰ Contrera, 2014; Weingarten, 2007.

be identified with big, first-class office buildings was an objective, but one might wonder how much of that resulted from a real marketing benefit (selling the financial products) or as an investment, and how much of it was a benefit felt by the board, senior executives and employees. It is not easy to pick this apart, but it is possible that some of the value resulted from greater employee satisfaction resulting from working in a prestigious space, with close identification with the company, rather than functionally equivalent offices offering less ego-boosting personal status.

Psychologists and marketing people use the terms 'self-image' or 'self-identity' to express how we describe ourselves – usually unconsciously. In order to support our self-image, we tend to acquire goods (including clothes, cars, technology, houses and perhaps office space) in an attempt to fulfil our self-image, and secondarily may hope that they will assist others in determining how they might behave towards us.³²¹ Marketing people and designers often create and exploit product images constructed around 'symbolic cues'. This is why a product or concept may be given such images as sexy, classy, fashionable, young ...³²² People shop accordingly, in a matching process to achieve what is sometimes termed 'self-congruity'. We often think of our purchases in order to represent ourselves to others, perhaps by impressing them, but a significant part of these actions is to impress ourselves and confirm our own identity.³²³ Of course, being able to select from a wide range of possibilities is part of the concept of postmodernism – we have fewer incentives to conform than in the past. An individual may be willing to pay more for a house that aligns with their own desired self-image and supports their self-esteem.³²⁴

Material and non-material objects both carry a range of meaning, so can express such things as 'personal qualities, social standing, group affiliation and gender role'.³²⁵

³²¹ Elliott, 1997, p.287.

³²² Sirgy et al., 2000, p.127.

³²³ Sirgy et al., 2000, p.128.

³²⁴ A real-estate agent friend, after reading this, said that it is blindingly obvious to people in his industry.

³²⁵ Steg, p.166.

Adjectives that I used in my own research explorations on buildings have included friendly/unfriendly, prestigious/low status, and impressive/unimpressive. These factors are among those that can be associated with how an individual perceives the social attributes associated with a building, and how a relationship with that building might transmit them to the individual. Few people had problems applying these terms to buildings.

Self-image itself is a complex concept, with a variety of definitions. There is also the reality of 'multiple selves'. This should not be unexpected – think of the different roles you may play over the course of a week – spouse, parent, businessperson, mentor, drinking buddy ...

The connections to the built environment are obvious. As individuals, we assign different attributes to different buildings. Is it seen as high status or low? Is the person or organization occupying it trendy or conservative, rich or poor? Numbers of experiments have found that people do indeed assign such attributes to different building forms.³²⁶ This becomes clear when the emergence of 'green' architecture is considered. It is, among other things, a symbolic expression of the way the person commissioning or occupying it would like to appear to themselves and to others. It is not enough that the building be energy-efficient: it has to appear to be energy-efficient. The reality does not even have to conform to the image.

■ Dissonance

One concept that creeps into this discussion is that of 'cognitive dissonance'. This is generally held to be an uneasiness resulting from a person confronting contradictions. The mind of the individual will usually attempt to resolve this discomfort, but this often involves efforts to discount or remove some element of belief.³²⁷ In one of my interactive research sessions a female architect, probably in her late-seventies, was confronted with survey results from her group that contradicted the ideology of the modernism that she would have picked up in school and followed through her career. She became red-faced and inarticulate

³²⁶ Research includes that by Sadalla and Sheets (1993) and Nasar (1989) and (1994).

³²⁷ Kaplan et al., 2016.

as she attempted to cope with what had just unfolded. New information undermined her entire understanding of design. The fMRI explorations by Jonas Kaplan, of the Brain and Creativity Institute of the University of Southern California, et al., point to how she likely responded: ‘Our results show that when people are confronted with challenges to their deeply held beliefs, they preferentially engage brain structures known to support stimulus-independent, internally directed cognition. Our data also support the role of emotion in belief persistence.’³²⁸ My subject probably went home and her mind did the best it could to protect her cherished beliefs, which were obviously a big component of her personal identity, probably by mentally dredging up old lectures explaining why International Style modernism was always an appropriate approach, and trying to forget the information she had just encountered, or reinterpreting it in the way another participant did – that there had to be something wrong with the experiment or the analysis. This devaluing of the conflicting information is a common response to unwelcome new information. Humans tend to be slow to accept new things – because new information and situations so often conflict with our accepted body of knowledge. Leonid Perlovsky, in discussing this,³²⁹ observes that new information frequently does tend to conflict with existing information – otherwise it might not be useful.

The fact that we want to resolve such dissonances is commonly used in marketing – we all have seen those interior decoration (and sometimes architecture) magazines with glossy photographs of alluring pristine living spaces. The intent is to create dissonance – we would love to occupy a space like that, and it may conform to what is termed our ‘ideal self-image’. Ideal – yet the reality is that our houses contain messy children and scruffy dogs. We have books and half-read magazines everywhere, and the cleaning lady has quit. How do we try to resolve things? It is simple: one goes out and buys the white leather chair that appears in that desired ‘perfect’ world, in an attempt to reconcile reality with our ideal self-image, no matter how irrational or ineffective that action might be.

³²⁸ Kaplan et al., 2016, p.9.

³²⁹ Perlovsky, 2014.

Dissonance can be created by placing a building into a foreign context. The buildings that Europeans built in their colonies often seem out of place. Gothic churches surrounded by palm trees can create this sort of dissonance. They are inharmonious to us, and probably to the local population, because few people in the twenty-first century share the beliefs and preferences of the people who created them, so miss the meanings the buildings originally carried.

Yet, there is also evidence that some dissonance may be acceptable – some, but not too much.³³⁰ Sometimes a building widely perceived as ugly embeds a riot of dissonant information, thereby taxing the perceptual and cognitive capabilities of the viewer – yet some people do respond to this sort of challenge.

The importance of human context and emotion suggests that the designer should place themselves into an emotional state that is analogous to that of a likely viewer – the person with whom they intend to communicate. Putting to one side accumulated learning and personal preferences should help the designer create a product that will be received in the sense in which it is being generated, rather than annoying people with dissonance.

■ Fashion – Cherished, or just junk?

After recognizing that architectural preferences clearly vary between groups, and from person to person within groups, it is not surprising that preferences are subject to change over time. In particular, changing societal values can alter the interpretations to the messages delivered by building attributes.

Outdoor drying of clothing was suppressed in many areas in North America. It was seen as unsightly, and one might suggest that at one time eliminating it was involved with status: ‘our area is affluent enough to have automatic tumble dryers – we don’t have to hang laundry outside’.

³³⁰ Jakesch and Leder, 2009, p.2107.

But, more recently, in an environmentally friendly and energy-conscious era, outdoor clothes lines can be seen as virtue signalling.³³¹ In my own research, undertaken in a neighbourhood consisting of modest Victorian terraced houses in the East of England, I was able to observe responses with respect to opinions about their street appearance. The reactions to solar collectors and pizza-sized satellite television receivers were striking. A house at one end of a street, situated so it was visible to all, had a roof virtually covered with a massive flat plate solar collector. Some houses had pizza-dish sized satellite television receivers. In the survey results it was possible to observe strong negative reactions to the presence of the dish receivers. Presumably, this is because they proliferate on social housing projects, and are likely seen as low-status indicators. In contrast, the solar collector was regarded positively, although I personally regarded the solar collector on that pleasant street as an intrusive and significant eyesore. What seemed to be happening was that the environmental responsibility associated with the solar collector was more than compensating for what some people would normally likely consider an installation with a negative visual impact. The emergence of environmental concerns has changed interpretations of visual environments.

At one point in his curious career, in the early 1950s my grandfather owned a warehouse in which people stored household goods. In the nature of such operations, some people simply stopped paying the monthly fee and ultimately forfeited their furniture. They saw it as not worth carrying away. Some of these pieces ended up, decades later, in our house. Some of this furniture dates from the mid to late 1800s, is exceedingly well constructed, and, in today's eyes, quite desirable. Its original owners would have cherished it. Yet halfway through the twentieth century it was regarded as junk. As with the Victorian houses in Experiment I, what was originally seen as fashionable, was later seen as awkward, ugly and old-fashioned, and then came to be cherished again.

³³¹ With concerns over energy and the environment, some higher-level governments, such as the Province of Ontario, have passed legislation to ensure that local governments cannot outlaw outside clothes lines: toronto.ctvnews.ca/ontario-premier-lifts-outdoor-clothesline-ban-1.290136, accessed 22 November, 2016

Fashion is important in the mix of factors that influence how people construct their attitudes. Looking at definitions of the word ‘fashion’, one will note the phrase ‘a popular trend’, or something similar. Those words suggest that fashions are likely to be short-lived and wide-spread. In attempting to understand good taste, Peace saw it as somehow more enduring than fashion – that something might be out of fashion, but still in good taste.³³² Of course, fashion is important, but given the longevity of buildings, it is something to follow with caution.

“ ***Beware: today’s fashionable design feature might be tomorrow’s avocado toilet.*** ”

■ Context is important

The effects of even such apparent universals as naturalness can be weakened if interactions with historical, cultural or social factors are somehow inappropriate.³³³ Fundamental factors may be universal, but may also be interpreted in terms of specific cultures and physical locations.

Generally:

Be aware of the context of a building.

What surrounds it?

How will it interact with it?

How do people encounter the building?

Who encounters it? Who matters?

What message do you want to convey?

Is the design likely to quickly become unfashionable?

³³² Peace, 1958, p.340.

³³³ Joye, 2011, p.24.



CHAPTER 15

Details, Forms and Colours

After considering the more basic functions that lead to responses to buildings and spaces you encounter or design, it is apparent that creating a building that will receive positive response initially, and over a period of decades or even generations, is not necessarily easy. Unity/Coherence/Balance/Order/Elegance/Harmony can be exploited by architects, but there also exists research that can help relative to some specific building characteristics.

■ Cleanliness/Shabbiness

The effect of visual cleanliness on human response is of interest, as research indicates that it can (perhaps not unexpectedly) change the perceptions of people relative to a building, as was discussed by Bloch and Forty.^{334/335} Herzog and Shier explored the question of maintenance relative to building age and confirmed that the modern buildings in their study were preferred over older buildings when the state of building maintenance was ignored (older buildings tend to be dirtier), but when it was controlled (effectively making them equal in cleanliness), the older buildings were preferred.³³⁶ This confirms that cleanliness and apparent levels of maintenance can be important in the overall assessment.

The ongoing cleanliness of a building, city or space is something that a designer has only limited control over – but users do have control, both individually and collectively.

³³⁴ Bloch, 1995, p.22.

³³⁵ Forty, 1986.

³³⁶ Herzog and Shier, 2000.

Nevertheless, designers and developers should recognize the nature of the life processes of buildings, and that some building designs are more resistant to the visual impact of ageing (and dirt) than are others. The photo of the Cambridge Union Society shows an unusual configuration where a white modernist element has been inserted into a nineteenth-century red-brick building. Undoubtedly modernism was seen as exciting and novel when it was created, but after several decades the effect of a lack of maintenance is obvious. The nineteenth-century parts still appear respectable, while the modernist element has become dirty and tired. Renovations to this structure started in 2019, and included extraction of the modernist element.³³⁷



Cambridge Union Society, UK. Completed 1866. Alfred Waterhouse, Architect. A contrast in long-term cleanliness between Victorian architecture and 1930s modernism – in one building. Modernist elements currently being removed.

Cleanliness has sometimes been suggested as a culturally formed preference,³³⁸ with strong roots in modern American culture.³³⁹

It is possibly a result of relentless marketing by the manufacturers of cleaning products, which started a century ago. Killing bacteria still appears in advertising – the original message was that germs caused disease, disease killed your children, and so you had to kill all

the germs – and that meant buying some of the product on offer. Again, there is considerable research in this area: one finding is that if we are in proximity with someone who we regard as a villain, even if there is no physical contact, we tend to want to clean ourselves afterwards. We might also think of Lady Macbeth's madness, as she attempts to clean her hands of imagined blood that results from her complicity in nasty deeds.

³³⁷ Cos, 2018.

³³⁸ Bloch, 1995, p.22.

³³⁹ While writing this section, I met a Texan who had just returned from a southern European city, and commented on how shabby it was. I had been there a few months before, and found it picturesque – even charming. But then I am used to high-density historic cities.

Consider how the building might look in two or three decades.

Is it important?

Will it look dirty and have water streaks?

How easy is it to clean?

How will the current owner/occupier maintain the building?

Beware of white buildings.

■ **Style and form**

Buildings often follow some particular architectural style – a set of elements that fit into some collective pattern. Jack Nasar, working in the United States, explored preferences for house forms, including Tudor, Mediterranean and Colonial, finding significant differences in local esteem.³⁴⁰ Newer developments in many countries show that house developers now frequently build in traditional styles, presumably reacting to market preferences.

The important familiarity aspect of how we come to esteem buildings suggests that, when possible, following past forms may be a low-risk design strategy. This was strongly supported in Experiments I and IV, in which historic, near-historic and reproduction buildings were ranked highly.

Consider using historic forms.

They are familiar, but some may be regarded more positively than others in any specific cultural setting.

Some research might be in order.

³⁴⁰ Nasar, 1989.

■ Materials and meanings

That building materials, as well as entire buildings, do convey meaning and influence building preference has been demonstrated.^{341/342} It should not be surprising that Sadalla and Sheet's research found that concrete block is seen, in the United States, as being cold and associated with low social status, while red brick is the opposite.³⁴³ They observed responses relative to physical, functional and social aspects, and they found '... a psychological correspondence between building materials and the characteristics of their users'³⁴⁴ and suggested that this reflected efforts by homeowners to self-define. They found that people generally assigned different personality attributes to different materials, whereby wood tended to be warm, tender and feminine, in contrast to brick or concrete block. In our own work, we also found that people had no difficulty associating what are usually seen as human traits with different building forms.

Tony Craig et al., of the James Hutton Research Institute in Scotland, and his collaborators found that '... respondents in their survey rated brick and roughcast as being more durable and traditional than the other cladding materials presented'. They found a strong relationship between pleasantness and 'traditional' materials in their subjects' responses. Respondents rated brick and roughcast (stucco, rendering, etc.) as being more pleasant, and more worthy of purchase consideration, than other materials, with the exception of horizontal timber cladding. In terms of roofing material, slate was preferred to steel.³⁴⁵ Also recently, Olav Høibø et al., working in urban Norway, found no major differences in preference for either indoor or outdoor materials between native Norwegians and immigrants (mostly from Asia, Africa or South America). They noted that exterior material preferences seemed to depend on whether or not the

³⁴¹ Sadalla and Sheets, 1993.

³⁴² Craig et al., c.2002.

³⁴³ Sadalla and Sheets, 1993.

³⁴⁴ Sadalla and Sheets, 1993, p.178.

³⁴⁵ Craig et al., c.2002, p.12.

person had been brought up in an environment where wood-clad buildings were common (such as Norway), but that generally, other factors tended to dominate those material preferences.³⁴⁶

Although more exploration is necessary, the conclusions of Craig et al. do support ‘... some of the anecdotal evidence given by developers and builders to the effect that house-buyers prefer “traditional” cladding’.³⁴⁷

Building materials hold meanings in themselves.

How might specific materials be regarded in specific cultural settings?

Using materials that are locally familiar is likely to be a good strategy.

■ Pitched roofs

In Experiment III, it was found quite clearly that the majority of non-architect respondents distinctly preferred small office buildings with pitched roofs over those with flat roofs. In the results, roof pitch dominated the evaluations of the wider population, who effectively responded: ‘pitched roof: I like it – flat roof: I don’t’. The actions of the recipients of some of the early modernist buildings, such as those of the 1927 Stuttgart Deutscher Werkbund exhibition, to retrofit pitched roofs, and the preference for pitched roofs by suburban house builders, also suggest a widespread preference for pitched roofs. It might also be noted how some consumer-oriented building forms, such as fast-food restaurants, have contrived mansard roofs, even though their use requirements tend to suggest a flat roof (other than hiding the roof-top mechanical equipment), and one might assume that this is the result of market research or experience. One question is whether the preference for pitched roofs is as strong in non-European cultures – in particular in dry locations where flat roofs prevail.

³⁴⁶ Høibø et al., 2018, p.11.

³⁴⁷ Craig et al., c.2002, pp.12–13.

For the developer or designer in Europe or North America, it makes sense to use a pitched roof, or something that suggests a pitch – unless there is a good reason not to. If not a pitched roof, a cornice does help to visually complete the top of a building, and will help to keep the exterior walls dry and unstreaked.

“**Generally: pitched roofs (or the appearance of a pitched roof) ⇒ greater preference.**”

■ Visible entrances

The inclusion of visible entrances has been shown to improve overall response.³⁴⁸ This makes sense. Entrances are logical, familiar and expected parts of building facades – they will be part of most people’s schemas for buildings. Think of your own experience – looking around for a building entrance is likely to put you off what otherwise might be the most pleasant building. The lack of a visible entrance gives rise to two-fold ambiguity – the building is hard to ‘read’, and the viewer knows that they may have to look around for a way in. We also know that slight mismatches of schemas can cause rejection – so doors should be obvious and appear as entrances, not as something else.³⁴⁹

“**A clearly visible entrance ⇒ greater preference.**”

■ Curved forms

The developer, client or designer might consider using curved forms, as there is some research that suggests they can be preferred. One proposition is that this might result from our preference for natural forms, nature has few straight lines, and that curved things are likely to be less dangerous than jagged things.³⁵⁰

³⁴⁸ Herzog and Shier, 2000.

³⁴⁹ MacDorman and Ishiguro, 2006.

³⁵⁰ Joye et al., 2010.

Painter and writer William Hogarth, in 1753 in *Analysis of Beauty*, proposed a 'Line of Beauty', whereby S-shaped curves would stimulate and appeal to viewers, in contrast to less dynamic lines. There are other commentaries on this, with some seeing curved forms as being less aggressive than angular forms. So straight lines might imply 'seriousness and logic', while curved ones imply 'ease and playfulness'.³⁵¹ Referencing work by German author, arts theorist and perceptual psychologist Rudolf Arnheim (1904–2007), Alain de Botton states 'We can speak of someone being twisted or dark, smooth or hard' and he points out that smooth curves (even in a line drawing) '... mirror the peaceable and flowing course of a loving union, while violently gyrating spikes serve as a visual shorthand for sarcastic putdowns and slammed doors'.³⁵²

However, other empirical research has questioned whether curved shapes are fundamentally preferred. Claus-Christian Carbon, of the University of Bamberg, explored the curved-preference question experimentally, and found that '... preferences for curved objects might be biologically motivated, but can also be, at least partly, modulated by fashion, trends or Zeitgeist effects'. Using cars, he looked at the angular forms prevalent in the 1980s and compared them to the rounded forms more prevalent in the 1950s and 2000s. In the initial explorations it appeared that people did prefer the rounded designs of the 1950s and 2000s, but that this effect was likely dominated by fashion cycles. He concluded '... although humans might generally be pre-shaped by evolution to prefer specific properties preventing them from danger, they are (also) specifically shaped to explore innovative and challenging properties'.³⁵³

This suggests that there is a preference for curved forms, but, as with any preference for certain proportions, it is relatively weak and readily dominated by other factors – including a preference for the familiar, the novel or the naturalistic. In building design, a curved form might be better, but only if it does not detract from some other, more significant, factor.

³⁵¹ de Botton, 2006, p.89.

³⁵² de Botton, 2006, p.90.

³⁵³ Carbon, 2010, p.243.

In the case of buildings, curved forms can cost more; is this extra cost warranted, or should the money be spent some other way?

“ **Generally: curved forms \Rightarrow possibly greater preference ... but a weak factor and has to be traded off against cost and overall harmoniousness of design.** ”

■ Colour³⁵⁴

Exterior colour is an enigma in architecture. Architect and MIT instructor C. Howard Walker, in 1893 pointed out that while colour had long been a part of architecture ‘... it has always played an inferior part ...’³⁵⁵ and offered the opinion that where it has been used extensively, the results have frequently been ‘grotesque’. Philosopher Ludwig Wittgenstein devoted his last book, the short *Remarks on Colour*, written in 1950, to the matter. He commented ‘... there is merely an inability to bring the concepts into some kind of order. We stand there like the ox in front of the newly-painted stall door’. But before the designer or manager decides to embark on the creation of a brightly coloured building, some contemplation of the reasons why architects have avoided extremes of colour is appropriate.

In the early twenty-first century the empirical research on exterior building colour remains quite limited, with strands being variously speculative, physical, physiological, cultural, psychological, artistic and even spiritual.³⁵⁶ One might expect to find some great research project that answers and integrates all of a designer’s questions, but it does not seem to exist – yet.

Research into colour does go back to the early days of psychology in the late 1800s, although, as is typical for the period, much of it relied on simple observations and, to a great extent, personal experience.³⁵⁷

³⁵⁴ This colour section is based on: Ellingham, 2019.

³⁵⁵ Walker et al., 1893, p.12.

³⁵⁶ Colours being associated with various religious functions and meanings.

³⁵⁷ Elliot, 2018, p.1.

For example, Goethe in his *Theory of Colours* of 1810 was essentially analysing his personal responses, with different colours seen as relating to different feelings. Experimental methods have improved but today's building-focused individual might be struck by the remaining issues. Many experiments dealt with colours in the abstract – typically subjects were presented with colours without context (not on buildings, in particular); potential matters of changing fashion were disregarded, and the experiments were conducted in Western cultural settings.

Stephen Palmer et al., of the University of California, Berkeley, attempted to understand some of the reasons for colour preference, stating that, in general, 'People like colors strongly associated with objects they like (e.g., blues with clear skies and clean water) and dislike colors strongly associated with objects they dislike (e.g., browns with feces and rotten food).'³⁵⁸ In evolutionary terms, this makes sense – we still like colours associated with things that helped our hunter-gatherer ancestors survive, and are repelled by those that might be harmful, and some male-female differences in colour preferences might result from the different roles filled during humanity's early days. Of course, Palmer's study also found other effects, including that university students tend to react negatively to colours associated with rival universities. They also pointed out that preferences '... tend to be self-perpetuating, at least until other factors, such as boredom, new physical or social circumstances, and/or fashion trends, change the dynamics of aesthetic response, as indeed they inevitably do'.³⁵⁹

Unfortunately, much of the empirical research has yielded ambiguous results – and may not apply to building exteriors anyway. Robert Finlay, of the University of Arkansas, summarized: 'In short, humans respond to color more on the basis of subliminal emotion than on grounds of rational consideration.'³⁶⁰ In particular, he pointed to the elusiveness of determining whether your brain mediates colour stimuli the same way that mine does – do all people experience forest green or sky blue in the same way?

³⁵⁸ Palmer et al., 2010, p.8877.

³⁵⁹ Palmer et al., 2010, p.8881.

³⁶⁰ Finlay, 2007, p.394.

While we might agree on what forest green is, we may interpret it differently and experience different reactions to it. Exploration of brain processes and how they form responses to colour is now underway using fMRI, and we might expect new insights resulting from those efforts.³⁶¹

There are a number of possible reasons for the limited amount of research of interest to building designers. Researchers in this area may not perceive building exterior colour as an important aspect of their work, perhaps because of the entanglement with context, or because researchers feel the matter belongs to a different discipline (perhaps architecture?). Looking more specifically into architectural discussion of colour, one still finds



Coloured buildings in Newfoundland. In a harsh maritime climate, they have to be painted every few years.

a great deal of personal opinion, and quotes of previous personal opinions, as was done by Swedes Gert Marcus and Hans Matell.³⁶² This is, at least in part, a reaction to the complexity of scientific colour research, which has diverged from the opinions and concepts of the creative community.

Other than the lack of guiding information, there are practical reasons why most building exteriors are not explicitly colourful. Exterior environments are hard on building materials. It is often wise to select materials that do not suffer from obvious fading – such as brick, stone, terracotta, cementous rendering, concrete, concrete block or even mud brick. These give a range of greys, beiges and earth-toned colours. In some places, such as St. John's, Newfoundland, exteriors are sometimes painted in vivid colours, but they tend to be wood-clad, and have to be painted periodically anyway.

³⁶¹ Racey, Franklin et al., 2019.

³⁶² Marcus and Matell, 1979.

Ceramic tile is one traditional material that offers colour possibilities, but it is only necessary to consider the conditions of the mosaic-tiled exteriors of Communist-era buildings in eastern Europe to recognize the havoc that freeze-thaw environments and limited maintenance can wreak.³⁶³

Familiarity also biases our preferences. Although many buildings of antiquity – those of Egypt, the Middle East and Greece that have served as models for centuries of new development – were originally coloured, over time weathering had its effect, so the emerging Renaissance civilizations were presented with buildings that were largely the colours of basic materials. Until fifty or so years ago, most architectural representation was black and white – being sketches or photographs, with coloured paintings being relatively rare (and expensive). It is only necessary to flip through architectural magazines of the 1950s to encounter the B&W world. In the education of architects, colour is usually pushed into the background – think of all those models being built with pristine white foamcore, and black and white sketches. I don't recall any of my instructors in architecture school spending much time discussing colour.

The Victorians, rediscovering the medieval past, were not ashamed of using colour, both inside and outside, and some buildings, such as those designed by William Butterfield (1814–1900), used brick and ceramic colours and patterns extensively and architecturally – perhaps even riotously.³⁶⁴ In other settings, iron structures and materials were sometimes defined with contrasting colours. In contrast, in early functionalist modernism, colour, like ornament, was often seen to be superfluous, and white walls were the ideal.³⁶⁵ In the modernist Stuttgart housing estate built for the Deutscher Werkbund exhibition of 1927, only two buildings were not white.

³⁶³ The 2017 film *Built to Last – Relics of Communist Era Architecture*, directed by Czech-Japanese filmmaker Haruna Honcoop, shows numerous examples of buildings with failed exterior tile-clad walls.

³⁶⁴ All Saints Margaret Street, in London, is one example and worth visiting.

³⁶⁵ Braham, 2001, p.193.

Colour and culture were explored by Robert Finlay of the University of Arkansas, who noted that over the past few centuries, in numerous Eurasian societies, bright colours were a marker of lower social class – people of taste did not display bright colours, which were often seen as ‘... superficial, subjective, irrational, self-indulgent, sensual, disorderly, and deceptive’,³⁶⁶ but did not offer insights into why this might be the case.³⁶⁷ He underlined that different cultures relate to colour differently, in keeping with differing historical, political, economic and religious conditions, and the availability and cost of different pigments. Research undertaken since the 1960s has indicated that too many colours (as well as materials) can decrease the esteem given to a design – because excessive complexity decreases legibility.^{368/369/370}

One complication is that shifts in fashion are usually shorter than buildings’ life expectancies, or even the periods between refurbishments. This makes it difficult to undertake colour research that might give long-term guidance. Many might recall the pastels (combined with splashes of bright colours) that were favoured in the 1950s and 1960s, psychedelic-inspired bright colours from the hippie/LSD period, the earth-tones of the late 1970s, and the reappearance of pastels in the 1980s. It might be difficult to perceive colour fashions in the twenty-first century, perhaps because we are in the time, and affected by the fashions themselves, but it is also possible that societal change means we are less tempted to follow fashion, and diversity and individuality are stronger forces.

Although one might hope for the appearance of some insightful empirical research on building exteriors that will allow a more evidence-based approach, this may never happen.

³⁶⁶ Finlay, 2007, p.24. 401

³⁶⁷ Part of this was written in the Starbucks in First Canadian Place in Toronto, where the presumably affluent and high-status individuals exhibit few bright colours. One can observe a few women wearing bright yellow or red coats. One might wonder if they are senior bankers or the receptionists.

³⁶⁸ Kaplan and Kaplan, 1983, p.18.

³⁶⁹ Kumar and Garg, 2010, p.487.

³⁷⁰ Stamps, 2004, p.2.

William Braham, of the University of Pennsylvania, suggested 'At the outset, one must wonder if color offers a wholly stable historical subject for examination'³⁷¹ – that previous generations, in particular the ancients, simply encountered a more limited palette of colours, and that modern discussions of colour have increasingly related to the individual and the subjective. Perhaps we are to always be left striving for a full explanation of how colour works in the minds of people and on the walls of buildings.

In spite of the uncertainties, colour is one of the tools that the building designer or manager has to manipulate the effect of a building exterior – and should not be swept under the carpet. Moreover, it can be quite inexpensive to implement. When we developed a seniors' housing project in a small town, the architect³⁷² designed the exterior with simple bands of contrasting brick colours. Curious, partway through construction I asked the contractor what this added to the cost of the building – and the response was that it added nothing, that the bricklayers liked doing something out of the ordinary. It only involved a bit more supervision – and the foreman was there anyway. Quite apart from preferences and ornamentation, there is evidence that the use of colour can change the perception of space and form,³⁷³ often at lower cost than physical manipulation of space and form.

In the twenty-first century, new materials offer colour opportunities not available previously. Dramatic and long-lived colours and patterns are more available. Moreover, it might be suggested that there has been a decrease in societal conformity, allowing expressions of individuality.

Applied colour can be changed in keeping with changing trends. Of course, this must be carefully thought through, in terms of what is actually easy to change. I was recently told by a curtainwall manufacturer about the complexities of changing now-unfashionable window mullion colours on buildings a couple of decades old.

³⁷¹ Braham, 2001, p.194.

³⁷² Seppo Kanerva of Sedun+Kanvera, Architects Inc., of Toronto.

³⁷³ Braham, 2001, p.195.

The practical designer or manager should consider the reasons why exterior building colour is still often treated cautiously. Building exteriors can be very long-lived – longer than fashion trends. This suggests that transient building elements should be treated differently than the permanent elements. Interiors can be redecorated relatively easily in keeping with most recent trends, while exteriors potentially have to exist for decades or centuries and should not look excessively dated or strange until they become esteemed simply for their age. Some exterior elements that are periodically renewed might be considered for more aggressive colours.

**“ Colour provides design opportunities, but caution is in order.
Fashions are likely to change faster than building exteriors.
If in doubt, use the colours inherent in the building material
being used, or perhaps art that can be easily changed. ”**



*Casa de Câmara (House of the Chamber), Porto, Portugal. Completed 2002.
Fernando Távora, Architect.*

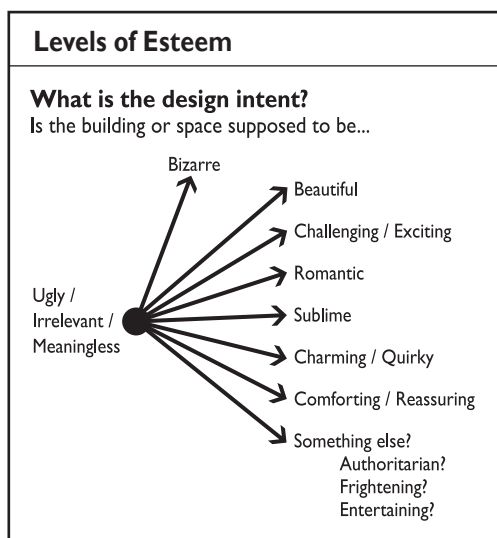


CHAPTER 16

If it isn't beautiful, what is it? And why?

Although it is reasonable to assume that people rarely create ugly buildings intentionally, this does not imply that people are always seeking the sort of good feelings associated with beauty.³⁷⁴ Not everyone will esteem a building for the same reasons.

One possible continuum mapping out preference, ugly might be seen as one extreme, with the other end having multiple possibilities. What we should be interested in is what causes a design to be esteemed (not necessarily beautiful), and how different people undertake this evaluation. Several



possibilities might be considered to be alternatives to ugly.

In particular when dealing with buildings, or even coffee pots, an overall preference assessment may encompass various factors, preference might result from, for example, both beauty and challenge, and include an evaluation of utility.

³⁷⁴ Concise Oxford English Dictionary, 9th edition, suggests as its first definition for beautiful as 'a combination of qualities such as shape, colour, etc., that pleases the aesthetic senses, esp. the sight ...'.

■ Challenging

Sometimes artists and architects undertake to challenge or unsettle people with designs that intend to violate most people's sense of the expected. They are creating works that are 'challenging', not necessarily beautiful.

In the research that explored the differences between connoisseurs and the wider population, one factor that sometimes emerges is whether a viewer regards the stimulus as challenging or not. For example, Canadian researchers Andrew Winston and Gerald Cupchik conducted experiments to explore how subjects with different degrees of education in art evaluated what they termed 'high art' (essentially more abstract) and 'popular art' (more representative). They found that generally, the 'naive' subjects preferred the popular art and rated it as more pleasant than 'high' art. The connoisseurs, with more background in art, preferred the high art, and rated it as more complex. The researchers went a step further and extracted some of the reasons for the differences. The research indicated that the less-informed subjects expressed that their preferences resulted from '... subjective emotional responses (e.g., "makes me happier")', while experienced viewers emphasized the objective, structural properties of the artworks (e.g., "more dynamic"). Experienced viewers subscribed to the philosophy that art should provide challenge, and rejected the belief, held by naive viewers, that art should provide warm feelings to a broad audience.³⁷⁵ This implies that not only do people respond to visual stimuli differently depending on their expertise, but they may use different scales. The 'naive' subjects were primarily seeking pleasure, including 'peaceful feelings' and 'immediate pleasure'. In contrast, their more informed viewers sought a challenge, including 'a new, separate world', 'something original' and that art 'should challenge our view of the world'. This corresponds to the findings in my own Experiment I: the 'high-style' houses' appeal was limited primarily to more educated people.

³⁷⁵ Winston and Cupchik, 1992, p.1.

The challenge factor is one explanation why designers' opinions are often different than those of the wider public. The wider population will tend to be evaluating buildings using their existing schemas that are presumably based on familiar building types, while the connoisseur is using a more complex set of criteria. Of course, most specialists in any field, including architecture, urban planning and interior design, are effectively connoisseurs of their field. In our own explorations (Experiment III) we found that 'experts' took longer to make their evaluations, which accords with the theories and observations concerning the behaviour of connoisseurs. Evaluating challenging buildings and streetscapes should take longer than a simple response to obvious cues.

For the past century or so, architects have been encouraged by their teachers, peer groups and awards juries to be original and challenging. To emulate successful precedent can attract nasty criticism. A bigger problem is that challenging structures can badly compromise neighbourhood or streetscape coherence, so architects frequently do battle with planners and neighbourhood groups over proposed buildings. Sometimes buildings should be challenging and original (at least in part), but order, coherence and easily understood references to already known forms should lead to greater acceptance by the large portion of the population who will prefer pleasure and pleasantness to challenge.

■ Romantic

It is impossible to consider nineteenth-century architecture (or literature, art or music) without dealing with the Romantic. In our rationalist world, one might look for a dictionary definition, and the *Concise Oxford English Dictionary*³⁷⁶ has something appropriate: '... of, characterized by, or suggestive of an idealized, sentimental, or fantastic view of reality; remote from experience ... concerned more with feeling and emotion than with form and aesthetic qualities; preferring grandeur or picturesqueness to finish and proportion'.

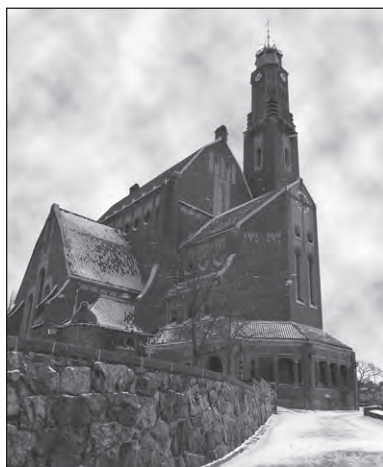
³⁷⁶ The Concise Oxford English Dictionary, 9th edition.

Other definitions emphasize imaginary and emotional aspects – perhaps as a mental escape from urbanization and industrialization. For example, nineteenth-century Romantic architecture attempted to create associations with valiant knights, exotic Indian princesses, pastoral activities and ruined abbeys (perhaps with mad monks), things that may not work on us in the early twenty-first century.

A romantic assessment is therefore dependent on us having the appropriate prototype to which our brains can relate the stimulus. Again, the meaning is clearly not inherent in the building or setting, but in the relationship between the person and the stimulus. It is not different from the normal attempts of the brain to associate the stimulus with experienced precedent; only in this case, the association is with an idealized and likely fictional precedent that the viewer already embraces.

The Romantic architects worked to address imagined prototypes that prevailed at the time. Hence one can see revivals of various European

forms, as well as representations of non-European cultures. In that the prototypes are imaginary, it is not necessary that the architectural stimulus be authentic – it is only important that it engages the mental images held by the viewers, no matter how ‘corrupted’ they might be. One example is the Royal Pavilion at Brighton – a fantasy about an imagined India. Less obvious ones are the neo-classical government buildings in the United States – evoking associations with democratic ideals associated with ancient Athens.



Engelbrekt Church, Stockholm. Completed 1914. Lars Israel Wahlman (1870-1952). Built in the National Romantic style, the church alludes to a heroic Nordic period.

As the twentieth century moved on, through war and economic turmoil, the specific romantic associations disappeared, and people regarded many buildings that exploited them as meaningless anachronisms. Today, while most of us will lack the original meaning of the buildings, they have become familiar in themselves, and perhaps have a different Romantic connotation: a time not of medieval heroes, but of the heroes of the Industrial Revolution.

■ Sublime

One concept with roots in antiquity is the sublime (in Longinus, first or second century AD, *On the Sublime*). In Western Europe it took root in the late eighteenth century – the concept was explored by Edmund Burke in 1757 (in *Philosophical Enquiry into the Origin of Our Ideas of the Sublime and the Beautiful*³⁷⁷) and appears in much other literature, and was generally seen as being different than beauty. The sublime was a powerful force through the nineteenth century in painting, music, literature and architecture, the intent being to create a mood. Kant saw the sublime as having a fundamentally different outcome than the pleasurable sense of beauty, and pointed to stormy seas, mountains, chasms and raging rivers – things that are beyond the ability of the individual to control or even fully appraise. ‘If the form of the object corresponded to the logic of the will, Kant called the pleasure one of the sublime.’³⁷⁸ Kenneth Clark termed this mood ‘agreeable melancholy’, and associated it with the imaginations of the times.³⁷⁹

Objects regarded as sublime are not necessarily ugly, nor beautiful. The sublime is a relationship between the person and what is sometimes termed ‘The Other’,³⁸⁰ often the forces of nature.

³⁷⁷ Burke noted: ‘Whatever is fitting in any sort to excite the ideas of pain and danger, that is to say whatever is in any sort terrible, or is conversant about terrible objects, or operates in a manner analogous to terror, is a source of the sublime; that is productive of the strongest emotion which the mind is capable of feeling.’ (Part I, Section VII, p.499).

³⁷⁸ Stamps, 2000, p.74.

³⁷⁹ Clark, 1928, p.35.

³⁸⁰ White, 1997.

While it is possible to argue that beauty can be a property of the object, something that is often assumed, the sublime can never be so classified – it is based on human interaction, often a confrontation, with ‘The Other’. In painting this is often manifested as a struggle against nature. While working on this part of the book in a hotel in Vienna, I was confronted by a massive painting of a Dutch seaport in a storm. It was a curious mix of individual confrontations between people and nature – almost cartoons. I was particularly intrigued by a man rowing a small boat through steep waves that surely would swamp the most vigorous oarsman. Nearby, a larger craft was being loaded – but it appeared to be stranded and huge waves were beating upon it. The elements were ridiculous, but the totality was most compelling.

The sublime is a complex concept – neuroscientists Ishizu and Zeki, of University College London, commented that it ‘is a distinct cognitive-emotional complex, which involves many components but is distinct from each individually, i.e., that the whole is other than the parts’.³⁸¹ Ishizu and Zeki, through fMRI scans of individuals viewing what were classified as a range of sublime landscapes, found that the brain areas being activated were those that otherwise dealt with novelty, memory and fear,³⁸² and that these patterns were different than those associated with perceptions of beauty.

The sublime can encompass many emotions: astonishment, terror, awe, vastness, and even a sort of anxiety and pain.³⁸³ It was (and is) complicated relative to the pleasure of beauty. Kant proposed that objects are sublime because ‘... provided our own position is secure, their aspect is all the more attractive for its fearfulness; and we readily call these objects sublime, because they raise the forces of the soul above the height of vulgar commonplace, and discover within us a power of resistance of quite another kind, which gives us courage to be able to measure ourselves against the seeming omnipotence of nature’.³⁸⁴

³⁸¹ Ishizu and Zeki, 2014, p.6.

³⁸² Ishizu and Zeki, 2014.

³⁸³ Ede, 2008, p.34.

³⁸⁴ Kant, Immanuel: The Critique of Judgement B, 1790. *The dynamically sublime in nature*. SS 28. *Nature as Might*.

Welsh arts initiator and funder, writer and speaker Sian Ede explained further: 'Sublime was to disassociate it from sensations of fear of the unknown and attribute to it exhilarating experiences of splendour, evidence of a wondrous and divine spirit in nature which stimulated the alert and receptive mind. Cloud-tumbled skies, stormy seas, arctic barrenness, deep forests, wildernesses hitherto regarded as uncivilized wastes became proper subjects for deeper feeling and contemplation and provided rich material for art and poetry.'³⁸⁵ Arthur Stamps offered: 'In the face of a thunderstorm, there is no tranquil contemplation of the infinite, but only a recognition of our ability to withstand such mighty forces, and this also makes us feel good.'³⁸⁶ Steiner commented: 'Sublimity, supposedly transcendent in value, is in fact a destruction of the common values and pleasures of human existence.'³⁸⁷ Personally, to me, this is like sailing on a stormy but sunny day; there is a contrast of elements, leading to a sense of almost religious awe in the face of creation – and perhaps just a bit of terror.

The sublime has been generally associated with 'masculine' qualities of size and strength, as those characteristics have a logical tie to some of the feelings associated with the sublime: awe and fear, but also some level of admiration or respect. In contrast, the beautiful was seen in the nineteenth century as more feminine: delicate, with fine detail, regularity and harmony.

This is one area that contains both complexity and mystery when associated with architecture. In order to be sublime, a building (or other piece of art) must be interpreted within the context of some contrasting setting – traditionally it was a natural setting, but one might imagine a piece of calming architecture existing in contrast to urban chaos. The nineteenth century also perceived sublimity in emerging technologies that were seen as a contrast to nature. In that form of the sublime, the viewer would tend to be left with a sense of wonder at the technology – perhaps images of puffing, struggling steam locomotives.³⁸⁸

³⁸⁵ Ede, 2008, p.34.

³⁸⁶ Stamps, 2000, p.74.

³⁸⁷ Steiner, 2001, p.6.

³⁸⁸ Raven, 2016.

Other possibilities exist too: Sumit Paul-Choudhury, editor-in-chief of *New Scientist*, wondered what a twenty-first century sublime might be – and proposed that it could relate to the spoiling of wilderness areas.³⁸⁹ Or perhaps it might be a confrontation with artificial intelligence?

One interface between architecture and the sublime has been through ruins – a confrontation with time and mortality. The Victorians built ruins, sometimes as garden follies, and pre-Victorian architect Sir John Soane had draftsman-artist Joseph Michael Gandy prepare illustrations of his proposed buildings in ruined form. As a result, we have wonderful images of such buildings as the Bank of England as ruins – imagined and sublime, drawn before they were even built. The notion of the sublime as related to architecture declined in the twentieth century, as architects addressed themselves increasingly to functionalist, technical and social issues. Perhaps more attention should be paid to this design objective.

■ Charming/Quirky

Another descriptive adjective is charm. People, buildings, urban spaces and interiors can all be ‘charming’. Dictionary definitions suggest it has something to do with delight or fascination, or being pleasing. Steiner listed it as one of the ‘feminine aesthetics’³⁹⁰ and noted that Kant saw beauty and charm as different things.³⁹¹

Charm might be seen as being associated with ‘quirkiness’ – much as an individual can be fascinating without being overtly beautiful. There is just something about them that is different, not unpleasant, perhaps endearing, and that draws your attention in a positive manner. Quirkiness might be seen as a very subtle way of creating charm and perhaps triggering a ‘novelty’ response, thereby avoiding boredom. Yet charm may conflict with the usual preference for cleanliness. One suspects that most hobbit holes or medieval peasant houses were not actually all that clean.

³⁸⁹ Paul-Chaudhury, 2016.

³⁹⁰ Steiner, 2001, p.xxiii.

³⁹¹ Steiner, 2001, p.57.

Sometimes a charming/quirky product appears and is successful, one being the Chrysler PT Cruiser (produced 2000–2010), a car with ‘retro’ styling. From the motoring press, it received both accolades and expressions of horror, and over 1 million were built – suggesting that part of the marketplace responded positively. At its introduction, the winners of one offered the comment, used by Chrysler in their advertising: ‘The thing is, everybody smiles’.³⁹² Although now, two decades after its introduction, it is not such a novelty, it remains a different and amusing sight on the roads.

Personally, I have seen charm emerge from the careful application of eccentric, traditional details. Canadian architect Norm Macdonald applied the word ‘quirky’ to the buildings of the prolific interwar architects Nicholson and Macbeth.³⁹³ These houses have unusual features, including roof ridges that appear to sag, and very low front entries, even in quite large houses. There is something engaging about walking up to a front entrance and finding that you step into a small porch where the roof comes down to your eye level. I have heard comments about these entrances being suited to hobbits, and what could be more charming than J.R.R. Tolkien’s portrayal of the peaceful Shire homes of his characters? In the seniors’ housing development project previously referenced, the occupants strongly engaged with the building, and I suspect that without the charming coloured brick bands it would have been just another ordinary seniors’ housing project. Is that the case? Clearly, research is needed into questions of charm and quirkiness.



Aging, irregular, small-scale traditional building forms can be charming.

³⁹² Telegraph Magazine, 26 August, 2000, p.39

³⁹³ Some of the houses created by Nicholson and Macbeth can be found on a video entitled ‘Domestic Gems’, on the website of the Niagara Society of Architects.

■ Bizarre

In *OAA Perspectives* magazine, we delighted in the unexpected, so periodically included images of giant inhabitable fruit and vegetables, castle-inspired filling stations, themed architecture, as well as an assortment of other unusual buildings. These might be described as bizarre – dictionary definitions tend to focus on strangeness, eccentricity or whimsicality, sometimes taking it into the realm of the outrageous. Certainly, bizarre buildings are not in the mainstream of architectural thought. Architecture critic Charles Jencks cast his net widely: his 1979 book *Bizarre Architecture* undertook to classify the genre as lying outside classes of ‘normal architecture’,³⁹⁴ but he did not create a distinction between different design processes. So while some of the buildings he discussed include those by serious and significant architects (including Bernard Maybeck, Antoni Gaudí, Bruce Goff and Jørn Utzon), they are freely mixed with unattributed structures of very ambiguous provenance. He divided them into certain categories, including fantasy, eclecticism (collected bits and pieces), adhocism and zoomorphism (animal-inspired). Again, the response will often relate to the background of the viewer, who may ‘get it’ as a pun or metaphor, or simply be baffled.



Giant inhabitable fruits and vegetables, sometimes with painted faces, would be regarded as bizarre by many people. But, in the right context, such as alongside a highway, they do attract attention and presumably customers.

But ultimately, looking at the bizarre is likely to be unsatisfying for most people, given the curious assortment of buildings that appear when one searches the internet for ‘bizarre architecture’. There is a considerable amount, but what is bizarre and what is not is clearly in the eye of the beholder – quite a bit of it consists of serious buildings by serious architects and serious clients.

³⁹⁴ Jencks, 1979, p.7.

Like all design, it is likely meaningful in a positive way to its creator, but perhaps only to the creator – the rest of us either being repelled, or just puzzled. Indeed, the government of China in 2016 decided to ban bizarre architecture, in response to the construction of a number of large unconventional buildings. They decided that thereafter, no matter what else was happening in the world, buildings should be ‘economic, green and beautiful’.³⁹⁵ One of the buildings referenced in various articles is not a giant vegetable, but the China Central Television offices, done by serious architects, and often described as a pair of giant trousers.

Following with food analogies, bizarre buildings might be regarded as the hot chillies of the built environment. You may not want too many of them, but they do spice things up.

■ Comforting/Reassuring

Some buildings may be none of the above, but are still esteemed because of a strong degree of familiarity. An Ottawa architect pointed to the positive attitudes among the local population to Canada’s National Arts Centre, a 1967 Brutalist pile of brown precast concrete arranged in interlocking hexagons, something not likely to be classified as beautiful, charming, sublime or even bizarre. Some might see it as challenging, but to many people it has become a familiar friend, associated with concerts, awards and graduations. Thousands of people walk by it every day, presumably just expecting it to be there as a landmark. It has even been recognized as a National Historic Site. Some buildings we esteem because we have developed intense levels of familiarity and engagement with them, something that transcends the building’s specific design attributes.



National Arts Centre, Ottawa, Canada. Opened 1969. Fred Lebensold, Architect. Even brutalism can become friendly as it becomes familiar and its presence reassuring. Photo: Courtesy of William Crompton, FRAIC.

³⁹⁵ Zorthian, 2016.

What is the design intent? Is the building or space supposed to be ...

- **beautiful**
- **challenging**
- **romantic**
- **sublime**
- **charming and/or quirky**
- **bizarre**
- **comforting**
- **or something else? (dominating/authoritarian?)**



Pantheon, Rome. c.126 AD. A building still in high regard, 2000 years after construction.



CHAPTER 17

Why are there superstar architects? What can we learn from them?

There will always be exceptions to the findings discussed herein, and one will be ‘monumental’ or ‘landmark’ buildings, often created by superstar or big-name architects. If the research findings do apply to such buildings as the Sydney Opera House or the Guggenheim museums in New York or Bilbao, they need special interpretation, and consideration of the role of both the architectural and popular media in promoting such buildings and their designers. Some landmark edifices might be regarded more as sculpture than functional buildings, and their value lies in that aspect, while commodity (functional usefulness) is less relevant. This certainly is the case for the Sydney Opera House, where a radical, distinctive and costly design yielded enormous benefits. It is hard to recall an advertisement for Australian tourism that does not include it, and in 2007 the building was declared a UNESCO World Heritage Site. Its value for performances is secondary to its massive worth as a monument and symbol.

While this book is devoted to the better understanding of the 99 per cent (or more) of buildings that are not creations of superstar architects (and their clients), landmark buildings by big-name designers offer some interesting insights.

This is a mysterious area. Some years ago, I was asked to review first-year art students’ work. Some students had managed, with the merest flick of a marker on paper, to create something that had immediate appeal to the review panel. It is both marvellous and perplexing to encounter such people, and it appears to be something inherent – the ability to create works that somehow engage and reverberate through the brain circuits.

Other students, in spite of days of diligent work, were unable to achieve anything with the same impact. I recall the same thing at architecture school – some students could create delightful images. They seemed to have no insight into how this was done – it just happened. Obviously, there are fundamental differences in design capability. But, how do you know for sure who has ‘it’. What standards are being used? Who has the combination of what abilities to be a superstar architect?

In the business of architecture, it is not enough just to be a great artist. I have personally known people who believed they were great designers, and perhaps they were, but they lacked the other capabilities, most notably marketing ability, to get the sort of clients who would pay for the execution of their concepts. Architecture cannot be treated like many other manifestations of creativity because buildings are expensive and almost always have functional social, cultural or economic purposes – they rarely operate only in the sphere of delight. Unfortunate products of a painter are easy to deal with – they paint over them (as some of those art students already had), or the painting remains in an aunt’s attic until discarded, or goes to a charity jumble sale. I recall a clothing designer commenting that he did not design for other people, but according to his own tastes – because he would not be able to guess what other people might want. Such arrogant comments are sometimes uttered by would-be superstar architects, and reveal a surprising lack of insight into the issues and possibilities. In contrast with buildings, clothes are relatively cheap, and if a designer’s creations remain unsold at their original prices, they can be discounted or converted to rags. Marketing research into consumer preferences does not always reveal everything and often needs careful consideration, and there are many cases when research has gone wrong, but, in general, some evidence is better than no evidence.

The usual illustration of when something goes seriously wrong with architecture has been Pruitt-Igoe, a massive modernist urban housing project in St. Louis completed in 1956, designed by Minouru Yamaski (1912–1986). Pruitt-Igoe rapidly became crime-infested, and torn apart by its occupants. By 1976, all 2,870 housing units had been demolished,

some in filmed explosions. Mistakes relative to buildings, no matter who makes them or why, can be exceedingly costly, and have economic, environmental and social consequences.

Promotion by architects, in one form or another, may be a key factor in achieving client acceptability of innovative designs. Some decades ago, promotion apparently had something to do with golf courses, but with more sophisticated clients, procurement is likely to have changed.

“ ***You too can be a superstar Or can you?***

What is special about superstar architects and their creations?

What can you learn from them that might be relevant to everyday buildings?

”

Labelling can be important, as we have seen. In tours of buildings by such star architects as Frank Lloyd Wright, I have heard the adoring comments of appreciative audiences – but I suspect that much of the response is due to the fact that the provenance of the building has been drawn to their attention, thereby dramatically changing the context. It is interesting to consider labelling and wine. A local winery owner tells me that he has experimented with wine labels, by putting different labels on bottles containing exactly the same wine. Many people are adamant in their perception that the wines are different – even when told they are the same. For many people, evaluating either architecture or wine can be a daunting task. In the 1970s, American wine critic Robert Parker created a wine evaluation system, whereby wines are assigned a number of points on a theoretical zero to one hundred scale, although the scale is set so that only vinegar might receive under 50 points. This has been very successful in the retailing of wines in America, and those that receive a high number of points meet with high demand, and command higher prices. Choice is made easy, because someone has already classified and labelled the product. This system has been criticized for a number of reasons, one being that the rating is connoisseur-based, and connoisseurs’ preferences are likely different than those of your spouse or sweetheart.

A connoisseur will be evaluating factors that casual wine-drinkers probably don't notice. The average wine consumer, overwhelmed by the decision, simply accepts the verdict of the expert. Perhaps architecture is the same: the messages that are created by and around the architect enhance their products, so people, being unsure how to react to a piece of unfamiliar architecture, simply give in and agree. Connoisseurs say it is great, so it must be.



The Rookery, Chicago. Completed 1888. Burnham And Root, Architects. As a young man Wright worked on the Rookery, a pioneering office building. Later interior finishes have been removed to reveal this column attributed to Wright.

The world is full of buildings created by people who have been acclaimed as superstars (by others or by themselves), and some have been quite successful. But reality does tend to intrude on most buildings – and in the case of buildings by superstar architects there are many interesting, informative and cautionary lessons to be learned. One is that radical projects are often rejected by the people they are intended for. In particular, ‘workers’ housing’ often seems to be unappealing to the workers and becomes occupied by professionals, artists and academics. This happened to the 1927 Stuttgart exhibition buildings. Even though the various elements were built by different architects, all used a modernist theme. At another exhibition, forty years later, Montreal’s Habitat ’67 underwent essentially the same process: although originally conceived as a prototype for affordable housing, it became a prestigious and expensive Montreal address.

A fascinating story concerns the Le Corbusier-designed 51-unit housing project in Pessac, near Bordeaux, France, created in the mid-1920s. Most of the individual houses are controlled by the occupants, and over the years they have made many changes.

Anita Aigner, of the Technical University of Vienna, offered: 'In everyday language, the dominant image of a house in the area had been superimposed upon the purist, modern buildings: pitched roofs had been put on the cubic structures; the gables were faced with wood; the long windows were reduced to a traditional format and provided with rustic shutters.'³⁹⁶ Apparently Le Corbusier knew there would be a reaction, but '... presumed that the modern house would *educate* the residents to a modern lifestyle ... However, many residents at Pessac did not adapt their taste to the modern house, but the house to their taste.'³⁹⁷ More recently, the project has become a design battleground where '... the "aesthetic reconquest" of the Pessac-estate could be seen as a *cultural struggle*, in which the taste norms of the "cultured" (experts as well as residents) are enforced against "inadequate", "popular" taste'.³⁹⁸ Alain de Botton's interpretation was that the houses were built for labourers who spent their days working in a factory constructed of concrete, and they did not want to live in the same sort of modernist environment.³⁹⁹ Reconstruction of houses was a reaction, and people asserted their individuality with fenced front gardens and traditional windows.

There are other problems with superstars. The classic is that the buildings leak – many of the modernist Stuttgart exhibition buildings of 1927 were soon topped with pitched roofs, now removed. Just in case you were wondering, there is a reason why so many buildings, in many climates, have sloping roofs (the water runs off). Frank Lloyd Wright reportedly stated that 'If the roof doesn't leak, the architect hasn't been creative enough.'⁴⁰⁰ I personally have waded through water and around buckets in recent buildings built by contemporary superstars. When you think about it, this is most curious. Why should a building created by a creative architect necessarily have to leak?

³⁹⁶ Aigner, 2014, p.73.

³⁹⁷ Aigner, 2014, p.73.

³⁹⁸ Aigner, 2014, p.79.

³⁹⁹ de Botton, 2006, p.164.

⁴⁰⁰ Sometimes it is difficult to find the references to popular quotes. My search engine picks up this quote many times, but the various websites use phrases such as 'supposedly', 'reported to have said', and don't seem to yield the original source. Hardarson (2005) offers some interesting insights into the relationship between architects and leaking roofs.

Does intense creativity in the design office lead to dangerous creativity in wall and roof details? One notable superstar architect, who created many buildings I personally regard highly, had a serious drinking problem, but his buildings generally don't leak. I suspect that he had a capable staff who worked all afternoon and into the evening to produce technically competent buildings, while the superstar designer was unable to inject his own brand of creativity any time after lunch.



The Stata Center at MIT, Boston, USA. Opened 2004. Frank Gehry, Architect. When I visited in 2008, I walked through puddles of water and around buckets.

As a client or building user, do you really want to have a self-proclaimed genius build the next project? The pain that often accompanies superstar architects would ordinarily seem to make them risky choices to design buildings. However, they are often good at promoting themselves and their buildings. Superstars can obtain media exposure and architectural acclaim, which will tip judgement in a couple of ways. Their buildings

are frequently photographed, thereby making them familiar, and so they become part of people's collection of mental prototypes – think of the Guggenheim Museum in Bilbao. Using a superstar architect can contribute to fundraising efforts, with the glow of the superstar enhancing the client. And all of that suggests some marketing value for buildings designed by successful architect-superstars.

The risk is when would-be superstar architects create unusual and hard-to-process buildings and they fail to receive coverage in the popular media and widespread acclaim, the outcome may simply be a leaky building regarded as ugly by most people.

■ How superstar architecture works – how we can be influenced in our preferences and choices

I. We like what others like – the Harry Potter effect

There has been some investigation into the propensity of people to flock. In 2008, Richard Webb considered this in an article entitled ‘Online shopping and the Harry Potter effect’.⁴⁰¹ His point was that although in the internet world people are not dependent on the things available at their local retailer, there are still ‘blockbusters’ – such as the Harry Potter series of books. Sales of music and books remain concentrated, with a small group of available products accounting for the lion’s share of sales. An online study referenced by Webb, was conducted by American academics Salganik, Dodds and Watts⁴⁰² using 14,000 participants. They dealt with music, not architecture, but the lessons are clear. They found popularity of music tracks was only partially dependent on the music itself – the knowledge of the choices of previous consumers was also important: ‘Increasing the strength of social influence increased both inequality and predictability of success.’⁴⁰³ If someone knows that other people have bought something already (sometimes an idea), they are more likely to buy it too. This is presumably part of a desire to achieve social bonding and lower the risk associated with the selection. You can experiment with this – the next time someone says that they like (or dislike) a certain building, artwork or piece of music, offer the opposite opinion and see what happens. Afterwards, defuse things by moving on to discuss whatever is the most popular spectator sport in your particular region.⁴⁰⁴

In a more academic sense, what is happening is that, as members of a group – even if only while completing an online survey – people tend to conform to the standards of that group. When we make our decisions, we make them within the context of the thoughts and actions of other people.

⁴⁰¹ Webb, 2008.

⁴⁰² Salganik et al., 2006.

⁴⁰³ Salganik et al., 2006, p.854.

⁴⁰⁴ In Canada the phrase tends to be about ice hockey: ‘How about those Leafs, eh?’

The terms often used are ‘tribalism’ or ‘social norms’. In each of Salganik’s groups, just the knowledge of the musical selections of the previous respondents created a ‘social norm’ that operated only within that group. Different groups had different people making initial selections that biased the responses of subsequent participants in that group: ‘the Harry Potter effect’.

In a practical sense, this is one reason superstar architects emerge – they end up as design leaders among certain groups, and, over time, more people adopt the preferences of the group. This can be seen in the matter of design review, which is the process by which a city or other area creates a committee that considers the appearance of proposed buildings. One of the findings has been that after some time, design review committees have less work to do, as applications tend to conform to what has previously been approved. And communities seem to accept that. Perhaps some more research is required here, but it would seem possible that any reasonable norm will eventually be accepted by the wider population.

II. The amount of effort people believe went into a work of art affects their judgement

The image of the suffering artistic genius is a powerful concept. We imagine painters freezing in Parisian garrets, and poets and musicians hacking out their tubercular lungs. It has been shown that we tend to associate art objects with some sort of artistic dedication.⁴⁰⁵ One strange effect is that people often bias their assessment of an object in accordance with the skill and effort they believe went into its creation. Again, this effect has been researched: for example Justin Kruger, of the University of Illinois at Urbana-Champaign et al. had people evaluate poems, paintings and, perhaps curiously, a suit of armour, and found ‘... higher ratings of quality, value, and liking for the work the more time and effort they thought it took to produce’.⁴⁰⁶ In their experiments they presented the same works of art to their sample groups with different

⁴⁰⁵ Dutton, 2001, p.210.

⁴⁰⁶ Kruger et al., 2004, p.91.

information about how long they took to produce. Among their findings was that if the quality of the stimulus was difficult to assess, the effort the subject thought had been taken to produce it had a greater impact. They explained this in terms of our experience as students. Students, they found, believe that the mark they receive should somehow correspond to the amount of effort they put in. A paper that took double the time to produce should somehow be worth more. If we believe considerable effort is put into something, we value it more. This is one reason why esteemed organizations make it hard to join – the effort makes the being admitted more significant and valued.

III. Work by one creator is valued more than work by multiple creators

Have you ever noticed that we so often refer to architects, painters and musicians in the singular? One might think of Louis Sullivan, the noted Chicago architect – but most of his work was done in partnership with Dankmar Adler in their firm of Adler and Sullivan. Skidmore, Owings and Merrill as a name seems to have less impact than does Philip Johnson, even though the large projects undertaken by both required the cooperation of numerous employees and consultants. We know that artists such as Rembrandt and Warhol have been collaborative and had numerous assistants – yet the output is usually ascribed to the single individual, as so often are movies to their directors.

Rosanna Smith and George Newman, of Yale University,⁴⁰⁷ undertook experiments using sculpture, painting and poems. They found a pronounced bias towards the single creator in the perceived value assigned to works of art, and that, generally, as the number of authors attached to a work increased, the perceived quality of the product declined. One possible reason is that people can more readily identify with the efforts of one person than with a team.

⁴⁰⁷ Smith and Newman, 2014.

This is why knowledge about the creation is incorporated into the way people assess a piece of art, or, presumably, a building. Smith and Newman offered possible explanations for this effect – subjects for future research. Their experiments suggested that the identifiability of the creator was unimportant, but wondered about this in the case where the creator was well known. They also speculated that their findings may be at least partially culturally dependent, in part relating to how individualistic the culture might be; as Americans, Smith and Newman were working in a highly individualistic culture.

Evaluations can be dependent on factors that may have no relationship whatsoever to the nature of the final work, in particular that information about creative processes influences judgements about the products.

IV. Representations and marketing

Awards can benefit architects. I have sat on awards juries and covered them for our publications. To me it has been clear that the quality of the presentation of projects is key in who ‘wins’. I recall one application, which showed a pleasantly coloured office building next to an idyllic, rush-filled pond. One of the jury members, after a moment’s thought, commented that the building was near where she lived, but that she had never seen the building like that. Sometimes I have thought the awards should have been presented to the photographers. Some firms undertake serious marketing activities, seeking awards and having their building profiles in the magazines. Of course, others believe that explicit marketing is unprofessional.

■ The brain is a strange mechanism – shortcuts and distortions

In one sense, we have been looking for a rational way of creating architecture that will likely be well regarded by most people – or at least not despised. This is a difficult task because of the diversity of people and human experience, but also because the brain offers its own quirks, which can be exploited or evaded by the skilful individual.

Numbers of these were pointed out by Patrick Cavanagh of the Vision Sciences Laboratory at Harvard University,⁴⁰⁸ whereby artists can take liberties with reality in order to convey meaning. Partial representations or outlines are mentally processed to create complete scenes. Blurred representations, such as those of the Impressionist painters, are interpreted by the brain and can create emotional responses. One might suspect that some architects and urban designers can create designs and undertake marketing/public relations initiatives that do the same thing and support their designs. But can they?

■ Finally

Superstar architecture represents a small proportion of everything that is built, yet, because of its rarity and differences, it can offer insights into how 'regular' architecture and architects might be understood. In particular, the representation of such people and buildings can be observed, together with how the population responds.

⁴⁰⁸ Cavanagh, 2005.



Santa Engrácia Church: The National Pantheon, Lisbon, Built variously 1712-1966, João Antunes, first architect.



CHAPTER 18

Glimpses of Delight – Pulling Things Together

How should a building present itself so it will be perceived positively – or at least not widely regarded as ugly? It makes sense to try to assemble things into a set of somewhat coherent principles to help society avoid wasting money on unesteemed buildings. The reality, however, is that any set of guidelines will be complicated – but there seem to be some basics.

In many ways evidence-based design is more complex than much evidence-based medicine (a field in which the term ‘evidence-based’ is quite popular), because of the individuality of human beliefs and preferences, whereas most people share at least some of the same physiological structure. Guidelines and principles should not be constraining, as predictable and boring built environments might result. The design process is like the work of a creative chef who meets the challenge of producing a gloriously memorable meal for a special occasion, but few people would want to eat day after day. The architect, and others involved in the project development process, have many and varied means to create outstanding buildings, much as master chefs can create meals that will resonate with the diner – something elegant, balanced and tasty, and never boring.

Experiments have repeatedly shown that architects have very different preferences than the wider population, so are probably not very good at predicting what pleases the wider population.

For example, Gifford et al., found in one experiment that pleasure for architects was related to the presence in facades of ‘more metal cladding ... fewer arches, and more railings’.⁴⁰⁹ For laypeople, they found ‘fanciness’ as a very significant factor, as well as more glass, greater reflectivity, less colour uniformity, more fenestration and more height. Gifford’s experiments offer another important insight: while architects’ judgements tend to align with each other, those of laypeople have less uniformity, as was found in our own experimentation. Architects share a school- and work-acquired culture, whereas the general population includes people with many different backgrounds and life experiences, but that does not mean that some general trends cannot be detected.

John Cleese, in his 2014 book *So, Anyway ...*, recounts the audience response at a rehearsal/preview of a London comedy show: ‘The second night’s audience, by contrast, was the weirdest I’d ever played ...we were not getting the laughs we were accustomed to ... Then some of the audience started laughing at things no one had ever previously laughed at ...we were bewildered ...’⁴¹⁰ They found that the preview tickets had been sold almost entirely to attendees of a conference – a conference of psychiatrists (could this have happened only to Cleese?). Apparently, psychiatrists have a unique sense of humour. Although Cleese’s regular audiences probably often contained a psychiatrist or two, their specific responses would have gone unnoticed in the larger group. Psychiatrists have spent many years studying the human condition, and it is also likely that a certain personality and intellectual inclination causes people to take up psychiatry as a profession – as opposed to surgery or respirology – or architecture, accounting or plumbing. An audience composed entirely of plumbers or airline pilots would probably also exhibit their own specific response to Cleese’s humour. Another message from his story is that comedians do pay serious attention to how their audience reacts, as should anyone producing a consumption good or service.

⁴⁰⁹ Gifford et al., 2000, p.175.

⁴¹⁰ Cleese, p.163.

The fact that people of different backgrounds perceive and evaluate differently does not mean that some key elements of overall response cannot be predicted – after all, that is what comedians do: they offer up situations and comments that most of us find amusing, and the rest of us are agreeably swept along. Whether the comedian finds something humorous personally might be of interest, but as a connoisseur of humour, their own response may not match that of the audience.

“As with the comedian, the objective for a building designer should be to understand what generates an appropriate response from most of the people, most of the time.”

There is a difference between stage shows and the built environment. If you do not like a particular genre of performance you can just choose not to go; if it is on television, the channel can be changed. My own parents perceived nothing at all – funny or otherwise – in Cleese’s brand of humour, whereas it was almost impossible to unwind my own children, when smaller, after they had viewed an episode of *Fawlty Towers* for the twentieth time. The audiences that architects, developers, interior designers and builders play for are usually not so self-selecting (but they can be). For office space users the building usually just comes along with the job: how they initially respond to the building is usually irrelevant in most labour markets, although it might influence their ongoing productivity.⁴¹¹ But it is important that designers and managers play to the market groups that are important – and that usually means the wider population, which will include psychiatrists, airline pilots and plumbers. Presumably Cleese’s show could have been rewritten to appeal specifically to psychiatrists, but there are not likely to be enough psychiatrists to supply audiences for an ongoing West End show. In the same way, it would be strange and usually uneconomic to design buildings to appeal only to connoisseurs of architecture – but it seems often to be the case.

⁴¹¹ While this was being written, the author participated in a project dealing with the office space of a major insurance company. Building operating costs were small compared to their staffing costs, and they were willing to spend considerable amounts to improve the building if any increase in productivity might be expected.

■ What are the design commonalities?

Thinking of wine can again help explain things. For centuries wine was produced using wisdom passed from generation to generation. However, over the past few decades, chemistry and engineering have come to play a substantial role, and the chemical factors that usually lead to a great wine have been identified, enabling wine producers to create better and more consistent results. After all, the difference between a great wine and pedestrian plonk is a matter of chemistry and how it relates to human perceptions. The part that makes the difference is a small element of a wine – about 98 per cent of the contents of a bottle consists of water and ethanol⁴¹² – the rest consists of a host of very specific molecules that define the wine. A winemaker or chemical engineer manipulates that two per cent to achieve the desired result.

One might keep this in mind relative to architectural and urban design. There are various elements that might be combined in the expectation of achieving a better, more reliable outcome. As with wine, architecture has been produced for centuries on the basis of received wisdom, but we are able to do better now.

■ Assembling the elements

Although there are mountains of wonderful research about how people respond to buildings, what is required is the synthesis of this material into forms that can assist the practitioner. How does one design a building that is seen by most people in a positive way? What characteristics and features are important, and how might the disparate factors identified in research be combined so as to avoid negative responses?

This is not a new matter. The Victorians debated it, and some of that debate concerned the many works of Sir George Gilbert Scott (1811–1878). Kenneth Clark commented critically that he ‘... was a populariser ...

⁴¹² Australian Academy of Science, *The Chemistry of Wine, Part 1*. www.science.org.au/curious/earth-environment/chemistry-wine-part-1, accessed 12 December, 2019

Gilbert Scott stood for the ordinary man who felt an inexplicable need for pointed arches ...'⁴¹³ In academic design circles, popularization is often seen as an insult. Scott expounded his own ideas in such writings as *Remarks on Secular and Domestic Architecture, Present and Future* of 1857, in which he outlined his own principles: that the designer should keep their design 'nearest to facts of construction', and ornamentation close to nature, and that the traditions of an area were to be respected. These guidelines echo through to the present, and within them, Scott managed to create buildings that delighted his own public, as well as those of today.

A set of guidelines should include some key elements.

I. Exploiting familiarity – The relation of building design to mental prototypes

Research shows that this factor is overwhelmingly important. If a building or its elements cannot be easily related to some prototype or schema already existing in the viewer's brain, it is likely to be perceived in a negative manner, perhaps simply as ugly. The prototype does not have to be a building: in some of my experiments, the more abstract buildings prompted unsolicited comments about what they resembled: a peanut, a bladder, shoe patterns, an upturned boat, and something to do with pigs. Historical forms, whether authentic or reproductions, and traditional allusions, ranked highly.

Different groups of people will have acquired their own mental prototypes to which they relate newly encountered buildings or urban spaces.

However, mental prototypes can also include how they relate to context, much as how the Kunsthau Wien (Vienna Art House) relates in scale and window form to its setting. After all, in reality, most people encountering an urban building will be familiar with the setting – it is in their library of mental prototypes, even if recently added by passing through the surrounding neighbourhood. Urban planners and many others have been shown to prefer buildings that fit in.⁴¹⁴

⁴¹³ Clark, 1928/1964, p.160.

⁴¹⁴ Fawcett et al., 2008.

II. Ensuring that the building is legible

If a building fails to be readily understood by the viewer, it is unlikely to be easily associated with a mental prototype. A designer should not confuse the passer-by. If the building cannot be easily perceived and understood, it will obviously be difficult to relate it to a mental prototype. Some of the features leading to legibility are:

- a limited number of exterior materials; in experiments, three or fewer, plus glass, seem to work well
- defined forms and clear edges
- orderly repetition of forms
- a visible entrance
- consistency with known forms.

III. Reflectional and translational symmetry

Reflectional (mirror) symmetry has repeatedly been shown to be important to most people in how they compile an overall evaluation of a building. The designer should respect it whenever it is possible, even to the extent of compromising purity of function to achieve it. Reflectional symmetry can be a positive factor through incorporation in important elements, even if the entire building is not symmetrical. Translational symmetry (repeated elements, as in a colonnade), has been used since antiquity. It can allow complex forms to be employed without overly compromising legibility.

IV. Naturalness and ornamentation

The presence of natural elements can be a significant factor in evaluations. In our own experiments we were aware of its impact. Results and comments from survey subjects again supported the importance of landscaping, yet getting genuine natural features into or on a building is not always easy in urban settings. This is where naturalistic ornamentation becomes an alternative to the real thing.

Remember that ‘popularizer’ architect Sir George Gilbert Scott, as well as early modernist Louis Sullivan, both integrated considerable amounts of naturalistic ornament into their buildings, and both were successful in evoking positive responses from their respective publics, both when the buildings were created and in the early twenty-first century.

Explicit ornament is a problem for many designers, as it was stripped away by the modernist design philosophers, who saw ornament as a design sin. It is likely that a century of anti-ornament thinking has rendered architects unable to integrate ornament into their designs. Yet experiments show that ornament can add value to buildings. Such things as cornices and mouldings do have a real function – sometimes to throw water away from the walls.

One ornamentation opportunity is art. Art, such as sculpture or paintings, is unfortunately easily removed from budgets by building committees, but the alternatives, such as convoluting ‘functional’ design forms, may be more expensive and less likely to give the assurance of positive design responses. Moreover, applied art can be changed, in keeping with fashion.

V. Novelty

Novelty is one of the elements that a skilful designer can use to make a building an object of interest – essentially, not boring. Architectural education tends to encourage novelty, but excessive novelty can be dangerous because the results can be illegible and confusing. Confusing people is to be avoided. Novelty must be handled carefully, as too much may destroy legibility and/or familiarity.

VI. Challenge

Designers often talk about challenging the viewer (for example with an ambiguous ‘statement’), but may not have any sense of what that challenge is, or how it is actually received. Before using challenge as part of an overall design, questions have to be asked about what is being attempted, and why, and probably an explicit experiment should be conducted to determine how the design intent is likely to be interpreted.

If it simply makes a building illegible and unfamiliar, the concept should be discarded early in the design process.

VII. Mystery

Mystery has been shown to be a worthwhile design characteristic – probably, like novelty, as a way of ensuring engagement with the viewer. As with novelty, too much mystery has the potential to make a building or space illegible, or even appear to be dangerous. The designer should ensure that the location of the entrance does not become a mystery.

VIII. Proportion and scale

In spite of millennia of debate, if there is any effect from specific mathematical proportions, it is weak, and readily dominated by other factors. If it were important, experimental results would be clearer and more consistent. Having said that, it does not appear to be a bad thing, just likely to be irrelevant.

Scale is related to proportion, but there is more evidence of its significance. It can depend on how a building is approached, and it is frequently violated in the case of pedestrians. The designer should always pay attention to the interface between building and street, and respecting the size of humans, within the intent of the design, is an important part of that.

IX. Warmth

One of the correlations with overall evaluation in Experiment IV was warmth, yet the subjective concept of ‘warmth’ is elusive. A typical dictionary definition includes something such as ‘... the quality or state of being warm in feeling’. But how does one create it? More research is required.

X. Programme notes

Other arts appreciate the value of labels and programme notes, and so do famous architects – they tell us about what they have created.

Buildings, especially those not following established precedent (novel), do not necessarily speak for themselves. The designer who aspires to have their creations known and esteemed should attempt to have them appear in the media as much as possible, complete with descriptions and interpretations. Personal media coverage can also be important, suggesting a value in writing, speaking and being interviewed. Information helps the audience in interpreting music, painting, wine – and buildings.

XI. Context

Context is important, as buildings are evaluated within their surroundings. Design considerations should not stop at the edge of the property. To what extent should a building ‘fit in’ or contrast with the surroundings? In part it might be determined by the audience – some research findings indicate that architects like things to stand out, while urban planners put a premium on fitting in. What is the contextual mood of the audience – are they strolling through a park, or rushing to work? Will the context be different in the future?

XII. Cleanliness

Cleanliness has been shown to adversely affect building evaluations. Unfortunately, buildings exist outside, so are exposed to atmospheric soiling. This suggests that buildings should either be self-cleaning, easy to clean, or designed so a bit of soiling is not apparent. Mouldings can help to direct water away from the walls. Beware of white buildings.

XIII. Consider the implications of the ordered preference model

The ordered preference model, developed by Dr William Fawcett,⁴¹⁵ suggests that the astute designer can address the preferences of differing groups – something for all. In the small suburban office building study (Experiment III), it was found that the general public paid a great deal of attention to the roof pitch while apparently ignoring the strength of design that was important to architects.

⁴¹⁵ Fawcett et al., 2008.

This suggests that while having a pitched roof is a good thing, so might be the choice of exterior design and material, which can be chosen so as to appeal to a different group. The key issue is identifying which group responds to what element, and how – and which groups are important.

The preferences of the wider population ('non-connoisseurs') are dominated by more basic sets of attributes; they use simple decision rules and are indifferent to a set of other, more complex attributes. In contrast, the preferences of the connoisseur groups (designers, developers ...) embrace more complex, 'high-level' attributes. They may attach little weight to the attributes used by the non-connoisseurs.

Of course, this requires that early in the development process the preferences of the different groups be identified, as it is usually difficult – for financial or regulatory reasons – to modify concepts later. In many situations it is not possible to access the relevant user groups, so a proxy group might have to be surveyed. The temptation is always for a designer, manager or developer to go with their own preferences, and ignore those of the wider user group – something to be avoided.

XIV. Unity/Coherence/Balance/Order/Elegance/Harmony

The creation of a successful design is in the hands of the designer, and depends on more than mechanically checking off the factors. Rather like a great cook or winemaker, the creator must carefully balance ingredients to achieve an integrated and elegant outcome. In particular, the interaction and balance of factors, such as the need to relate to mental precedents and mystery or novelty, must be managed. While personal taste still plays a role, the creator cannot lose the awareness that most people who experience the resulting product will not be connoisseurs, so are not likely to share the evaluation of the expert.

■ Aspiring to the unattainable

Architects are apparently afraid of the terms ‘aesthetic’ and ‘beauty’ in a way that biologists and physicists are not. Perhaps biologists and physicists are more aware that there is more than what they have discovered, something perfect and elegant, and just-out-of-reach; something they can strive for. I feel that some of the music of W.A. Mozart hints at that ultimate perfection. Rather like the sculptor discovering what was hidden in the stone all along, great musicians, artists and, indeed, great architects, create works that suggest an unreachable, pre-existing, perfect spirituality or perhaps an ultimate source of reality.⁴¹⁶

Music composers often balance familiarity, usually achieved through repetition, with challenge and surprise. Themes and variations are one example, where there is a set of statements on a theme, and a set of variations. The initial statements establish a musical precedent or prototype in the brain of the listener, and then challenge and fascinate it with almost what they expect, but not quite. Listeners can detect the familiar patterns: variations ensure that boredom is avoided, and interest generated. This is a tool used both by the early Renaissance composers and contemporary popular musicians. What do you like musically? Think about it, and it is likely to be a balance of repetition and modification – the familiar and the novel. In architecture, this same balance can be noted in the Jerwood Library at Trinity Hall Cambridge, by Freeland Rees Roberts Architects, where the building evokes a familiar traditional form, but improvises on it to create novelty and challenge. Simplifying, it is reasonably clear that both familiarity and novelty have positive effects on overall evaluations, but as they constrain each other, they need to be thoughtfully balanced by the designer.⁴¹⁷

The sense of utopia in building design is very real, as it relates to both the sense of the word: a paradise and yet a no-place – something that does not exist, yet represents an aspiration.

⁴¹⁶ This was made clearer by a lecture by Professor Douglas Headley, *Ecological Aesthetes and the Cambridge Platonists*, 22 October, 2018.

⁴¹⁷ Blijlevens et al., 2012, p.179.

As we respond to building design, we are measuring some reality against our personal mental model of an imaginary and yet unattainable perfection; something that cannot exist, cannot be realized, and cannot even be properly articulated. We can hint at it, but for each person that design utopia will be different. Thomas Moylan, of the University of Limerick, proposed ‘... that the utopian ... is a quality lodged deep in the modern human psyche and at work in the most intimate and familiar interstices of everyday life’.⁴¹⁸ As Oscar Wilde suggested, the recognition and addressing of our various images of utopias can provide the energy for new designs.

So, while we know certain things that we should include in design, such things as symmetry, legibility, only a few different materials ... the harmony and elegance aspects are being measured against all of our individual notions of a design utopia.

“Oscar Wilde proposed: ‘A map of the world that does not include Utopia is not worth even glancing at, for it leaves out the one country at which Humanity is always landing. And when Humanity lands there, it looks out, and, seeing a better country, sets sail.’⁴¹⁹”

⁴¹⁸ Moylan, 1992, p.8.

⁴¹⁹ Wilde, 1891.



CHAPTER 19

Consideration of Some Buildings Used in Experiment IV

It is worth considering some buildings relative to the design aspects that might lead to overall esteem – in particular those used in Experiment IV. More detailed, coloured images of all the buildings can be found on the internet.

■ Historic buildings

For all groups, the historic buildings – or those that appeared to be historic – were ranked at or near the top. There are a number of possible interpretations of this finding:

- Historic buildings fit our mental prototypes (rather obviously, because their forms have been around long enough to become their own prototypes).
- They were created before the modernist architectural dogmas appeared, so are more in touch with the fundamental desires of the wider population.
- They incorporate factors that were seen to be important in research, often having the following characteristics:
 - are readily legible and consist of relatively few materials
 - tend to be symmetrical or have symmetrical elements
 - tend to have some degree of ornamentation (often naturalistic)
 - usually have pitched roofs
 - have obvious entries
 - are designed in accordance with a coherent style

and as a result of the above, they are likely to be perceived as balanced, harmonious and elegant.



Neues Schloss (New Palace) Stuttgart. Part used in experiment. Completed 1807. Reconstructed 1958-1964. Various architects.

One image of an apparently historic building was of the exterior of one wing of the 'New Palace' in Stuttgart, Germany. Originally built in the late 1700s, it was almost

completely destroyed by bombs in 1944, and subsequently rebuilt between 1958 and 1964, mostly as offices. It scored highly among all groups, including the architects. In a workshop setting I asked one architect to talk about it. He identified it as a historic building, and in positive terms. Afterwards, I asked him if he would perceive it differently if it was a replica on the same site (it is), or a couple of streets over from the replacement, or in another city, and he offered a blank look. Another participant commented 'but what about honesty?' I think I must have missed that lecture in architecture school. In this case, information about the building changed the attitudes of the respondents.

■ Historical references

That so many twenty-first century architects should still be concerned by reproduction buildings seems curious. In the results of some of my experiments I have suspected that fundamentally, they retain many of the same preferences as other people, but that these are overlaid by education, experience and peer pressure. One building that is esteemed by most people, including architects, is the 1999 Jerwood Library at Trinity Hall Cambridge (UK), which few people would regard as historic. The building is legible, alluding to familiar half-timbered, Tudor architecture – but it is also obviously not of the genre, so novelty comes into play, challenging the viewer. It consists of only two exterior wall materials and has a pitched roof. Although not symmetrical overall, it does have symmetrical elements.

In post-survey discussion, architects frequently had trouble with it. Although invariably initially ranked highly by every group of architects, afterwards there was widespread, and sometimes entertaining, disavowal. In one group of thirty-five architects, no one would admit to having ranked the building highly, and one individual who, due to the way the data was collected in that particular session, was known to have given this building a high score, when questioned, responded 'there must be something wrong with the numbering system'.

This phenomenon tends to support the 'thinking fast and thinking slow' proposition of Kahneman and Tversky, which suggests that there are two separate evaluative processes involved: the first operating automatically, with little effort or voluntary control and quickly, and the second, which involves more mental activity. Our subjects, given 14 seconds for the first review of each image gave a first, rapid, relatively unfiltered, response of esteem for the library.

On second thought, given more time, they realized that the design did not conform to what they had been taught in architecture school and by their professional mentors, so wanted to disavow their first response, especially before an audience of their peers. In another group session, around a table, at the beginning of the session, an engineer subject, when considering the Lomma Library (always the first image in the survey set), told the architect sitting next to him not to overthink it. It is likely that the architects' initial response is similar to that of non-architects, but when asked to talk about it, they engage the 'slow' part of their thought processes and get a different answer.



Jerwood Library at Trinity Hall Cambridge, UK. Completed 1998. Freeland Rees Roberts, Architects.

The Duntroon House by Paul Roth was not included in the surveys, as it is a single-family dwelling, but it was used in discussion. I wrote this house up in *The Right Angle Journal*⁴²⁰ after having met Paul Roth at a session held by the Royal Architectural Institute of Canada. He mentioned that this house, located in rural Ontario and included on his website, had attracted considerable favourable comment. It has many concept similarities with the



Duntroon House by Roth Knibb Architects Inc.

Jerwood Library. Both are strongly traditional but obviously not reproductions, are legible and familiar, but they also have some novelty, thereby avoiding boredom and offering

a bit of challenge. The images both exhibit pitched roofs and chimneys, and are constructed of materials that are common in their geographical area – essentially, each reflects its own vernacular context. Both include symmetrical elements, but are not, on an overall basis, symmetrical, and the results suggest that each architect managed to achieve a level of unity/coherence/balance/order/elegance/harmony that resonates with many. This might be a good formula for building designers to follow.

■ Classic modernism

A white modernist building in Oslo was ranked very highly by the architects – just ahead of the Jerwood Library, but near the bottom of the pack for everyone else. This is perhaps not surprising, given this is a form built by the heroes of the modern movement in architecture. Such modernist buildings aspire to the machine-made discussed in modernist literature,



White modernist buildings are not difficult to find – but few of them are clean. This one is in Oslo.

⁴²⁰ Ellingham, 2017/18.

but are still usually made using traditional, crude but robust building materials. It is not easy to find a white modernist building that is actually a pristine machine-like white. This is because the exteriors often consist of rendering over brick or block, and, lacking wall details that will throw rain water away from the walls, rapidly become dirty and stained. A more typical, dirty white modernist building would likely score lower.



Modernist buildings can get very dirty – Lawn Road Flats, London. Completed 1934. Wells Coates, Architect. This photo was taken in 1974. The building was reconstructed (and cleaned) in 2003.

■ **Abstract modern: Kunsthaus Graz; Domus in A Coruña; Mercedes Benz Museum, Stuttgart**

These buildings are an interesting contrast, because, while all three are exhibition spaces, and have very non-traditional forms and colours, they were evaluated very differently. The Kunsthaus in Graz, Austria was designed by Colin Fournier and Peter Cook, an individual whose theories and concepts I admire. It was one of the least favourite buildings as ranked by all groups, although, as might be expected, some individuals esteemed it (and curiously, to me, the wider population esteemed it more than the architects). Through the survey process three different views were used of this complex building, but the scores given to this building remained consistent and low. Considering the factors that tend to make buildings regarded in a positive manner, the Graz Kunsthaus lacks most of them – it is difficult to associate with any positive prototypes which most people might readily access; in fact its architects refer to it as ‘A Friendly Alien’.⁴²¹ From the street view, some respondents saw a peanut shape, while others were apparently baffled.

⁴²¹ Fournier, Colin; Cook, Peter; Price, Cedric; Bogner, Dieter; and Pakesch, Peter (2004), Friendly Alien, Berlin: Hatje Cantz

It lacks scale – even when elements such as people or cars were included in the image, it is hard to understand how big it is or how it works. The entrance is not readily apparent. A number of people commented on the ambiguity of the exterior material – unrecognizable in the photographs used. However, given the capabilities of the design team, it is possible that the building itself might become familiar, and so become its own mental prototype in people’s minds – but it might take time, or might not happen at all. That is the risk of radical architecture.



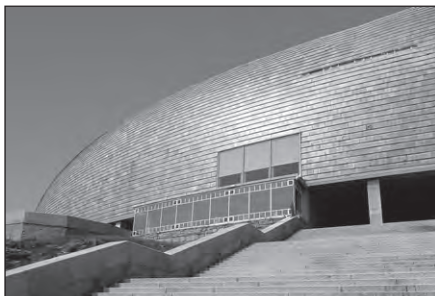
Kunsthau Graz, Graz, Austria. Built 2003. Colin Fournier and Sir Peter Cook, Architects. Just one of the photographs used in the experiment, together with an overall view (not used). Photos courtesy of Martin Head, PhD.

Exhibit 19.1: Three curved form contemporary building forms compared.

Overall evaluations (rank within each group)

	Architects	Other Building	Wider Population
620 Domus Museum, A Coruña, Spain	11	13	19
621 Kunsthau Graz, Austria	20	19	15
724 Mercedes-Benz Museum, Stuttgart, Germany	12	4	3

The Graz building can be contrasted to the Domus building in A Coruña, Spain – also a recent, black building with a non-typical overall form, although covered with dark shingles, a material that is both familiar and legible. Interestingly, it can be associated with a prototype – people commented that they saw it as an upside-down boat – yet it was not esteemed by the wider population. Some other factor is obviously at work: perhaps its dark colour, or its limited number of windows (remember this is in southern Europe where many buildings have limited amounts of glazing).



*Domus Museum, A Coruña, Spain. Opened 1995.
Arata Isozaki and Cesar Portela, Architects.*

The Mercedes-Benz Museum, Stuttgart, of 2001, created by a design team including UNStudio, was ranked near the top of the non-historic buildings by the wider population and the ‘other building industry’ group, but in the middle of the pack for the architects. It attracted little verbal comment in discussions. One respondent said that it had looked like it had been designed by a bunch of engineers – an interesting comment, given its owner. The engineer respondents ranked it very highly. It follows some of the rules: the exterior is essentially one recognizable material and glass, and those elements are immediately legible. Overall, in form it is quite coherent, but this is one building that warrants additional survey exploration, in particular relative to the buildings in Graz and A Coruña.



*Mercedes-Benz Museum, Stuttgart. Opened 2006.
UNStudio, Architects*

The Mercedes-Benz Museum demonstrates that the wider population is willing to accept fairly extreme contemporary design, but there needs to be more understanding of exactly what characteristics lead to positive evaluations. Why was it ranked so highly by the non-architects? It is worth speculating on the differences in these buildings that might lead to these results.

■ Interesting contrasts: old and new Birmingham libraries



Birmingham Central Library, Birmingham, UK. Opened 1974. John Madin, Architect. Brutalism. Is it coming back into fashion?



Library of Birmingham, Birmingham, UK. Opened 2013. Mecanoo, Architects.

The Old and New Birmingham Central Libraries were both included: the old one being a Brutalist building from 1974, with the new 'high-tech' one completed in 2013. For the new library there was a surprising difference in the responses between the building industry participants and the wider population – with the wider population ranking it ninth, in contrast to the architects (twenty-first) and the 'other building' respondents (at fourteenth), although the younger architects ranked it eighth.

One might speculate that the designers managed to make this building appeal somehow to the wider population, but is it possible that most architects, if given the commission, would have done something different – so don't like it? Strangely, the architects preferred the older Brutalist building, although they did not rank it highly. One factor that might be obscuring the absolute evaluation is that the old building in the image was dirty and scruffy – it was demolished shortly after the photograph was taken, and it is known that cleanliness is important in evaluations.

■ Targeting a specific group

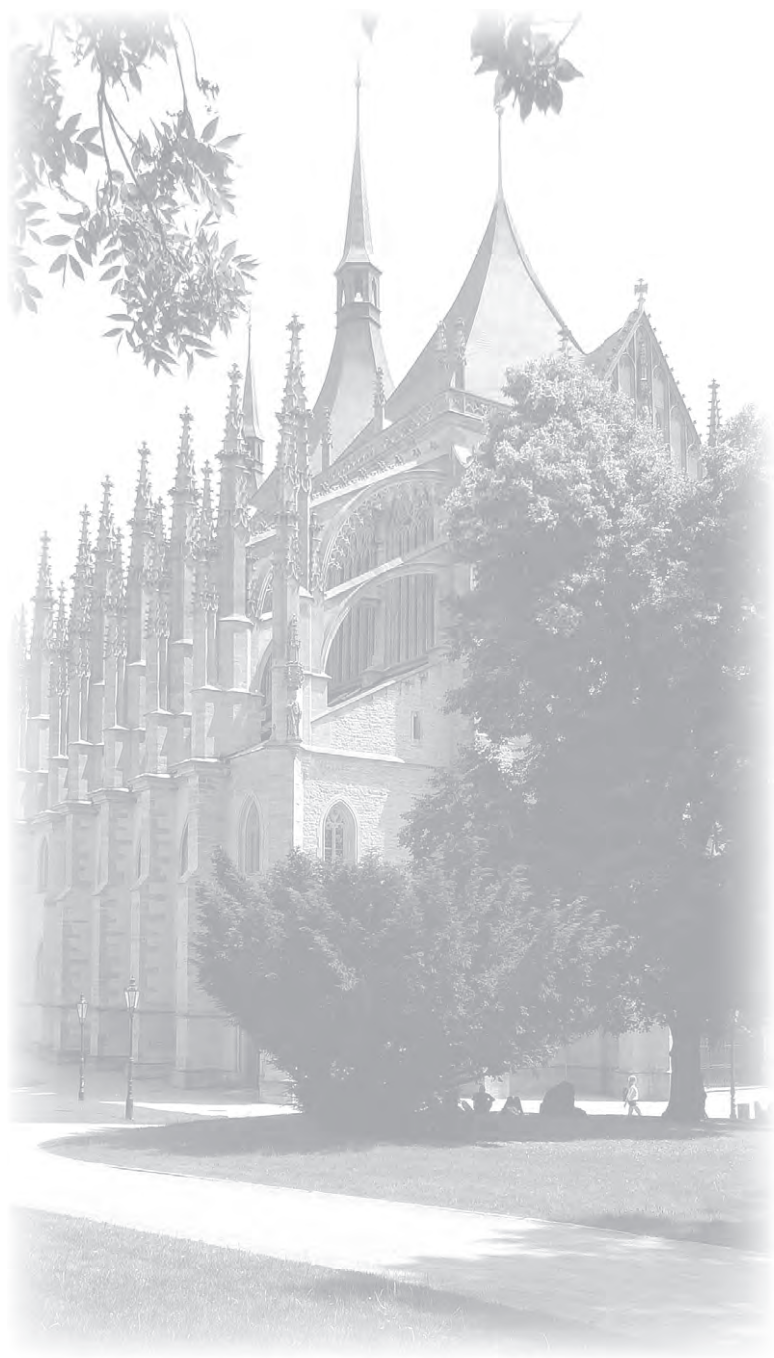
I was involved in creating Suomi-Koti, the Toronto Finnish Canadian Seniors Centre. In the overall assessments, the building fell near the bottom of the rankings, demanding consideration of the reasons for this.

The building was created through a participative community process, so it would be expected to match mental prototypes of the elderly Finnish-Canadians who created it in the 1980s. They wanted to express their conception of their homeland, but their mental prototypes will not likely exist within the minds of most non-Finns, or even of successor generations of



Suomi-Koti, Toronto Finnish Canadian Seniors Centre, Toronto, Canada. Sedun + Kanerva, Architects.

Finns. Even though there are few exterior materials (white rendering, white metal and blue canopies), the form is complex and takes some effort to interpret by the uninitiated. The white exterior of the building has become dirty, thereby lowering the cleanliness factor. The non-profit board is aware of this, but cleaning would cost a significant amount. This indicates the importance of exteriors being either easy to clean (or non-soiling), or of a material and form that can weather attractively.



St. Barbara's Church, Kutná Hora, Czech Republic



CHAPTER 20

Reasons for the Lack of Impact of What We Know

Over the last few decades there has been considerable work done in uncovering the factors that lead to specific human responses, but there has also been a surprising lack of impact of this information on how buildings and cities are created and managed.

Sir Leslie Martin (1908–2000), a highly influential figure, saw research as an integral part of the design process,⁴²² but during his most active years of the 1940s to 1960s, the concept that one could explore the wider population's preferences and pay heed to them in design, was in advance of the theoretical and computational tools to easily do so, or the intellectual environment that would support the activity. Jack Nasar of the State University of Ohio, a major contributor to the science of environmental psychology, cautioned, in 1999: 'Architectural theory ... attempts to support conclusions from an analysis of patterns. It tries to build an argument for the author's particular aesthetics. Through profiling a select set of designs or designers, the author [typically an architect] argues for how things ought to be, rather than describing how they are.'⁴²³ The use of the word 'theory' is interesting: in most disciplines theory is followed by experimentation and observation to verify, refute or modify the theory, but this is rarely the case in academic architecture. Eight years after Nasar's comment, Byron Mikellides, Emeritus Professor at the Oxford Brookes School of Architecture, observed more-or-less the same situation:

⁴²² Martin, 2016.

⁴²³ Nasar, 1999, p.62.

‘When we look at the real world of architecture, a considerable amount of this research has gone unnoticed.’⁴²⁴ Mikellides anticipates an increasing influence of the research results – but that has been promised for some decades.

For most architectural and planning practitioners, any exposure to architectural psychology is in the past – they may have encountered it in



Royal Festival Hall, London. Opened: 1951.

Sir Leslie Martin, Architect.

Since my teens I have periodically encountered the Royal Festival Hall. Decades ago, to me, it seemed old-fashioned – especially as it was adjacent to the then-new and exciting brutalist Queen Elizabeth Hall. Now, after updating and reconfiguration, it has become something I esteem – especially when compared with the now-aging and grubby Queen Elizabeth Hall (will it become esteemed again?)

one or two undergraduate lectures, as I did, but have not thought of it since. Meanwhile, mainstream psychology has pursued the clinical route. When I discuss the design attitudes and preferences of normally functioning people with most psychologists I usually receive blank stares. This confirms the comments of psychologists Christopher Spencer and Kate Gee, of the University of Sheffield, who comment that pertinent findings ‘... have been largely ignored by “mainstream” architects, planners and psychologists – the architects too busy to check out relevant findings, and the psychologists content to stay in their labs’.⁴²⁵ This situation has arisen for a number of reasons.

⁴²⁴ Mikellides, 2007.

⁴²⁵ Spencer and Gee, 2009.

■ Researchers and practitioners speak different languages and have different priorities

The communication of findings by researchers is usually wrapped in methodological and statistical techniques unfamiliar to people in the development and building industry. The educational processes mean that the disconnect continues from generation to generation, as newly created professionals in each area learn their respective trades from older peers. Research findings are presented at academic rather than trade conferences, in language that may be regarded as meaningless piffle by practitioners. Academics, seeking the lists of publications and citations necessary for promotion, generally publish in academic journals that building industry professionals do not read, or even have access to. Duncan Philip, writing in the *Journal of Environmental Psychology*, blamed psychologists for remaining within academia and ‘not getting out more’.⁴²⁶ But equally it should be suggested that practitioners need to get ‘inside’ more, and academia needs to accept them and build on their capabilities.

■ Experimental findings are often difficult to translate into designs

People are complex, as is the built environment. The success of a design depends on many factors that rarely act independently. Hence, for the architect or developer, research findings can be treacherously difficult to evaluate and apply. As well, research usually considers only a few factors at a time. It is difficult enough to undertake research on one or two of design aspects, without trying to design and interpret more comprehensive experiments.

What a practitioner needs is a set of easy-to-follow guidelines. This book offers some, but such guidelines will always be flawed due to interconnectivity and context, in particular due to the unity/coherence/balance/order/elegance/harmony factor, which relates to the individual designer’s ability to integrate sometimes conflicting design variables into a unified whole.

⁴²⁶ Philip, 1996, p.281.

■ Research findings may not align with the preferences of the people who create buildings

Usually experimental results derived from wider populations contradict architects' own responses. Any connoisseurs of anything evaluate things differently than the wider public; this has been demonstrated repeatedly. Beyond this, one might consider the natural resistance of designers, who usually consider themselves at least in part artists, to bring too much empirical, evidence-seeking science into their discipline, as it potentially represents a transfer of power away from them – perhaps to specialist consultants.

This specific matter should be given reasonable regard, although it should not be used as a reason to stifle research, or ignore research findings. The process of discovery can ossify, with rigid ways of thinking and doing things developing around previous findings that become doctrine, and deter further progress.⁴²⁷ Sometimes it is how research is used that is important.

“It is not unusual among environmental design professionals to find the nagging fear that people will turn out to prefer the wrong things ... The implication is that individual preference is highly idiosyncratic and attempting to study it will only lead to chaos.”

Stephen and Rachel Kaplan, 1981, p.72.

■ Building is a very complex process, and other things may be more important

Almost any building process is a matter of resolving a complex set of interlocking and often conflicting requirements. Many of these are highly technical, legal or financial, and a failure can be a major problem.

⁴²⁷ This was pointed out in a ‘fireside chat’ on 12 March, 2020, by Professor Arthur Gibson, of the Department of Pure Mathematics and Mathematical Statistics, at the University of Cambridge.

Structural failures are very noticeable, but so is a failure to address the operational needs of a building – that the business cannot function efficiently there. Planning and building regulations must be met. Such things as aesthetic design failures are less obvious – and perhaps more importantly, more difficult to quantify or successfully litigate.

Through their businesses, developers and architects usually experience and deal with buildings as development projects, not ongoing assets to be managed. This should not be surprising: even though other members of the development team may have a longer-term involvement, architects, other designers and development managers are usually retained only to undertake the development – once the building is completed and past the guarantee period they seldom return to it. Office space innovator Francis Duffy stated this as: ‘... even the language of architecture defines their work in terms of the process of building rather than the ongoing reality of building use’.⁴²⁸

■ Lack of observable outcomes in buildings

As pointed out by Mikellides⁴²⁹ there has been limited feedback on real, built projects for which environmental psychology findings have been explicitly employed to modify design. Considering the earlier comments of Duncan Philip in 1996 about psychologists being too entrenched in academia,⁴³⁰ this seems to have changed little over the decades.

Some interest has occurred whereby the success of different building aspects is analysed through post-occupancy review. Techniques such as the Design Quality Method (DQM)⁴³¹ are widely seen as potentially valuable, but comments from practitioners indicate that it is difficult to collect fees for doing the work, the process and findings may or may not benefit the firm commissioning the work or future projects, and the results are frequently ignored.

⁴²⁸ Duffy, 1990.

⁴²⁹ Mikellides, 2007, p.6.

⁴³⁰ Philip, 1996.

⁴³¹ Cook, 2007.

■ We don't always know who to appeal to

In my work with respect to the housing stock in the East of England (Experiments I and II), I found that widely held preferences can transform over time. In that case, the entire structure of the population had changed, with white-collar 'service' workers replacing the less-educated industrial employees of decades past. Given that buildings are typically used by a series of successive generations, how should architects and developers respond?

■ The development process has certain characteristics that deter early-stage analysis

It is often difficult to integrate new information into the development processes. The initial stages of private-sector development projects are characterized by massive uncertainties, high-cost project funding, and periods of intense work interspersed by intervals of waiting. The uncertainties usually involve financing, marketing, planning approvals and corporate decisions.

A typical private-sector development project, and to an extent those of other sectors, might start with a bright idea, perhaps just the gut-feel of an experienced proponent. A possible site is identified and tied up for a period of time, while sketch designs are prepared, planning applications are made and financial possibilities are explored. At this stage, all cost and effort are at risk – if the project fails for any reason, almost everything is lost – and every piece has to fall into place before the project can proceed. That means that the developer logically pays the architect and other consultants (as few as possible) as little as possible and, again logically, buys only enough design effort to move the project to the next stage. Some limited market research might be undertaken. At the point at which all the critical pieces are in place, time becomes exceedingly important, and the design is pushed through as quickly as possible, so construction can start.

This uncertainty means the implied discount rate on money spent in the earliest stages of a development project, when evidence-based decision-making can have its greatest impact, is very high, working against expenditures of time and effort. The project participants can access personal experience more quickly, so the result is often conservative – doing what was done before. Many entrepreneurial developers actually don't use much of their own money – they rely on selling the deal as it unfolds, so are continuously evaluating how best to spend their limited amounts of funding. Managers in other sectors will have to pry funds from their more senior managers.

The casual observer might think that government should ameliorate some of these problems, but it can make things even worse. One of the author's own projects, built with government funding, was repeatedly subjected to unrealistic, politically motivated time requirements. These were met, but it involved forfeiting any higher-level thought being applied to the design. After months of waiting for their approval, we were given some unrealistically tight deadlines. I recall the meeting when, on the day of a deadline, the architect appeared with the working drawings, dumping them on the meeting table, while enumerating them: architectural, structural, mechanical, landscape, electrical and specifications. Leaving the office, he said that he had not even looked at all of them, let alone coordinated them, and we had another deadline – to start construction in a couple of weeks. He did what he could, but the construction processes were chaotic, with the ten-floor building effectively designed as it was constructed.

A further issue is the usual desire of planning authorities to 'lock in' designs – which may have been done with limited thought. Subsequent changes then become difficult.

How this assortment of issues might be resolved is not clear. One might hope that evidence-based design will become more prevalent. For the people who design the built environment this will require a very different way of thinking, with design and administrative processes having more respect for research results and the cost savings and the better results they can produce.



Museum of Anthropology at University of British Columbia, Vancouver, 1976, Arthur Erickson, Architect



CHAPTER 21

Final Thoughts

It is reasonable to assume that few people deliberately create ugly buildings. One way to understand ugliness is to recognize that, as individuals, each with our own specific backgrounds, we may not be seeing a building or urban setting in the same way as the people or society or era that created it. Moreover, those in the building industry have their own way of seeing and interpreting the built environment. How people collectively perceive and assess buildings does change over time: many Victorian buildings spent decades having contempt heaped on them, but we now value, enjoy and protect many of them. This process might be inevitable as society and culture continue to evolve.

The best explanation for some fundamental patterns is that evolution endowed us with cognitive characteristics that have contributed to our success as a species. However, relative to the entire span of *Homo sapiens* and our more remote predecessors, experiencing built environments of any complexity is a very recent occurrence, so we process newly encountered buildings and streetscapes using mental hardware and software shaped during our hunter-gatherer existence. As we all share that sort of background regardless of more recent cultural developments, it should not be surprising that many of the patterns identified by researchers transcend geographical and cultural settings.

Generations of researchers have consistently revealed patterns in human response to environmental situations. We have good insights into how people compose their evaluations, but many of these have not been reflected by practitioners.

There is a wonderful opportunity for practitioners to create more esteemed buildings, that will use money and other resources more efficiently, through longer-lived, more productive, sustainable and economically attractive assets. The tragedy is when something newly created is regarded as unappealing by most people who encounter it – and there are numerous pieces of research, as well as personal anecdotes, that demonstrate that this happens all too often.

There is room for more education in a number of areas. The wider practising profession and the schools of architecture have not absorbed this research. Academic architecture has continued with discussions of semiotic and linguistic meaning, while practice has been dominated by questions of legal liability, materials science, planning permissions, fees and environmental sustainability. Perhaps architects are just resisting information that undermines a self-image as artistic masters in the creation of the built environment – rather like a chef who cooks only what he/she personally likes, and expects everyone should come to like that.

At least two propositions might be made: that the people who create the built environment need to have more regard for the people who will encounter their products, and that researchers need to improve their communications with practitioners.

■ Avoiding ugly

Now, after two thousand years of debate, some substantial works on the subject, and generations of builders who have followed various philosophies and rules, it is abundantly clear that obtaining a positive human response does not lie in conforming to a simple set of rules. If beauty (or ugliness) were somehow absolute, universal, significant and embedded in the building form, someone should have figured it out by now.

Experimental results have confirmed that architectural beauty is in the relationship between a building and the onlooker, and so it is a human construct that is based on factors in our backgrounds – both individual factors, and those shared by others.

Many underlying factors are acquired, but there are also ‘hard-wired’ biases that peer out from underneath. It is possible to gain some insights into preferences – and so enable us to more reliably predict whether people will see any proposed building as beautiful or ugly.

However, based on the research findings, including those based on work by the Kaplans, Canter, Gifford, Fawcett, Cupchik, Nasar and Stamps, it is possible to suggest a set of general guidelines that, for the wider public, separate the pleasing from the ugly.

■ Seeking preferred forms

After a great deal of research and discussion, it is evident that, for quite a number of reasons, there is no single ideal design form. Forms that people prefer have significant personal and cultural determinants, and culture evolves – sometimes quite quickly.

In an increasingly educated and affluent population, there should be an ever greater demand for improved ‘delight’ from the built environment. With planning and building regulations we should be able to simply assume that buildings will satisfy the ancient requirements of ‘commodity’ and ‘firmness’. The public is likely to increasingly focus on the various dimensions of ‘delight’. It has been experimentally demonstrated and observed that simply meeting or improving the visual messages of ‘commodity’ and ‘firmness’ is likely to fail in winning widespread regard in the twenty-first century. More attention must be specifically paid to the ‘delight’ aspects of design, including how they might persist over longer periods of time.



A McDonald's Restaurant. A corporation that does serious research into its market came up with this design. How many things in the Esteem Checklist does it address?

The experiments demonstrating that people who create and manage the built environment evaluate it differently than the wider population mean that they cannot rely on their own perceptions and value systems when designing buildings. They might get it right, but often will not. So those who create buildings need to pay increasing attention to existing and emerging research, and undertake more exploration of the specific markets in which they work. Research does not guarantee that a design will be accorded with great esteem, but the likelihood of it being widely perceived as ugly will be reduced.

Esteem Checklist:

When in doubt, consider the following design approaches that have been shown to be associated with esteemed buildings:

- Familiarity
- Naturalness
- Ornamentation – preferably naturalistic
- Symmetry – reflected and translational
- Not too many materials – two or three plus glass is probably enough
- Careful use of novelty (it should not conflict with familiarity)
- Mystery is good, but not too much
- Reproductions are not to be feared
- Consider the practical aspects of human scale
- Strive for buildings that might be perceived as warm
- Remember the contexts in which a building will exist, including geographical, cultural and personal
- Try to provide ‘programme notes’ to help people understand the building
- Remember that materials and styles carry meanings for people
- Use a pitched roof, or suggest it, whenever possible
- Make sure the entrance is visible
- Think about curved forms (but be careful about cost)
- Some rules and guidelines (such as the above) are meant to be broken, but there should be very good reasons for doing so
- Very importantly – pull it all together through unity/coherence/balance/order/elegance/harmony
- Keep in touch with your market – and that means ongoing understanding of the population being addressed
- Design decisions should be based on solid evidence, not guesses or assumptions. If in doubt, get out there and do some research – it is cheap compared to the costs of construction.

For those who undertake the research, there is much we do not know, and the potential for more investigation is probably unlimited. Some topics need more consideration:

- Cultural dependency and the future: What is happening in cultures as they globalize?
- How do the factors establishing preference interact as people assign overall preferences to buildings and urban spaces?
- How exactly are preferences formed (more work needs to be done with children and teens)?
- How can neuroscience add to our knowledge?
- What more can we learn about the factors that lead to a design being seen as coherent, ordered, harmonious and elegant?

Perhaps more importantly, researchers have to make their findings accessible to practitioners. That means publishing in places, and in forms, that designers and developers can find and understand.

Designers and developers need to understand the factors that tend to enhance the delight people receive from the built environment and respect them in their designs, thereby merging art and science – the intuitive with the scientific. Successful managers usually go out and find out what is going on. One relevant phrase is ‘management by wandering around’ (MBWA) – this helps to ensure that a big gap does not develop between the decision-makers and those they influence.

Design creativity remains important. Ultimately, a building designer is like a winemaker or a cook: a pinch of this and a pinch of that to create a product which is initially evaluated as a whole by the consumer. Hence the importance of coherence/unity/balance/order/elegance, which is not one element in itself, but an integration of many pieces – that the combination of elements creates an engaging product that might be described as ‘elegant’ and ‘delightful’.

“At the end – delight is a good thing”

During much of the twentieth century an explicit debate about delight was missing from architectural philosophy. It was often seen as something resulting from functionality. This was reasonable when societies coped with the unpleasant implications of industrial and economic revolutions, intense urbanization and major wars. Now, in societies where basic needs are increasingly met, more effort needs to be focused on the conscious creation of delight. For the designer, the task now is to connect with markets and the complex human desires and needs that drive them. This involves integrating the subjective with the objective, and the art with the science, so each can contribute to a successful and efficient product.

Delight is nothing to be uncomfortable about – it can add to the meaning and pleasure derived from life – surely something desirable. Moreover, anything in the building or urban environment that ends up being widely seen as ugly is a waste of resources, especially if that leads to premature demolition.

We can return to one of the original questions – ‘why does someone like or dislike a piece of architecture or an urban setting?’ The response may be as simple as ‘I don’t like red wine’, or it might involve a complex analysis. The next time you encounter a building or urban setting that evokes a strong response from you or someone else, go one step further, and ask that important question – *why*? And then ask why other people may not respond as you do.

As with food, wine, music and visual art, a greater capability of understanding and assessing architecture will give most people more enjoyment. It is one thing to derive a good feeling from the intoxicating attributes of wine, but if you listen to the rapturous outpourings of a wine connoisseur, you can see that there is more to be appreciated than just the physical effects of alcohol. So it is with buildings – there is more than just simple utility on offer.

Unlike wine and food, when the greatest experiences often come with a higher price tag, many wonderful buildings can be experienced by walking beside them – or sometimes just visiting them through photographs or videos. Buildings and urban spaces surround us; we don't even have to seek them out. Even for the individual who has no intention of becoming a built-environment connoisseur, being able to appreciate them a bit more can offer an easy, low-cost, pleasurable experience. You don't have to possess the buildings – you can merely enjoy the experience and the knowledge that delightful things exist.



Riddarhuset, 'The House of Nobility', Stockholm. Completed 1660, Simon and Jean de la Vallée. How many things in the Esteem Checklist does it address?



Marin County Civic Centre, California (1970) Frank Lloyd Wright, Architect.



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